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(Estd. 1995)

NAAC Accredited 'A' Grade Institute

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**THE INTERNATIONAL CONFERENCE  
3Ds (Data Analytics, Digitalization & Disruption)  
in Business and Society**

**ORGANIZED BY**

**Institute of Technology and Science**

**ITS School of Management**

**Mohan Nagar, Ghaziabad**

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## **ABOUT ITS**

I.T.S Group of Educational Institutions is a pioneer educational group which has since evolved as a brand in the realm of education. Established in 1995 under the aegis of Durga Charitable Society started with its first campus in Mohan Nagar, Ghaziabad, The Group is now having four campuses formidable with establishments at Muradnagar and Greater Noida also, imparting multidisciplinary curricula.

I.T.S - The Education Group is an 24 years old leading educational group of the country. Its various programmes are NBA accredited & NAAC (A-Grade) accredited. ISO 9001:2008 certified group offers 20 courses to its 8000 students in its 8 Institutes spread over 4 campuses, endowed with state-of-the-art infrastructure, all modern facilities and more than 700 distinguished faculty members.

I.T.S - The Education Group is a renowned and established educational group offering programmes in Management, IT, Dental, Engineering, Pharmacy, Biotechnology and Physiotherapy. PGDM programme offered by I.T.S is equivalent to MBA as certified by the Association of Indian University (AIU) which is a rare recognition given to any such programmes in India.

I.T.S is headed by Dr. R. P. Chadha as its Chairman who believes in nurturing the potential of the students and ensuring it to grow into a commitment to create a Thinking Professional Order. There is a strong societal, industry, professional and fraternity participation rendering the graduated students as highly sought after products in the professional field.

All the Institutes under I.T.S – The Educational Group, are supported by full-time experienced and qualified faculty members who also act as mentors. All the courses are either affiliated to Universities and/or approved and accredited by AICTE. Apart from ISO 9001:2008 certification, the campuses are Wi-fi enabled. Value added inputs together with research work, seminars, paper presentation, MDPs and FDPs are a way of life. The group lays due stress on the development of the student not only as a professional but also as a worthy members of the society.

The I.T.S Group of Educational Institutions has 4 different campuses offering different professional courses. The Mohan Nagar campus started in 1995 in Ghaziabad offering PGDM, approved and accredited by AICTE and equivalent to MBA by AIU. The MCA/MBA programs are approved by AICTE and affiliated to AKTU, Lucknow. The BBA and Bca programs are affiliated to C.C.S. University, Meerut.

The Campus at Muradnagar started in the year 2000 imparts MDS (Approved by Dental Council Of India), BDS (Recognised by DCI & affiliated to C.C.S.), M.Sc (Biotech)/ B.Sc (Biotech) and BPT and MPT(affiliated to C.C.S. University, Meerut) and B Pharma and M Pharma which is approved by AICTE and affiliated to AKTU, Lucknow. Two campuses in Greater Noida started in 2006 and located at Knowledge Park III, offers B.Tech (approved by AICTE and affiliated to AKTU, Lucknow) with specialization in CS, IT, EC,ME & EE and MBA which are also approved by AICTE and affiliated to AKTU, Lucknow. The second campus established as Dental College and Hospital offers BDS and MDS which are approved by Dental Council Of India.

The admissions in all the Campuses are exceptionally in demand showing the growing popularity of the brand. This is duly backed by the placement records of the group with its passout being getting selected immediately in companies of repute.

I.T.S supplements education with its CSR activities offering help, care and guidance to the down trodden and unprivileged segments of the society. I.T.S-The Education Group offers nonprofit medical care to society through its two, 100 bedded fully equipped multi-speciality hospitals.

## **MESSAGE FROM THE CHAIRMAN**

It gives me great pleasure to note the publication of the conference proceedings in “International Journal of Advance and Innovative Research” for the International E-Conference on “3Ds(Data Analytics, Digitalization & Disruption) in Business and Society”. It provides a valuable opportunity for the confluence of ideas in diverse streams of thought in management and allied areas like Marketing, Human Resource Management, Finance, Operations, Information Technology, Ethics, International Business, etc.

This convergence of thoughts on a particular relevant and contemporary concepts and issues will help in creation of Amrit or Divine Nectar for educationists, researchers, business professionals and policy makers. The deliberations and discussions at the conference is expected to widen the scope of research and Knowledge base and in the diversified areas of management, information technology, business and society .

I would like to take this opportunity to greet and express gratefulness for the concerted efforts of academic fraternity, researchers, business practioners and technologists for providing thought provoking contributions.

I am also indebted to them for choosing to participate in the conference and have contributed in raising the standards of academic excellence.

**Dr. R. P. Chadha**  
Chairman I.T.S. - The Education Group

## **MESSAGE FROM THE VICE CHAIRMAN**

It is indeed a matter of great pride and pleasure that ITS School of Management and Institute of Technology and Science, Mohan Nagar are successfully organizing the International Conference on “3Ds(Data Analytics, Digitalization & Disruption) in Business and Society”.

The two day conference is witnessing enthusiastic participation from different parts of the country and abroad as academicians, researchers and business practitioners for deliberations on a variety of themes across diversified areas of management, information technology, business and society. A heartening feature of the conference is substantial participation and presentation of academicians, researchers and business professionals with thought provoking concepts and ideas on global competitiveness and social development in more strategic, ambitious and collaborative manner in order to access and provide opportunity in the global economy.

I hope this conference will provide a fertile ground for the productive exchange of ideas, laying the foundation for further research in the relevant fields.

We are happy that Indian Academician and Researchers Association (IARA) has accepted to publish conference proceedings in its premier journal “International Journal of Advance and Innovative Research (IJAIR)”. I believe, publication of proceedings will help and encourage researchers and educationists to delve more into these areas and unearth newer nuggets of wish

**Shri. Arpit Chadha**  
Vice Chairman  
I.T.S-The Education Group

## **FROM THE DESK OF DIRECTOR**

We feel highly delighted that ITS School of Management and Institute of Technology and Science, Mohan Nagar have organized two days international Conference on “3Ds(Data Analytics, Digitalization & Disruption) in Business and Society”.

The objective of the conference is to provide a platform to bring researchers, academicians, professionals and students from management, information technology, economics, environment and social science areas to interact and disseminate information on the prospects and challenges of global competitiveness and sustainable development.

The publication of the conference proceedings for the International Conference is the sum total transactions of thoughts and concepts delivered and presented by the participants and dignitaries deliberations on a variety of themes across diversified areas of management, information technology, business and society.

It is hoped that the papers and abstracts included herein will spark greater interest in the area of Data Analytics, Digitalization & Disruptions in Business and Society leading to holistic development of research and academic excellence.

We are thankful to all the teachers, researchers and business professionals who invested their valuable time and effort in writing these papers, and chose to contribute for this compendium.

We would also like to take this opportunity to express our gratefulness to the management, faculty, staff and students, without their efforts this conference would not have been possible.

With best wishes

**Prof.(Dr.) V. N. Bajpai**  
Director

## PREFACE

The global environment is changing at a rapid pace. The society and contemporary businesses are consistently being impacted by digital technologies which have brought in myriad of changes. The management ideas and theories, popular and applicable at one point in time become obsolete, and new ideas and approaches to management take their place. Since the industrial revolution, management as a discipline has undergone numerous transformations. While trying to understand the changes in business and management, we find disruption at the core of those changes and this has been the challenge amongst business experts and researchers that how can a business use it to drive real change in the company or industry.

.Digital Transformation, Data Science and Sustainability are continuously changing the functioning of organizations globally. Impact of business is one such idea that has impacted the disruptive thinking of the organizations in terms of principles, policies, philosophies, process, programs, procedures, and people (7Ps).

Organizations, once seen as profit making entities, have moved to 'Triple Bottom Line' and Sustainable Development Goals (SDGs). Digitalization, Technology and Data Science has made business 'Local-Global-Local'. As a result, these have provided impetus to disruptive thinking in an organizational context. At times, they have become the reason for the changes that have subsequently transformed organizational structures, business processes, people management, product & service designs, supply chain management, advertising and marketing, and accessibility to the consumers.

In future, the idea of complete transformation of the production systems and process is going to pose a challenge not only to management thinking, but also to the inter-relationships of organizations, people and society. Hence, it is important to understand the inter-linkage of disruptive thinking, technological innovations and management of business organizations and extensive use of Data Analysis in management and leadership.

View points before organizing this conference and publication of this conference special Journal is addressing and documenting company's innovation and business strategies linked with disruptions, digitalization and data science in order to leverage company's core competencies and creating sustainable business development and hence to discuss organizational and management issues.

We are extremely indebted to all the teachers, researchers and business professionals who invested their valuable time and effort in writing these papers, and chose to contribute for this conference special journal.

We would also like to take this opportunity to express our deep sense of gratitude to the management, faculty, staff and students, without their efforts this conference would not have been possible. I am thankful to International Journal of Advanced and Innovative Research (IJAIR) and Indian Academicians and Research Association (IARA) that have shown interest in publishing this conference special journal.

With best wishes

**Prof. (Dr.) Manoj Kumar Jha**  
Conference Convener

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DEVELOPMENT AND PERFORMANCE EVALUATION OF ADVANCE CIPHER ALGORITHM (ACA) ON ENERGY CONSUMPTION FOR DIFFERENT DATA TYPES

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ABSTRACT

Today the internet, intranet, extranet, and other media are increasing for exchanged important and valuable information but there are required best solutions to necessary security against the information thieves' assault. The step-by-step coding methods engages in a recreation role in the data security system. Encryption and decryption algorithms put away a considerable quantity of calculates possessions for instance CPU time, memory utilization, series energy of laptop (energy consumption) CPU workload, Throughput. In a wireless setting, resources are restricted, because battery influence availability is limited. If microprocessor and memory utilization are increasing than series power required, but series technology is increasing at a very slow charge which is forming in series breach. Since battery powers play a most important role in the usability of the devices. We are evaluating six of the mainly encryption algorithms, RC2, RC6, Blowfish, AES, DES, ACA on different data types as text, image, audio and video in this research. We observe a procedure for analyzing the trade-off between energy and security. In this research paper, we have developed ACA and move toward to reduce power utilization using some method and formulas. An evaluation has accomplished in support of those encryption algorithms by dissimilar locations for each step-by-step processes such as unlike ranges of data slabs, dissimilar information types, and battery power utilization in proportion in different key sizes with different data types and finally encryption/decryption rate.

Keywords: ACA, Data Slab, Encryption, Decryption, RC2, RC6.

1. INTRODUCTION

Encryption step by step processes are generally accessible and it is worn in protection. They can be classified into single key and double key coding. Public keys for the encryption process and private key for the decryption process; it is used in the digital mark. Public key encryption is based on numerical computation meticulous and this be not incredibly capable for small mobile devices [1][6]. An asymmetric coding technique that is approximately one thousand era slower than symmetric techniques, because they require more computational processing energy [2][8].

In single key coding, there are using for encrypting and decrypting data. Before transmission between entities, the key should be distributed. The power of single input encryption depends on the dimension of the key. There is using a similar step by step process, in this case, coded data via a key that is harder to split, than done by using the lesser key. Presently here given numerous examples of sturdy and feeble keys of cryptography step to step process.

RC6, RC2, DES, ACA, AES and Blowfish, uses one 64-bit key. But DES uses one 08-bytes key. Triple-DES (3DES) uses three 8-bytes keys whereas AES uses a range of (08, 16, 24) bytes keys.

Blowfish uses a range of (4-56) bytes; default 16 bytes while RC6 uses a range of (08, 16, 24) bytes keys [1-5]. The categorization of coded performance is shown in Figure.1

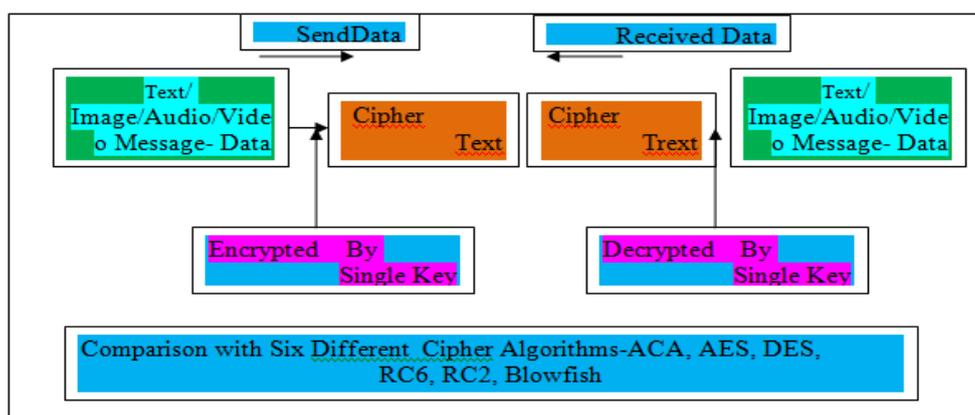


Figure. 1 Encryption/Decryption of Text /Image/Audio/Video Message using single Key

There are given mainly common coding methods are-

DES: (Data Encryption Standard): It is the primary data coding standard that was suggested through the National Institute of Standards and Technology. The size of the Data Encryption Standard is 08 bytes key size. A lot of attacks and process validate and fault in Data Encryption Standard that through an insecure slab cipher [3] [4].

3DES: It be an improvement of DES; the size of DES is 08 bytes slab size with 24 Bytes key size. The coding method is parallel to the unique DES, but it is applied 3 era to enhance the coding n level. It be slower than other slab secret message methods [3].

RC2: It is a slab secret message with 08 bytes slab with a changeable key size. It knows how to utilize since a substitution for the DES step by step process that variety from 8 to 128 bits. RC2 is susceptible to a related-input assault. [3].

Blowfish: It is slab secret message with 8 bytes. Blowfish obtain a changeable-span key that ranges starts since 32 bits to 448 bits; by default 128 bits. Blowfish is license-free and is available free for all users; Blowfish has variants of 14 rounds or less [5].

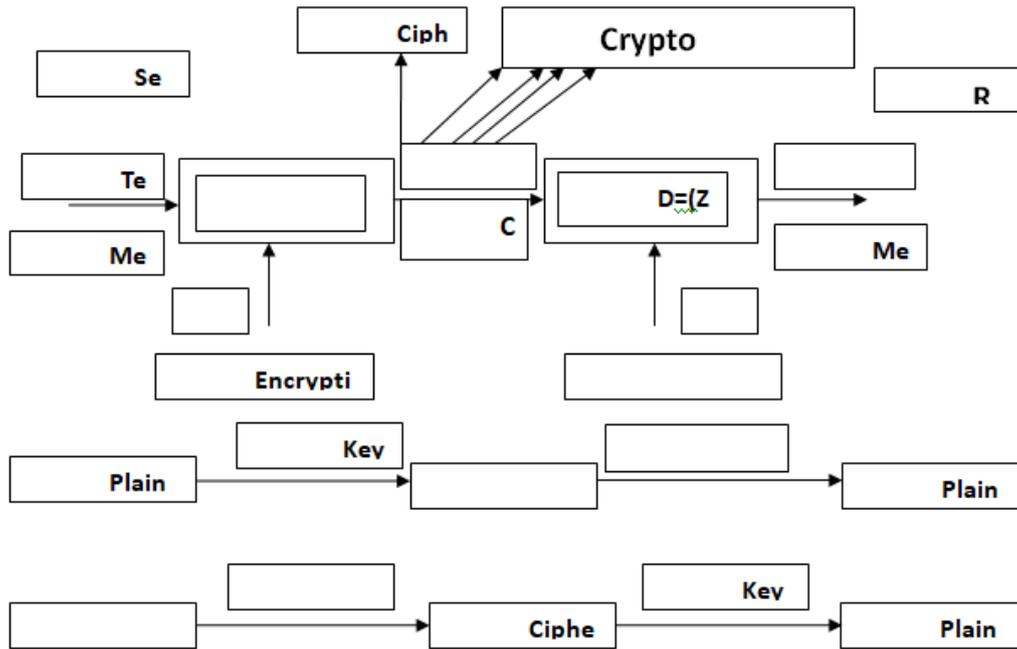
AES (Advanced Encryption Standard) [20], [21], [22] It is a slab secret message. AES has a variable input span of 16 bytes, 24 bytes, or 32 bytes bits; default 32 bytes. It coded data slab of 16 bytes within 10, 12 and 14 round, which is depending on the key size. AES code is speedy and bendy; it can be implemented on different stage, particularly in small devices [6]. Also, AES has been cautiously tested for several precautions [3,7].

RC6 is slab secret message [23], [24], [25] that is resulting since RC5. It be deliberate to gather the rations of the Advanced Encryption Standard competition. [26] RC6 has a slab size of 16 bytes and maintains input ranges of 16, 24 and 32 bytes. The number of suggestions reflect on RC6 as Advanced Encryption Standard [8].

## 2. PROPOSED WORK

We have proposed a technique in favor of appraising presentation of preferred single key coding of various step by step processes on power utilization Encryption step by step process, put away a large quantity, calculate belongings such while microprocessor time, memory time, and series energy. Series method that is greater than increasingly by a slower rate than further technology, due to this reason “series space” [9][10]. They require a method to make choice regarding power utilization and protection to decrease the utilization of series energy strategy. The most common classification of encryption techniques with using (A) Secret key (symmetric) cryptographic uses single key for both encryption and decryption and (B) Public key (asymmetric) cryptographic uses two keys one for encryption and other for decryption shown in Fig. 2. Here we have proposed a technique for evaluating trade-offs between Power and Protection (PP). The objective is to give support to the blueprint of power well-organized vulnerable message system on behalf of the wireless environment in the future. We have recommended four approaches to decrease the power utilization of the protection set of rules.

1. Developed a new cipher algorithm known as ACA (Advanced Cipher Algorithm).
2. Substitute for typical protocol protection primitives (PPP) utilizes power whereas keep up a similar protection level.
3. Thirdly variation of typical security set of rules (SSR) suitably. Finally,
4. The new design of security set of rules (SSR), where the energy effectiveness is the main focus.
5. We have evaluated on different types of data as Text /Image/Audio/Video w.r.t of these algorithms ACA, DES, RC6, Blowfish, and RC2, AES. The presentation assesses of coding schemes have conducted in conditions of power varying for manuscript information, acoustic data, capture data, and image data. The evaluation of power utilization, by varying the packet range and key range for the preferred cryptographic algorithms.



- (A) Secret key (symmetric) cryptographic uses single key for both encryption and decryption.
- (B) Public key (asymmetric) cryptographic uses two keys one for encryption and other for decryption

Figure 2. Encryption/Decryption of Ranges (in KB) of Text /Image/Audio/Video message with using (A) and (B).

In this paper we have organized various kinds of research work; associated work, which is described in Section-3, Measurement of energy consumption in section 4. Development of a new cipher algorithm which is known as ACA in section 5. The experimental design is illustrated in part 6, and outcomes and analysis are in part 7. Finally, the conclusion is drawn in part 8.

**3. RELATED WORK**

The performance of the algorithms and evaluation outcomes obtained from other resources. In this paper [11] Advanced Encryption Standard be quicker and more efficient than other coding algorithms. While the broadcast information is reproduce and taking place. Here it is the inappropriate difference in the presentation of the dissimilar single key method.

We have studied [12] it is carrying out for dissimilar accepted surreptitious input step by step process since DES, 3DES, AES, and Blowfish. They apply, and their presentation is assessed by coding key in files of changeable contents and range. Outcomes illustrate to facilitate Blowfish had a very good demonstrate compared to other algorithms. Advanced Encryption Standard has an enhanced activity of DES and 3DES. It moreover shows that 3DES has almost 1/3 throughput of DES, or in other words, it desires 3 times than DES to process the same amount of data.

In this paper [13], it is carryout for dissimilar accepted furtive input step by step processes such as RC4, AES, and XOR. They are applied with production and be evaluated by coding for actual time of video torrent changeable contents. The outcome illustrates coding wait transparency using AES is less than the precision by RC4 and XOR algorithm. Hence, AES is a feasible solution to secure real-time video transmissions.

The study of protection compute intensity has been predictable in favor of web encoding toward examine web browsers. This revise reflects on computing the presentation of coded procedure at the programming language’s writing with the web browsers. This be pursue by carrying out tests simulation to obtain the best encryption algorithm versus a web browser [14].

This paper [17] author discussed the security schemes, and it assesses the most commonly cryptographic step by step process. AES and Blowfish contain the best presentation surrounded by others. Blowfish as well as AES are also known to have better coding.

[30] In this paper authors talked about the data protection has become an important issue in data communication. An Encryption algorithm has come up as a solution and plays an important role in information

security system. On other side, an algorithm consumes a significant amount of computing resources such as CPU time, memory and battery power. Therefore, it is an essential to measure the performance of encryption algorithms. In this work, three encryption algorithms namely DES, AES and Blowfish are analysed by considering certain performance metrics such as execution time, memory required for implementation and throughput. This is based on the experiments; it has been concluded that the Blowfish is the best performing algorithm among the algorithms chosen for implementation.

[32] In this paper authors discussed about the Internet is used by Individuals, cooperative and government organisations. But there is a possibility to hack the information. So, protect the information, we need to encrypt/decrypt information by using cryptography algorithms. In this paper the active encryption techniques are studied and analysed to endorse the performance of the encryption methods.

This paper [35] Authors discussed on source executive in wireless sensor networks have identified. Energy efficient routing protocols as one of the energy saving mechanisms that can be used to manage the consumption of networks available energy and extend network lifetime. Routing protocol assist in finding paths for transmission of sensed events, and they must be able to extend the lifetime of a network despite some of the limitations of sensor nodes. In this paper, we survey and compare existing routing protocols in wireless sensor networks. We start by introducing the different solutions to improve the network lifetime and focus on energy efficient routing protocols as the area of the survey, in addition to network topology modelling. We also model the network regarding energy consumption, sensing and event extraction analysis in the network. The Categorization of the routing protocols into homogeneous and heterogeneous was performed, for which, sub-classification into static and mobile and other behavioural patterns of the routing protocols was done. The second phase of the paper presents models and simulations of selected routing protocols and comparisons of their performances.

**4. ENERGY CONSUMPTION MEASUREMENT**

Power utilization for coding and decoding can be considered in many ways. Initially, the technique worn to compute energy utilization is toward imagine with the purpose of the usual amount of energy is utilized by typical procedure and experiment, the additional energy utilization by coding, step by step process. These techniques are observing the stage of remaining battery that can compute by equations from (1), (2).

The series life utilities for run = the number of runs change in series life-----(1).

Average battery Consumed per iteration=Battery Consumed PIteration N1-----(2).

The techniques of protection primitives (pp), be able to be calculated through counting the amount of calculating round that is used in computations and related to the security operations. The calculation of the power cost of coding, we make use of the same techniques as illustrated in [20] [22] with the subsequent Equations:

$$\text{Brate\_coded (ampere-cycle)} = \tau * I \text{ ----- (3)}$$

$$\text{Total Energy\_rate (ampere-seconds)} = F \text{ (round/sec)----- (4)}$$

$$\text{Energy\_cost (Joule)} = \text{Total energy\_rate (ampere-seconds)} * V \text{ ----- (5)}$$

Where B rate \_ coded: a basic rate of coded (ampere-round)

$\tau$ : is the total number of clock cycles.

I: is the standard current drawn by each CPU clock round. The belongings of the majority of Common Encryption Algorithms.

Total energy \_ cost: the total energy cost(ampere seconds)

F: is the clock frequency (round/sec). Energy \_ cost (Joule): the energy rate consumed). Through the using the round, the operating voltage of the CPU, and the average current drawn for each round,

We can compute the power utilization of cryptographic functions for example, on average; each round consumes approximately 270 mA on an Intel 486DX2 processor or 180 MA on Intel StrongARM. For an ample calculation, with a 700 MHz CPU operating at 1.35 Volt, encryption with 20,000 cycles would consume about  $5.71 \times 10^{-3}$  mA-second or 7.7  $\mu$  Joule. So, the amount of power utilization by program P to achieve its goal( coding or decoding)

$$\text{Energy (E)} = VCC \times I \times N \times \tau \text{ ----- (6)}$$

Where N: the number of clock round.  $\tau$ : the clock period. VCC: the supply voltage of the system: the average current in amperes drawn from the power source for T seconds. Since for a given hardware, both VCC and  $\tau$  are fixed,  $E \propto I \times N$ . However, at the application level, it is more consequential to talk about T than N, and therefore, we express energy as  $E = \alpha I \times T$ . Since for a given hardware, Vcc is fixed [22]. The second and third methods were used in this work.

**5. PROPOSED ACA MULTI-ENCRYPTION ALGORITHM**

Here we consider the encryption where are using two different types of algorithms X-tea & ACA: here we are verdict coding data and given that hardware raised area with the configuration that is based on the cryptographic step by step process [28].

We consider  $X_1, X_2$ , As Input Bits from X-tea \_ function

Inputs are given-

Delta\_value key<sub>1</sub>, key<sub>2</sub>, key<sub>3</sub>, key<sub>4</sub>,

Add\_function

S1, clk, reset

Outputs are given

In this program, there are given four encrypted data outputs

Coded output records (Out<sub>1</sub>, Out<sub>2</sub>, Out<sub>3</sub>, Out<sub>4</sub>)

Hardware Design of X-tea, ACA Coding Approach Method

X-tea\_func1(.out(w1),.x(x1),.delta(delta),.key1(key1),.key2(key2).rl(rl),.srt(srt),.clk(clk)); \_\_\_\_ (a)

X-tea\_func2(.out(w2),.x(x2),.delta(delta),.key1(key3),.key2(key4).sr(rl),.srt(rst),.clk(clk)); \_\_\_\_ (b)

ACA\_func c3(.a(w3),.b(w4),.c(w5),.d(w6),.A\_out(out1),.B\_out(out2).C\_out(out3),.

D\_out(out4),.clk(clk),.add(add)); \_\_\_\_\_ (c)

**ACA Encryption Algorithms**

There are given ACA Function with parameters-

ACA\_function c3 (.a(w3), .b(w4), .c(w5), .d(w6),.

A\_out (out1),. B\_out (out2). C\_out(out3),.

D\_out(out4), .clk(clk), .add(add))

**Multi-Encryption Approach using (X-tea & ACA)**

**Method 1: X-tea- Pipelined Approach**

X-tea\_func (Out, S1, Delta\_val, key<sub>1</sub>, key<sub>2</sub>, Q, Z)

1. For each Plaintext Bits  $X_i \in X_j$
2. For each Ciphertext Bit  $Out_i \in Out_j$
3. If (s1=1^S=0)
4. //splitter// assign out<sub>1</sub>=in[31:0]; assign out<sub>2</sub>=in[63:32];s
5. While (z>= 32) do {
6. For each  $X_i, Out_j$  ( $Out_j[1] = ((in<<4)^in<<5) + in$ )
7. For each  $X_i, Out_j$  ( $Out_j[2]= Delta\_val +( key_1,+ key_2)$ )
8.  $P= Out_j[1] \oplus Out_j[2]$
9. }
10. Else Exit
11. If  $Q \in X_j$  then Call KSP\_func
12. Else Subtract (  $Q= Q-\{X_j\}$ )
13. Exit

**Method 2:** Pipelined approach enhances the throughput of **ACA coding and decoding algorithm**. The speed of ACA coding depends on the use of different secret message function in different rounds of act and the key generation method ACA\_func (M\_out, N\_out, O\_out, P\_out, m,n,o,p,add,clk); **Coding schedule \_ACA**

1. DEFINE parameter r=10;
2. for (j=1;j<=r; j=j+1)
3. begin
4. t=n\_mul << log\_n;
5. r=p\_mul << log\_p;
6. l\_int = ((l\_int^t) << r)+s[2\*j];
7. o\_int =((o\_int^r) << t)+s[2\*j+1];
8. {l\_int, n\_int,o\_int,p\_int}={n\_int, o\_int, p\_int, l\_int};
9. End

**Decoding Schedule \_ACA**

1. for(k=1;k<= r; k=k+1)
2. begin
3. {L\_int,N\_int,O\_int,P\_int}={P\_int,L\_int,N\_int,O\_int};
4. V=p\_mull << logg\_p;
5. W=n\_mull << logg\_n;
6. O\_int = ((O\_int-s[2\*k+1])>> W)^V;
7. l\_int = ((l\_int-s[2\*k]) >> V)^W;
8. End

**Method 3:**

Here we are considering about the KSP function and koge stone adder design. In KSP function given some parameters- x, y, sum, Cin, Cout,

KSP\_function (x, y, sum, Cin, Cout)

1. Begin
2. Defining Levels (n): = 8 i.e.

Number of levels used here is n=4

**LEVEL 1**

3. Define Black Cell Level (1A-7A) = G\_Z[0-6], P\_Z[1-7], G\_Z[1-7], P\_Z[0-6], G\_A[1-7], P\_A[1-7]
4. Define Gray Cell Level (OA)= Cin, P\_Z[0], G\_Z[0], G\_A[0]

**LEVEL 2**

5. Define Gray Cell Level (1B)= cin, P\_A[1], G\_A[1], G\_B[1]
6. Define Gray Cell Level (2B)= G\_A[0], P\_A[2], G\_A[2], G\_B[2]
7. Define Black Cell Level (3B-7B) = G\_A[1-5], P\_A[3-7], G\_A[3-7], P\_A[1-5], G\_B[3-7], P\_B[3-7]

**LEVEL 3**

8. Define Gray Cell Level(3C) =cin, P\_B[3], G\_B[3], G\_C[3]
9. Define Gray Cell level(4C-6C)(G\_A[0-2], P\_B[4-6], G\_B[4-6], G\_C[4-6]
10. Define Black Cell Level(7C) G\_B[3], P\_B[7], G\_B[7], P\_B[3], G\_C[7], P\_C[7]

**LEVEL 4**

11. Define Gray Cell level (7D)=cin, P\_C[7], G\_C[7], Cout

The proposed step by step process be separated into a positive set of the key in with relevant output, additionally, it provides the information that has been given procedures. In procedure 1, provides the step by step approach in the creation of planned pipelined technique of x-tea, where the concept of [29] FSM has been used, this procedure calls another procedure\_3 contained by its process that defines the process of Kogge stone adder which is the fastest adder used in the process, it is designed into two different levels black level and gray level, each having its specific task respectively. [28]. After designing the proposed modified approach of X-tea, but here we consider another component which is known as Advance Cipher Algorithm(ACA) illustrated in the procedure 2, output from the two modules of X-tea each of 24 bit, making it 64 bit (Since input for ACA is 64 bit) that is fetched as an input to ACA module, This connecting of two different approaches of cryptographic step by step process building it more protected and powerful over an ACA step by step process platform with using hardware platform with configuration and design based on cryptographic algorithm while (HDL) that is called multi-encryption technique.

## 6. EXPERIMENTAL DESIGN

There are given an experiment configuration where we have used a laptop which Processor-Intel® Core™ I-3-5005U CPU@2.00 GHz, 16GB RAM. In this experiments, encrypts a different file size ranges from 400 K byte to 7.5 Megabyte in favour of manuscript data, since 55 Kbytes to 9,264 Kbytes in favour of acoustic data, from 16 Kbytes to 155 Kbytes in favour of images data from 4,000 Kbytes to 5,000 Kbytes in favour of video files. Dissimilar file size ranges from 321 K byte to 7.139Mega Byte 139 Megabytes in favor of manuscript since 33 Kbytes to 8,262 Kbytes in favor of audio data, from 28 Kbytes to 131 Kbytes in favor of pictures (Images) and from 4,006 Kbytes to 5,073 Kbytes for video files.

### Several performances are tranquil:

- 1- Energy consumption.
- 2- Encryption time.
- 3- CPU process time.
- 4- CPU clock cycles

On the side of calculation of the power rate of coding, we employ the same techniques which are illustrated in [18]. The basic charge of coding signifies by the product of the total number of clock rounds which is taken by the coding and the typical current drawn by each CPU clock cycle. The necessary coding charge defined by the unit of ampere-round. To calculate the full amount power charge, by split the ampere-round and the clock rate in round/subsequent of a processor; we find the energy charge of coding in ampere-seconds. Then, we multiply the ampere-seconds with the processor's operating voltage and obtain the power charge in Joule.

In use the electrical energy of the Microprocessor and the average current drawn for each round, then we can calculate the power utilization of cryptographic purposes. For example, in average, each round utilizes approximately 270 mA on an Intel 486DX2 processor [18] or 180 mA on Intel Strong ARM [19]. However, currently we might not find any power utilization benchmark for an Intel Pentium VI 1.5 GHz that is used in our capacity; we suppose it is close to 100 mA. For an illustration computation, with a 700 MHz CPU operating at 1.35 Volt, encryption with 20,000 cycles would consume about  $5.71 \times 10^{-3}$  mA-second or 7.7  $\mu$  Joule. We replace total no of clock cycle divided by clock frequency to be duration time for coding or decoding. Then, the amount of power utilized by program P to achieve its goal (coding or decoding) is given by  $E = V_{cc} \times I \times T$  joules [18].

Coding instance is considered, an encryption step by step process obtains to make a secret message from a plaintext. Coding instance is used to compute the throughput of a coding method. It points out the rate of coding. The throughput of the coding method is calculated as the total plaintext in bytes coded and divided by the coding time [15].

Microprocessor CPU progression time is the time that a CPU that is dedicated merely to the meticulous procedure for computation and replicate the load of the CPU. The further CPU time that is used in the coding process. CPU clock rounds are metric, sparkly power utilization of the CPU at the same time as working on the coding process.

### There are given subsequent responsibilities to be performed are shown as follows

1. The assessment be carried out between the outcomes of the preferred dissimilar coding and decoding schemes in terms of the coding time, series power and throughputs.

2. A study is performing on the effect of varying packet range on energy utilization, throughput, and CPU workload for each selected cryptography step by step process.
3. The cram is performing on the consequence of varying information form -such as document, acoustic file, capture file, and descriptions- for each cryptography selected step by step process taking place energy utilization.
4. The cram be performing taking place the effect of changing and the key size for cryptography selected algorithm on energy utilization.
5. We have used a laptop which configuration is Processor-Intel® Core™ I-3-5005U CPU@2.00 GHz, 16GB RAM. In these experiments, coding in a different file size ranges- microprocessor working on 1.35 Volt, a decoded with 30,000 round would be utilized

5.91 x 10.3 milli amperes per second or 7.9 Micro Joule. We replace total no ofclock round separated by clock frequency to be duration time for coding or decoding. Then, the amount of energy utilization by program P to achieve its goal (coding or decoding) which is given by:

$$E= V_{cc} \times I \times T \text{ joules [18].}$$

**7. SIMULATION OUTCOMES**

**7.1 Accomplish of altering packet size for cryptography algorithm on power utilization (Manuscriptfiles)**

**7.1.1 Encryption of dissimilar pack dimension**

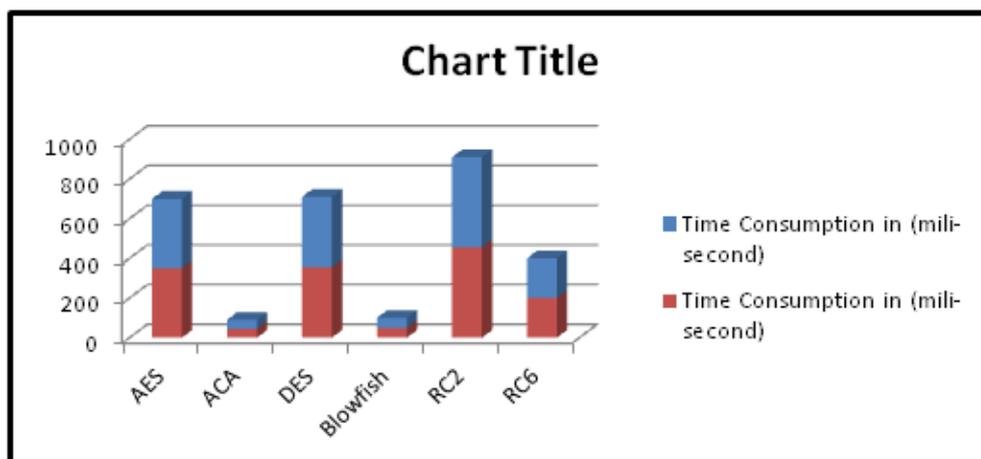
**7.1.1.1 Central Processing Unit workload**

**Table.1 Shown the CPU Workload in a different cryptographic algorithm.**

In Figure 3, we illustrate the concept of cryptography which is step by step process in terms of allocation of the CPU load for the coding process. There are given with a different data block size.

**Table. 1.** Microprocessor (CPU) Work Load in a different cryptographic algorithm

Sr. No.	Cryptographic Algorithms	Time Consumption in (milli-second)
1.	AES	350
02.	ACA	45
03.	DES	355
04.	Blowfish	50
05.	RC2	455
06.	RC6	200



**Fig.3** CPU Workload in different cryptographic algorithm

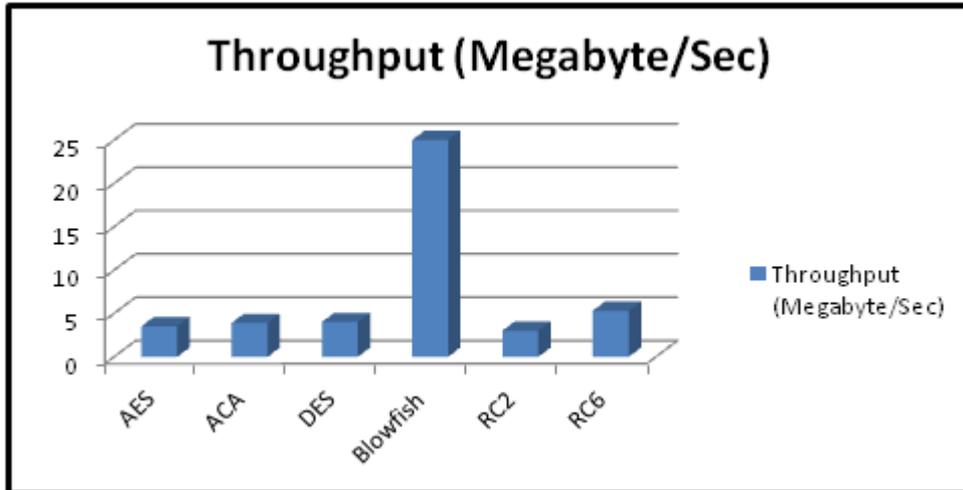
X-Axis: Cryptographic Algorithms Y-Axis: Time consumption in millisecond (0-1000)

**7.1.1.2 Encoding throughput**

The coding format which be considered by separating the plaintext in Megabytes coded taking place the total coding time for every step-by-step process. Because throughput assessment be better, the power utilization of this coding technique is decreased. Table-2 shows the Throughput of each coding step by step process (Megabyte/Sec) and Fig. 4 shows the Throughput of each coding step by step process (Megabyte/Sec)

Sr. NO.	Algorithms	Throughput (Megabyte/Sec)
01.	AES	3.5
02.	ACA	3.9
03.	DES	4
04.	Blowfish	25
05.	RC2	3
06.	RC6	5.3

**Table-2** Throughput of each encryption algorithm (Megabyte/Sec)



**Fig. 4** Throughput of each encryption algorithm (Megabyte/Sec)

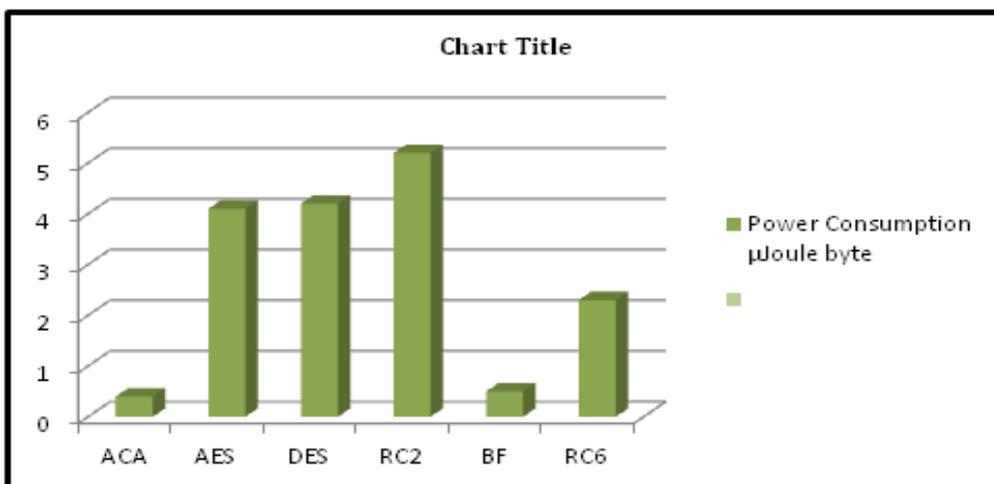
X-Axis: Cryptography encryption algorithms Y-Axis: Throughput in Megabyte/Second (0-25)

**7.1.1.3 Energy consumption**

In Figure 5, we are showing the performance of cryptography algorithms in terms of power consumption for the encryption process with a different data block size. Table. 3 shows the power utilization for encrypting in different Text document Files in  $\mu$ Joule/Byte. Fig. 5 shows the power utilization for encrypting the different Text document Files in  $\mu$ Joule/Byte.

Sr. No.	Cryptography Algorithm	Power Consumption $\mu$ Joule byte
01.	ACA	0.4
02.	AES	4.1
03.	DES	4.2
04.	RC2	5.2
05	BF	0.5
0.6	RC6	2.3

**Table.3** Energy utilization for encrypting different Text document Files in  $\mu$ Joule/Byte.



**Fig. 5** Energy utilization for encrypting different Text document Files in  $\mu$ Joule/Byte.

X-Axis: Cryptography algorithms Y-Axis: Power consumption in  $\mu$ Joule/Byte (0-6)

The outcome illustrate the energy of ACA step by step process is in excess of another step by step process in provisions of the energy utilization, dispensation moment, and throughput (when we encrypt the same data by using AES and Blowfish, we found that ACA need in the order of 16% of the energy that is consumed for AES). A new point can be perceiving that RC6 requires less energy, and less time than all algorithms except Blowfish (when we encrypt the same data by using RC6 & AES, we found that RC6 requires approximately 58% of the power which is consumed for AES). A third point can be noticed that AES has an advantage over other 3DES, DES, and RC2 in provisions of energy utilization, A fourth point can be noticed that 3DES has low performance in terms of utilization and throughput.

When compared with DES. It requires always more power time than DES because of its triple-phase encryption characteristics. Finally, it is established that RC2 has low performance and low throughput when compared with the other five step by step process despite the small key size used.

7.1.2 Decryption of different packet size

7.1.2.1 Microprocessor (CPU) workload

The simulation outcome for this concern point is shown in Fig.6 Time utilization for decoding in different Text Data which is also shown in Table.4.

Cryptographic Algorithms	Packets(in KB)									
	T1(48)	T2(50)	T3(110)	T4(252)	T5(350)	T6(624)	T7(829)	T8(975)	T9(5355)	T10(7410)
RC6	50	46	70	100	145	148	150	88	650	746
BF	47	44	66	110	143	145	150	90	150	149
RC2	52	50	80	90	200	202	204	208	900	1230
DES	46	48	50	52	102	104	110	160	800	980
AES	45	47	50	98	100	108	150	200	650	860
ACA	30	36	45	60	100	135	140	145	150	145

**Duration Time in milliseconds**

Table. 4 Time consumption for decrypting different Text Data

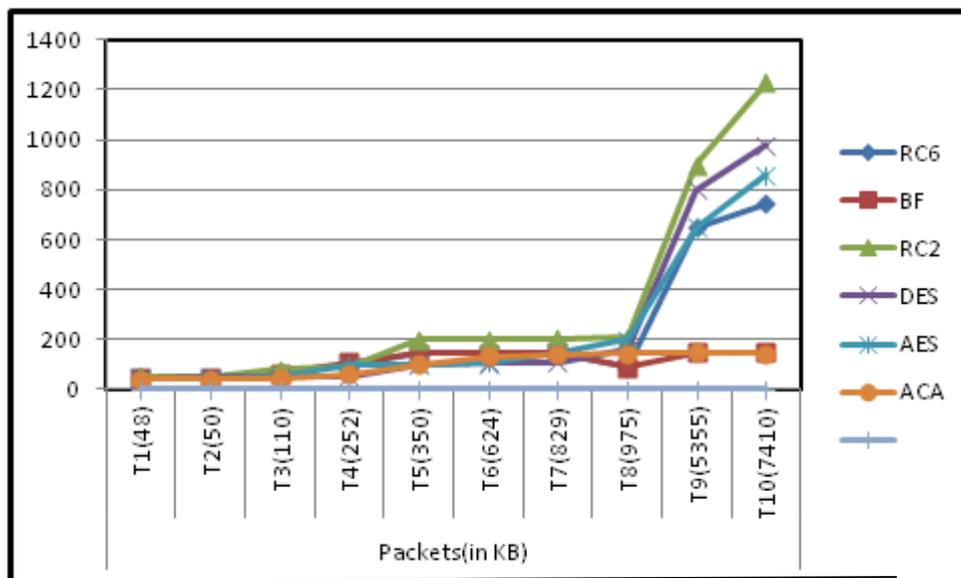


Fig. 6 Time consumption for decrypting different Text Data.

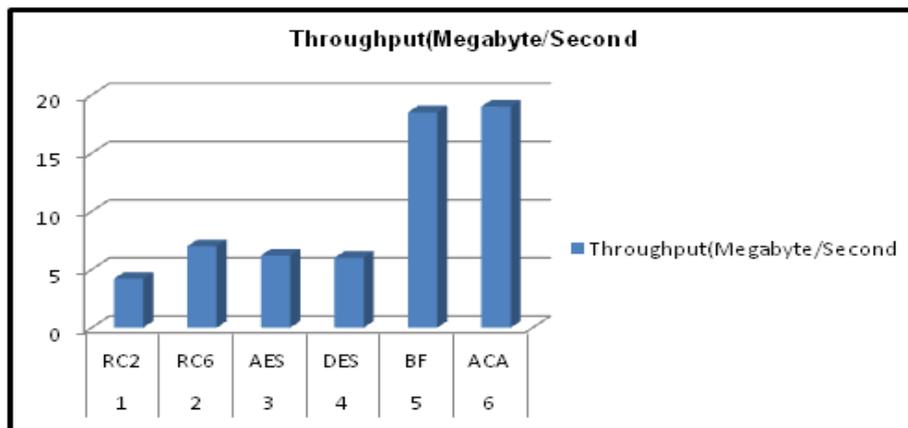
X-Axis: Cryptography algorithms with packet in KB Y-Axis Time Consumption in millisecond (0-400)

**7.1.2.2 Decryption throughput**

There are given simulation outcomes for this comparison position which are shown in Fig.7 about the throughput of each decoding step by step process (Megabyte/Sec) and it is also shown in Table.5 throughput of each decoding step by step process (Megabyte/Sec).

Sr. No.	Cryptographic Algorithms	Throughput(Megabyte/Second)
1	RC2	4.2
2.	RC6	7.0
3.	AES	6.2
4.	DES	6.0
5.	BF	18.5
6.	ACA	19.0

**Table.5** Throughput of each decryption algorithm (Megabyte/Sec).



**Fig.7** Throughput of each decryption algorithm (Megabyte/Sec)

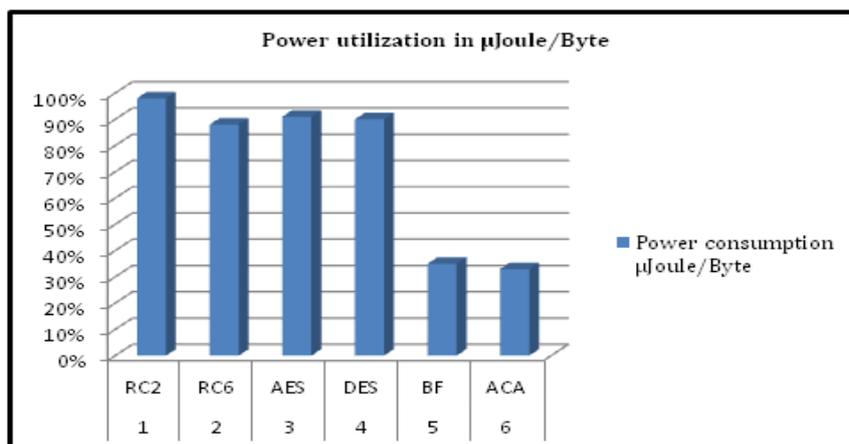
X-Axis: Cryptography decryption algorithms Y-Axis: Throughput in Megabyte/Sec(0-20)

**7.1.2.3 Power Utilization**

In Simulation outcomes for this comparison, the position is shown in Table.6 and Fig.8 about the power utilization for decrypting dissimilar transcript document Files which is represented in  $\mu$ Joule/Byte.

Sr. No.	Cryptographic Algorithms	Power consumption $\mu$ Joule/Byte
01	RC2	98%
02	RC6	88%
03	AES	91%
04	DES	90%
05	BF	35%
06	ACA	33%

**Table.6** Power consumption for Decrypt different Text document Files in  $\mu$ Joule/Byte.



**Figure.8** Power utilization for Decrypt different Text document Files in  $\mu$ Joule/Byte

X-Axis: Cryptography decryption algorithms Y-Axis: Power utilization in Joule/Byte(0-100)

In Simulation outcomes intended for this evaluation points that be given away in Fig. 6, Fig. 7, and Fig. 8 at the decoding stage. We establish a decoding process, ACA is better than the other step by step process during throughput and energy utilization (once we decrypt the same information by using ACA & AES, we found that ACA needs around 35% of the energy that is utilized in favor of AES). The second position should be noticed that RC6 requires less time than all step-by-step process, except ACA and BF (once we decode the same information by using RC6 & AES, we found that RC6 requires approximately 88% of the energy that is utilized for AES). A third position that can be taken in that AES has an advantage over other 3DES, DES RC2. The fourth position that can be measured RC2 still has the low performance of these step-by-step process.

**7.2 The outcome of varying file form (acoustic files) for cryptography step by step process on energy utilization.**

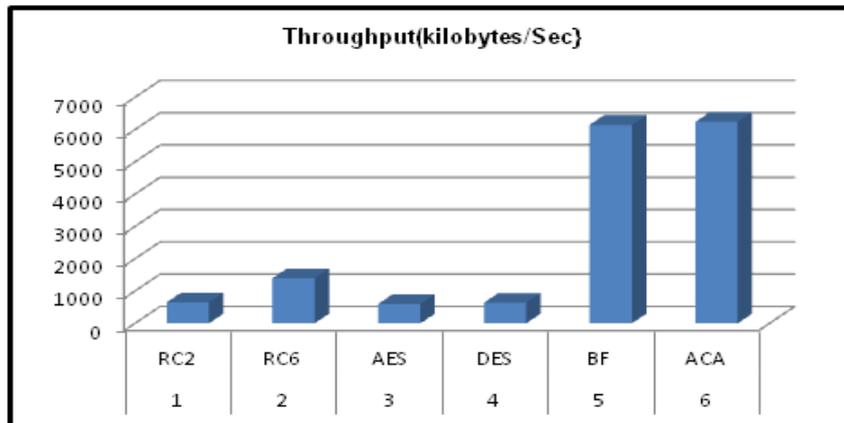
**7.2.1 Encoding of dissimilar Audio files (different range)**

**7.2.1.1 Encoding throughput**

Here the subsequent segment, assessment among coded step by step process has conducted at text and document data files. After that we have made a comparison between other types of data (Audio file) to check which one can perform better in this case. Replication results for audio data types are shown in Fig. 9.

Sr. No.	Cryptographic Algorithms	Throughput(kilobytes/Sec}
1.	RC2	650
2.	RC6	1400
3.	AES	600
4.	DES	640
5.	BF	6150
6	ACA	6240

**Table 7.** Throughput of every encryption step by step process (Kilobytes/Sec).



**Figure. 9** Throughput of every encryption step by step process (Kilobytes/Sec).

X-Axis: Cryptography encryption algorithms Y-Axis: Throughput in KB/Sec.(0-7000)

**7.2.1.2 Microprocessor (CPU) workload**

In Figure. 10 and Table.8 we show the presentation of cryptography step by step process in terms of sharing the CPU load for the encryption process. With a different audio block size shown in table 8, and also given time utilization for encrypting different audio files.

Cryptographic Algorithms	Packets (in KB)									
	T1 (33)	T2 (337)	T3 (2026)	T4 (4677)	T5 (6488)	T6 (6667)	T7 (6800)	T8 (6844)	T9 (7644)	T10 (8262)
RC6	5	20	198	280	360	375	395	40	420	430
BF	20	22	21	28	32	34	36	37	38	120
RC2	12	30	388	580	630	642	800	805	840	990
DES	21	23	370	520	640	642	830	795	985	995
AES	14	25	380	525	670	674	790	805	990	997
ACA	11	18	19	25	30	32	33	34	35	103
Duration Time in milliseconds										

**Table. 8** Instance utilization for encrypting different Audio Files

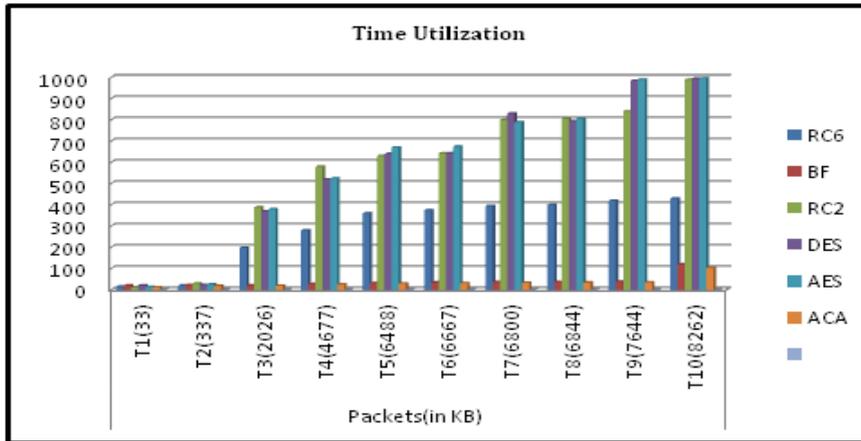


Fig. 10 Instance utilization for encrypting different Audio Files

X-Axis: Cryptography encryption algorithms with packet in KB Y-Axis Time utilization in millisecond (0-1000)

7.2.1.3 Energy Utilization

In Figure11 and Table 9, illustrate the presentation of cryptography step by step process in

Sr. No.	Cryptographic Algorithm	Power Consumption $\mu$ Joule/ byte
1.	RC2	98%
2.	RC6	48%
3.	AES	91%
4.	DES	90%
5.	BF	13%
6.	ACA	12%

Table.9 Energy utilization in favor of coding in different Audio Files as per  $\mu$ Joule/Byte.

Conditions of energy utilization for the coded process with a dissimilar audio slab size.

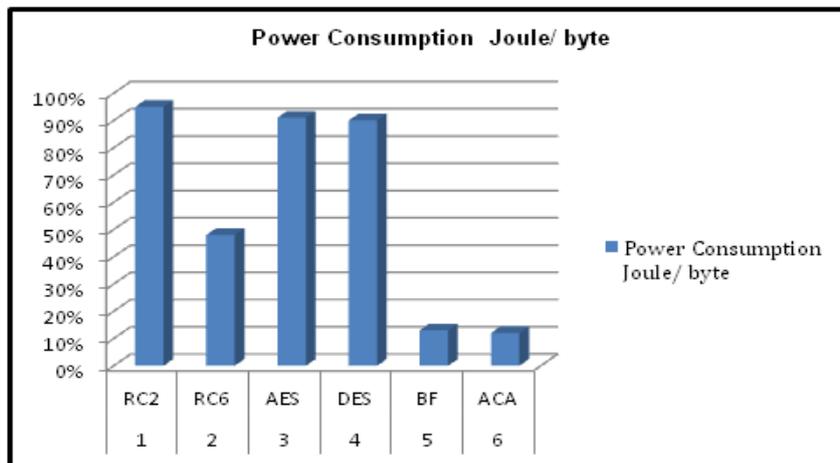


Figure. 11 Energy utilization in favor of coding in different Audio Files as per  $\mu$ Joule/Byte

Outcomes illustrate the control of ACA step by step process in excess of another step by step in conditions of the energy utilization, dispensation instance, along with throughput (when we coded the same data by using ACA & AES, we found that ACA needs around 14% of the energy that is utilized for AES). An additional position that can be taken in that RC6 needs less energy utilization and less time than all step-by-step process except ACA (we coded similar information with RC6 & AES, we found that RC6 needs around 49% of the energy which is utilized for AES). A third position be able to be noticed that AES has an advantage over other 3DES, DES and RC2 in terms of time utilization and throughput especially in small size files. Here the fourth position can be taken in that 3DES has low performance in terms of energy utilization and throughput, when compared with DES. It need continuously more time than DES. Finally, it is found that RC2 has low performance and low throughput when compared to the other five algorithms in spite of the small key range used.

7.2.1 Decoded of dissimilar Audio files (different sizes)

7.2.2.1 Decoding the throughput

Replication outcomes in favor of this comparisons positions are shown in Fig.12 and Table.10

Sr. No.	Cryptographic Algorithm	Throughput (KiloByte/Sec)
1.	RC2	1100
2.	RC6	1200
3.	AES	1145
4.	DES	1150
5.	BF	7890
6.	ACA	8100

Table.10 Throughput of each Decryption algorithm (Kilobytes/Sec)

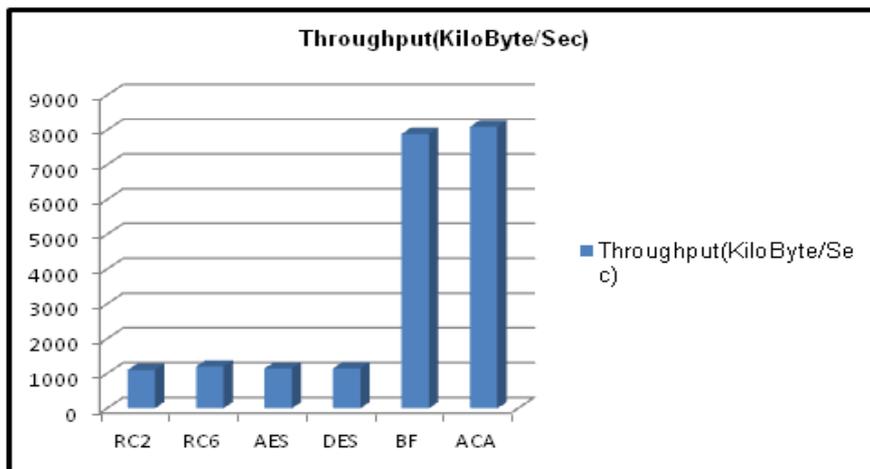


Fig. 12 Throughput of each Decryption algorithm (Kilobytes/Sec)

7.2.2.2 CPU workload

There are given simulation outcomes for these comparison points are shown in Fig. 13 and in Table 11.

Cryptographic Algorithms	Packets (in KB)									
	T1 (36)	T2 (340)	T3 (2030)	T4 (4715)	T5 (6510)	T6 (6700)	T7 (6820)	T8 (6850)	T9 (7655)	T10 (8362)
RC6	8	22	200	290	380	390	397	410	427	432
BF	22	24	26	29	33	35	37	39	40	125
RC2	15	31	389	585	638	644	810	815	835	995
DES	22	24	372	522	646	647	835	794	990	998
AES	17	26	383	527	673	676	795	810	992	995
ACA	13	17	20	26	33	35	37	39	40	103

Duration Time in milliseconds

Table.11 Time utilization for Decrypt different Audio Files

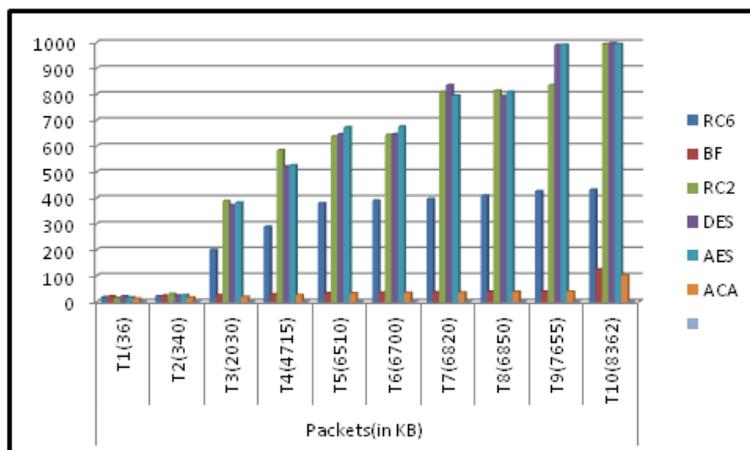


Fig. 13 Time utilization for Decrypt dissimilar Audio Files

7.2.2.2 Power utilization

The simulation outcomes for this comparison point are shown in Fig. 14 and in table 12

Sr. No.	Cryptographic Algorithms	Power consumption $\mu$ Joule/Byte
01	RC2	92%
02	RC6	88%
03	AES	90%
04	DES	91%
05	BF	19%
06	ACA	17%

Table.12 Power utilization for decrypting dissimilar Audio Files in  $\mu$ Joule/Byte.

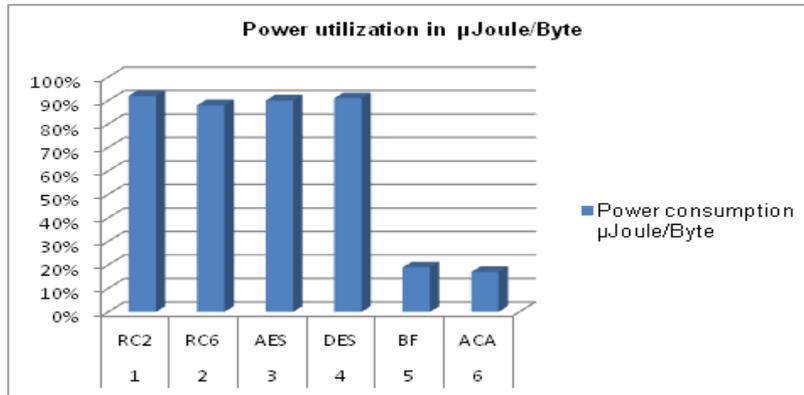


Fig. 14 Power utilization for decrypting dissimilar Audio Files in  $\mu$ Joule/Byte.

Since the outcomes is the same as in the coding process for audio files. Once we decode the similar information by using ACA & AES, we found that ACA requires around 18% of the power which is utilized for AES. Once we decrypt the similar information by using RC6 & AES, we found that RC6 need around 84% of the power that is utilized for AES.

7.3 The effect of changing file type (Video files) for cryptography algorithm on power utilization.

7.3.1 Encryption of dissimilar Video files (dissimilar ranges)

7.3.1.1 Encryption throughput

We will make an assessment between other types of information (Video files) to check which can carry away glowing for a second time within case. Replication outcomes in favor of a video information type which be given away inside of the Fig. 15 and Table. 13 at encryption.

Sr. No.	Cryptographic Algorithm	Throughput (KiloByte/Sec)
1.	RC2	820
2.	RC6	1410
3.	AES	880
4.	DES	890
5.	BF	5300
6.	ACA	5700

Table .13 Throughput of each encryption algorithm (Kilobytes/Sec).

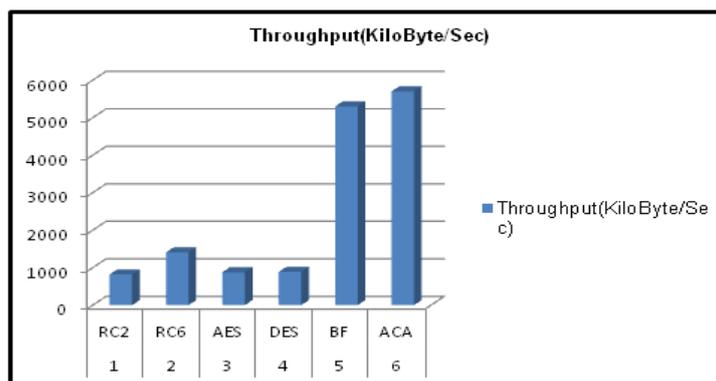


Fig. 15 Throughput of each coding step by step process (Kilobytes/Sec)

7.3.1.1 CPU workload

Figure 18 and Table 16 shows the performance of secret step by step process in terms of sharing the CPU load. With a different video block size.

Cryptographic Algorithms	Packets (in KB)		
	T1(4008)	T2(4415)	T3(5073)
RC6	210	280	284
BF	50	80	95
RC2	415	580	515
DES	416	506	510
AES	460	480	518
ACA	45	76	90
<b>Duration Time in milliseconds</b>			

Table. 16 Time utilization for encryption of different video Files

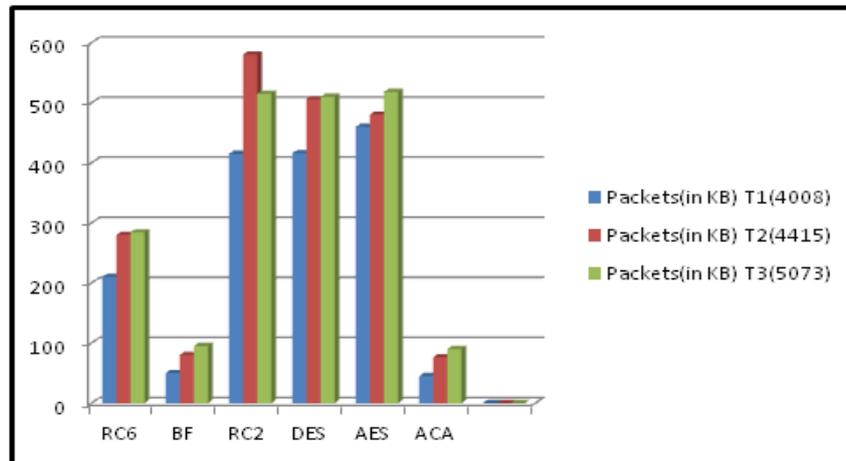


Figure. 18 Time utilization for encryption of different video Files

7.3.1.2 Power utilization

In Figure 17 and Table.15, show the presentation of secret step by step process in conditions of power utilization for encoding process with a different video block range.

Sr. No.	Cryptographic Algorithms	Power consumption $\mu$ Joule/Byte
01	RC2	93%
02	RC6	51%
03	AES	94%
04	DES	90%
05	BF	15%
06	ACA	13%

Table.15 Power utilization for encrypting different Video Files in  $\mu$ Joule/Byte

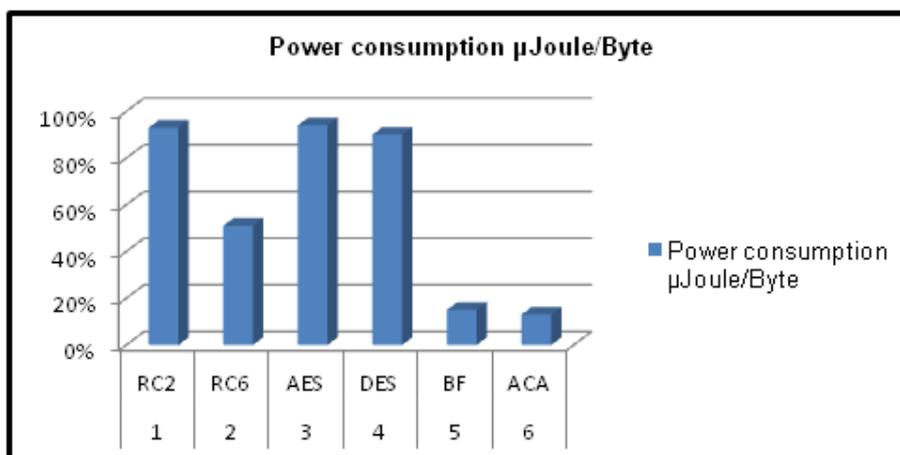


Fig. 17 Power utilization for encrypting different Video Files in  $\mu$ Joule/Byte

There are given outcome be the same as in manuscript and acoustic data. The outcome illustrates and the advantage of ACA step by step process in excess of another step-by-step process conditions are given; processing instance, energy utilization, as well as throughput (we encrypt the similar information by using ACA & AES, we found that Blowfish have need of something like 16% of energy that is utilized in favor of AES). Another position can be noticed that RC6 requires less energy utilization and less time than all step-by-step process except ACA (Encrypt the similar information with RC6 & AES, we found that RC6 has need of approximately 51% of the energy that is utilized for AES). In the third position can be taken in that, 3DES has low performance in terms of energy utilization and throughput when compared with DES. It needs always more time than DES. Finally, it is found that RC2 has the low presentation and low throughput when compared to the other five step by step processes.

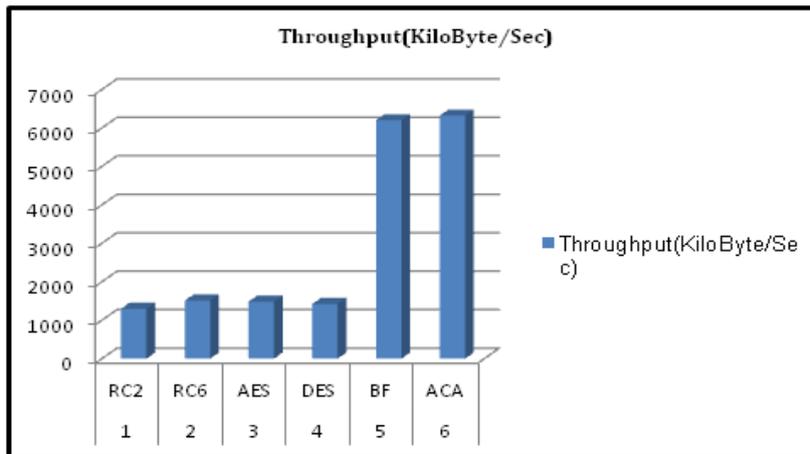
**7.3.2 The decryption of dissimilar video files (dissimilar sizes)**

**7.3.2.1 Decryption throughput**

There are given replication outcomes for this comparison position are shown in Fig. 18 and Table.16

Sr. No.	Cryptographic Algorithm	Throughput (KiloByte/Sec)
.	RC2	1300
	RC6	1510
3	AES	1480
4	DES	1420
5	BF	6200
6	ACA	6320

**Table.16** Throughput of each Decoding algorithm (Kilobytes/Sec)



**Fig. 18** Throughput of each Decoding algorithm (Kilobytes/Sec)

**7.3.2.2 Microprocessor (CPU) workload**

There are given replication outcomes for comparison positions are shown in Fig. 19 and Table.17

Cryptographic Algorithms	Packets (in KB)		
	T1(4010)	T2(4420)	T3(5075)
<b>RC6</b>	245	250	285
<b>BF</b>	53	60	63
<b>RC2</b>	251	280	320
<b>DES</b>	250	252	290
<b>AES</b>	240	246	270
<b>ACA</b>	51	57	64
<b>Duration Time in milliseconds</b>			

**Table.17** Time utilization for Decrypt dissimilar video Files

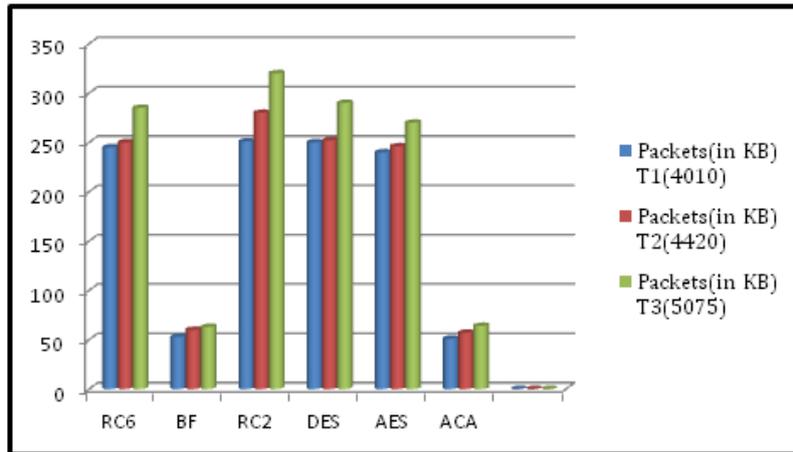


Fig. 19 Time utilization for Decrypt dissimilar video Files

7.3.2.3 Power utilization

There are given replication outcomes for comparison point which are shown in Fig. 20 and Table.18

Sr. No.	Cryptographic Algorithms	Power consumption $\mu$ Joule/Byte
01	RC2	97%
02	RC6	94%
03	AES	96%
04	DES	90%
05	BF	24%
06	ACA	21%

Table.18 Power utilization for Decrypt dissimilar Video Files in  $\mu$ Joule/Byte.

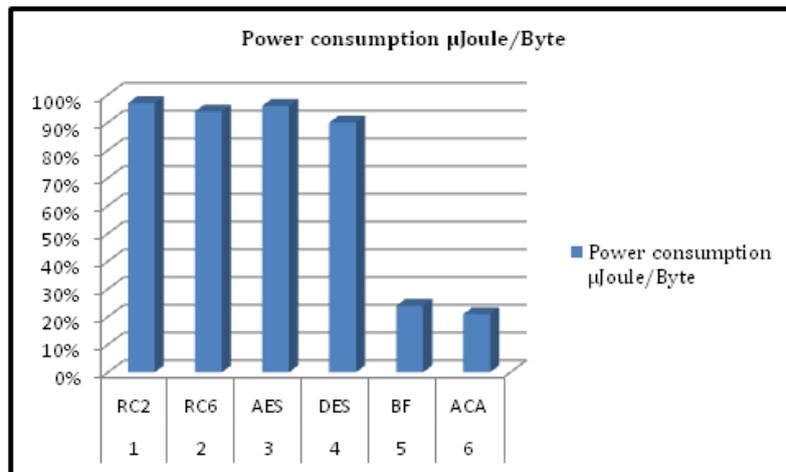


Fig. 20 Power utilization for Decrypt dissimilar Video Files in  $\mu$ Joule/Byte

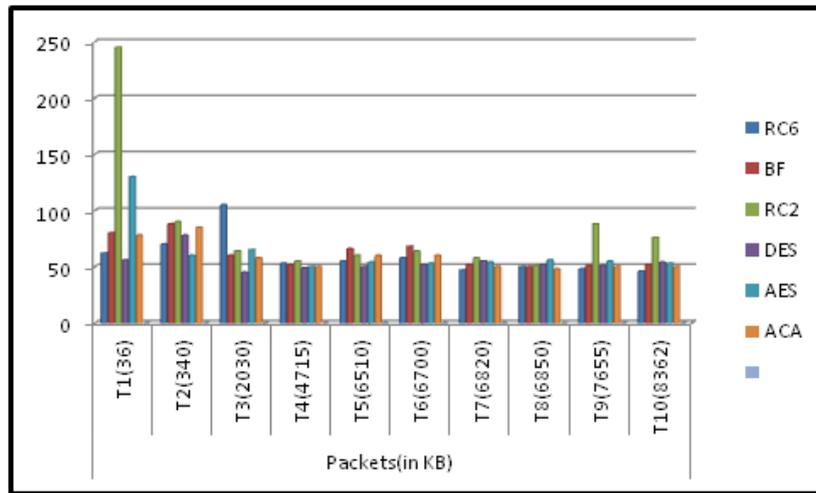
We found the outcomes are the similar while the encoding method for video, audio files, and manuscript information. Once we have decoded the similar information with Blowfish & AES, we found that Blowfish requires around 24% of the influence that is consumed for AES. When we decrypt the similar information by using RC6 & AES, here we also found that RC6 requires around 93% of the energy that is consumed for AES.

The outcome of varying file type (Images) for the secret algorithm taking place of energy utilization. We carry out the similar process that was conducted on manuscript files, acoustic, and video files, images files encoding and decoding. Replication outcomes in favor of picture data (JPEG images) it is shown in Fig. 20 and Fig 21 at encryption and decryption correspondingly.

Cryptographic Algorithms	Packets(in KB)									
	T1 (36)	T2 (340)	T3 (2030)	T4 (4715)	T5 (6510)	T6 (6700)	T7 (6820)	T8 (6850)	T9 (7655)	T10 (8362)
RC6	62	70	105	53	55	58	47	50	48	46
BF	80	88	60	52	66	68	52	50	51	52
RC2	245	90	64	55	60	64	58	51	88	76

<b>DES</b>	56	78	45	49	50	52	55	52	51	54
<b>AES</b>	130	60	65	50	54	53	54	56	55	53
<b>ACA</b>	78	85	58	50	60	60	50	48	50	50
<b>Duration Time in milliseconds</b>										

**Table.19** Time consumption for encrypting different images

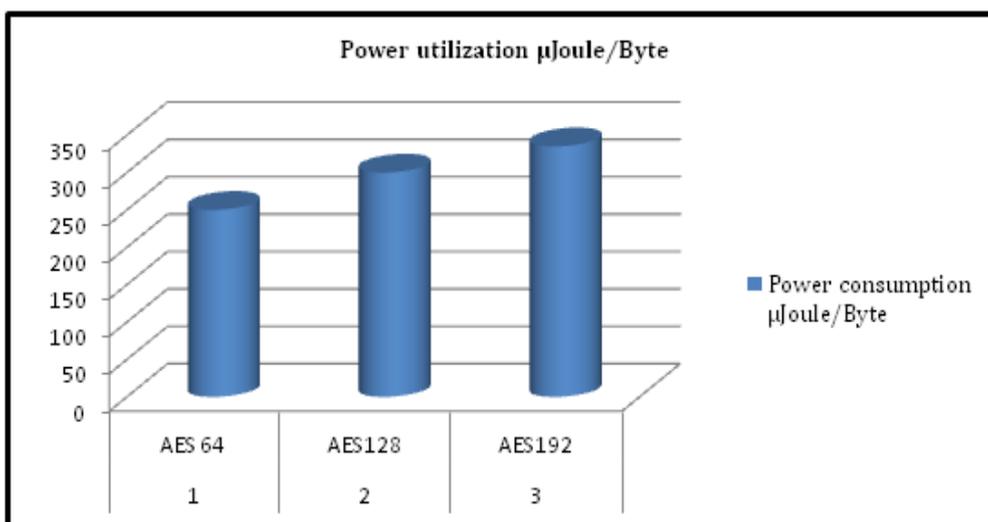


**Fig. 21** Time utilization for encrypting dissimilar images

Those outcomes, that are trouble-free to examine that RC2 at rest has a drawback in the encoding process over another step-by-step process in conditions of time utilization in sequence in throughput. Taking place, the further grant, that is simple to examine that RC6 and ACA include drawback in the decoding process over another step by step process for the duration of conditions of time utilization and in sequence in throughput. We locate that 3DES still has low presentation when compared to DES. The assessment position is varying with dissimilar input sizes for AES and RC6 algorithms. In the case of the AES algorithm where reflect on three dissimilar input sizes likely i.e., 8 bytes, 16 bytes and 32 bytes keys. The replication outcomes are shown in Fig. 21 and Fig.22.

Sr. No.	Cryptographic Algorithms	Power consumption $\mu$ Joule/Byte
01	AES 64	250
02	AES128	300
03	AES192	335

**Table. 20** Time utilization for dissimilar key size for AES .



**Fig. 22** instance utilization for dissimilar key size in favor of AES

The Advanced encryption standard encoding step by step process that can be observed input range directly on the way in the direction of understandable change in the series and instance utilization. Departure from 16 bytes key to 24 bytes reason to add energy as well as instance utilization on 8% and 32bytes key, causes an increase

of 16% [9]. The case of RC6, we are considering three different key sizes i.e., 128 bit, 192 bits and 256-bit keys. The result is shown in the following figure.23 and table .21.

Sr.No.	Cryptographic Algorithms	Key Size	Duration in the Mili second
01.	RC6	128	444-447
02.	RC6	192	444-449
03.	RC6	256	444-452.5

Table 21: Time utilization for different key size for RC6

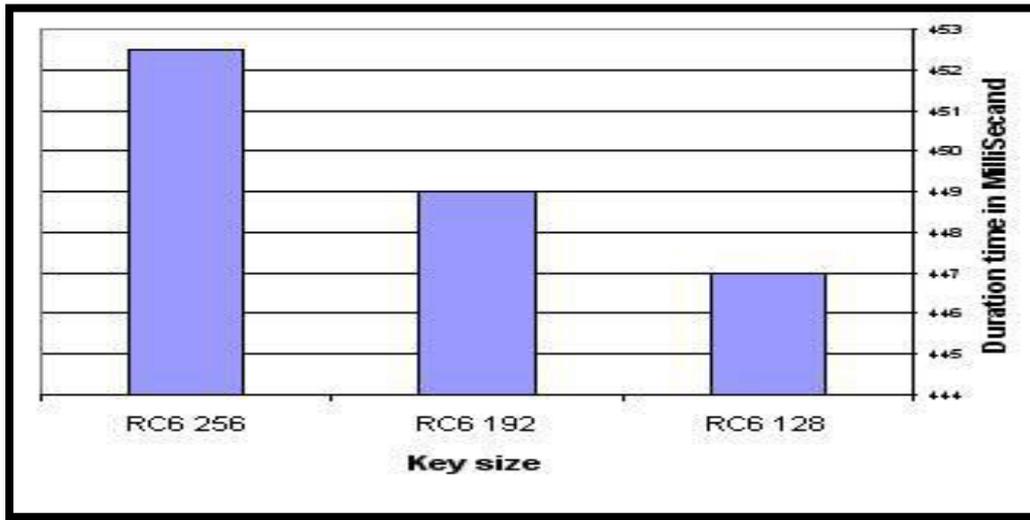


Figure 23 Time utilization for dissimilar key size for RC6

.RC6 encryption algorithm which can be seen that superior input rang that shows the way to clear change in the series and time utilization. The mainly frequent encoding methods be recognized the follows: DES: (Data Encryption Standard) was the first encoding standard to be suggested by the National Institute of Standards and Technology. DES is (64 bits key size with 64 bits slab size). Since that time, many attacks and methods have recorded the weaknesses of DES, which made it an insecure slab secure message [3], 3DES is an enhancement of DES; it is 64-bit block size with 192 bits input range [4]. In this standard, the encryption process be alike to the one in the unique DES but applied three times to increase the encryption level and the average safe time.

8. CONCLUSION

This paper presents an illustrated assessment of chosen symmetric encryption step by step process. The chosen algorithms are AES, DES, ACA, RC2, Blowfish, and RC6. A number of positions that can be finished from the leisure outcomes. Mainly the holder of varying container size, that was completed that ACA has enhanced the presentation than another common coding step by step process, that is used by blowfish. Secondly, we originate that 3DES has low presentation and evaluate to another step-by-step process of decryption encryption standard. Thirdly, we found the RC2 has a drawback in excess of every part of other step by step process within conditions of instance utilization. Fourthly, we found AES has enhanced presentation than RC2, DES, and 3DES. Within case of acoustic and video files, we establish the outcomes are the same as in manuscript data. To conclude the varying input range can be distinguished that superior key range shows the way in the direction of clear transform in the series and time utilization. In the upcoming effort, we will learn about the delivery of various packets ranges that are naturally broadcast, furthermore established by Wi-Fi plans, more than a wireless set of connections. Here our future examines, we have proposed three methods to decrease the power utilization of protection protocols (PP) and apply them to wireless local area networks (W-LANs) to make available a power-efficient protection representation on behalf of 802.11 WLANs by replacement of standard protection protocol primitives (SPPP) utilize high power, while maintaining the same protection intensity. Secondly, the variation of the typical protection set of rules correctly. Finally, a completely new intend of protection protocol (pp).

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**A STUDY ON PERCEPTION AND AWARENESS TOWARDS CRYPTO CURRENCY IN DELHI  
NCR****<sup>1</sup>Dr. Satish Kumar and <sup>2</sup>Dr. Ashish Kumar Jha**<sup>1</sup>Professor, I.T.S Ghaziabad<sup>2</sup>Assistant Professor, I.T.S Ghaziabad**ABSTRACT**

*This chapter analyses the perception of customer towards crypto-currency in India. The emphasis has been laid on the adoption, usage, value attributes, bottlenecks and factors influencing Crypto-currency adoption. The current system is able to support the Smooth adoption and monitoring payments through Crypto-currency. Also, it has been indicated by the recent research that Crypto-currency adoption is on the rise as it gives high rate of return. The current analysis has been divided into seven sections, which include perceptual analysis age-wise, occupation-wise, gender-wise, education wise, income-wise and analysis of antecedents, and lastly analysis of perceived risk and utility. The questionnaire asks questions about the benefits people avail while using virtual currency and what are the various factors which influence the people to use virtual currency and what are the risks they face associated with virtual currency.*

*To build up a parallel banking environment, technological implementation is crucial. As a part of this, virtual payment system propelled Crypto-currency. In, Ghaziabad customers' perceptions about the Crypto-currency are impressive. To examine the customers' perceptions towards Crypto-currency is one of the main focuses of this research. About 95 responses were collected to conduct the study. A quantitative research design was adopted to perform the test of hypotheses. The survey results revealed that usage and financial benefits, convenience factors, and psychological factors positively influence customers' attitude towards Crypto-currency. Also, there are some problems identified by the respondents as customers.*

**INFORMATION**

One of the key pillars of the modern society has been the civilized and organized exchange of goods and services. In India, as in other countries around the world, an organized method of payment has evolved over time from a barter system to the more complex forms of monetary transactions. More regularly, we are progressively reliant on new innovations to make our transactions quick and productive. The proceeded and fast development of innovation has achieved noteworthy changes in our regular day-to-day existences (**Panagiotis et al., 2018**).

The predominant form of payment across India in the 20th century has been coins, cash and cheque. As we move into the 21st century, payment through cash and cheque itself has undergone a transformation. It has moved from being a physical paper-based exchange of value to a virtual electronic one. This is in line with the development of electronic payments world over. The development of Crypto-currency industry was very evident as an individual is getting more reliant on technology and Crypto-currency business is the best result of technological innovation. (**Sumi & Safiullah, 2019**).

In the Indian market, the development of Crypto-currency is probably the most significant phenomenon of the modern era.

This study is an attempt to unveil the perception held by Crypto users towards Crypto-currency in India. The review of literature indicated that most of research work in the field undertaken till now has been done in developed countries like United States and other fast developing countries. But research is still lacking in case of developing countries like India. It was also revealed that, hardly any comprehensive study has been conducted in India to examine the perception of crypto users.

The present study focuses on factor like age, occupation, gender, educational qualification, monthly income, and occupation. It also analyzed the current status and trends of Crypto-currency in India.

**CRYPTO-CURRENCY**

Cryptocurrency is a digital payment system that doesn't rely on banks to verify transactions. It's a peer-to-peer system that can enable anyone anywhere to send and receive payments. Instead of being physical money carried around and exchanged in the real world, cryptocurrency payments exist purely as digital entries to an online database describing specific transactions. When you transfer cryptocurrency funds, the transactions are recorded in a public ledger. Cryptocurrency is stored in digital wallets.

Cryptocurrency received its name because it uses encryption to verify transactions. This means advanced coding is involved in storing and transmitting cryptocurrency data between wallets and to public ledgers. The aim of encryption is to provide security and safety.

The first cryptocurrency was Bitcoin, which was founded in 2009 and remains the best known today. Much of the interest in cryptocurrencies is to trade for profit, with speculators at times driving prices skyward

### **How does cryptocurrency work**

Cryptocurrencies run on a distributed public ledger called blockchain, a record of all transactions updated and held by currency holders.

Units of cryptocurrency are created through a process called mining, which involves using computer power to solve complicated mathematical problems that generate coins. Users can also buy the currencies from brokers, then store and spend them using cryptographic wallets.

If you own cryptocurrency, you don't own anything tangible. What you own is a key that allows you to move a record or a unit of measure from one person to another without a trusted third party.

Although Bitcoin has been around since 2009, cryptocurrencies and applications of blockchain technology are still emerging in financial terms, and more uses are expected in the future. Transactions including bonds, stocks, and other financial assets could eventually be traded using the technology.

### **Cryptocurrency examples**

There are thousands of cryptocurrencies. Some of the best known include:

#### **Bitcoin**

Founded in 2009, Bitcoin was the first cryptocurrency and is still the most commonly traded. The currency was developed by Satoshi Nakamoto – widely believed to be a pseudonym for an individual or group of people whose precise identity remains unknown.

#### **Ethereum**

Developed in 2015, Ethereum is a blockchain platform with its own cryptocurrency, called Ether (ETH) or Ethereum. It is the most popular cryptocurrency after Bitcoin.

#### **Litecoin**

This currency is most similar to bitcoin but has moved more quickly to develop new innovations, including faster payments and processes to allow more transactions.

#### **Ripple**

Ripple is a distributed ledger system that was founded in 2012. Ripple can be used to track different kinds of transactions, not just cryptocurrency. The company behind it has worked with various banks and financial institutions.

Non-Bitcoin cryptocurrencies are collectively known as “altcoins” to distinguish them from the original.

### **How to buy cryptocurrency**

You may be wondering how to buy cryptocurrency safely. There are typically three steps involved. These are:

#### **Step 1: Choosing a platform**

The first step is deciding which platform to use. Generally, you can choose between a traditional broker or dedicated cryptocurrency exchange:

- **Traditional brokers.** These are online brokers who offer ways to buy and sell cryptocurrency, as well as other financial assets like stocks, bonds, and ETFs. These platforms tend to offer lower trading costs but fewer crypto features.
- **Cryptocurrency exchanges.** There are many cryptocurrency exchanges to choose from, each offering different cryptocurrencies, wallet storage, interest-bearing account options, and more. Many exchanges charge asset-based fees.

When comparing different platforms, consider which cryptocurrencies are on offer, what fees they charge, their security features, storage and withdrawal options, and any educational resources.

**Step 2: Funding your account**

Once you have chosen your platform, the next step is to fund your account so you can begin trading. Most crypto exchanges allow users to purchase crypto using fiat (i.e., government-issued) currencies such as the US Dollar, the British Pound, or the Euro using their debit or credit cards – although this varies by platform.

Crypto purchases with credit cards are considered risky, and some exchanges don't support them. Some credit card companies don't allow crypto transactions either. This is because cryptocurrencies are highly volatile, and it is not advisable to risk going into debt — or potentially paying high credit card transaction fees — for certain assets.

Some platforms will also accept ACH transfers and wire transfers. The accepted payment methods and time taken for deposits or withdrawals differ per platform. Equally, the time taken for deposits to clear varies by payment method.

An important factor to consider is fees. These include potential deposit and withdrawal transaction fees plus trading fees. Fees will vary by payment method and platform, which is something to research at the outset.

**Step 3: Placing an order**

You can place an order via your broker's or exchange's web or mobile platform. If you are planning to buy cryptocurrencies, you can do so by selecting "buy," choosing the order type, entering the amount of cryptocurrencies you want to purchase, and confirming the order. The same process applies to "sell" orders.

**There are also other ways to invest in crypto.** These include payment services like PayPal, Cash App, and Venmo, which allow users to buy, sell, or hold cryptocurrencies. In addition, there are the following investment vehicles:

- **Bitcoin trusts:** You can buy shares of Bitcoin trusts with a regular brokerage account. These vehicles give retail investors exposure to crypto through the stock market.
- **Bitcoin mutual funds:** There are Bitcoin ETFs and Bitcoin mutual funds to choose from.
- **Blockchain stocks or ETFs:** You can also indirectly invest in crypto through blockchain companies that specialize in the technology behind crypto and crypto transactions. Alternatively, you can buy stocks or ETFs of companies that use blockchain technology.

**The best option for you will depend on your investment goals and risk appetite.**

**How to store cryptocurrency**

Once you have purchased cryptocurrency, you need to store it safely to protect it from hacks or theft. Usually, cryptocurrency is stored in crypto wallets, which are physical devices or online software used to store the private keys to your cryptocurrencies securely. Some exchanges provide wallet services, making it easy for you to store directly through the platform. However, not all exchanges or brokers automatically provide wallet services for you.

**There are different wallet providers to choose from. The terms “hot wallet” and “cold wallet” are used:**

- **Hot wallet storage:** "hot wallets" refer to crypto storage that uses online software to protect the private keys to your assets.
- **Cold wallet storage:** Unlike hot wallets, cold wallets (also known as hardware wallets) rely on offline electronic devices to securely store your private keys.

**Typically, cold wallets tend to charge fees, while hot wallets don't.**

**What can you buy with cryptocurrency?**

When it was first launched, Bitcoin was intended to be a medium for daily transactions, making it possible to buy everything from a cup of coffee to a computer or even big-ticket items like real estate. That hasn't quite materialized and, while the number of institutions accepting cryptocurrencies is growing, large transactions involving it are rare. Even so, it is possible to buy a wide variety of products from e-commerce websites using crypto. Here are some examples:

**Technology and e-commerce sites**

Several companies that sell tech products accept crypto on their websites, such as newegg.com, AT&T, and Microsoft. Overstock, an e-commerce platform, was among the first sites to accept Bitcoin. Shopify, Rakuten, and Home Depot also accept it.

**Luxury goods**

Some luxury retailers accept crypto as a form of payment. For example, online luxury retailer Bit dials offers Rolex, Patek Philippe, and other high-end watches in return for Bitcoin.

**CARS**

Some car dealers – from mass-market brands to high-end luxury dealers – already accept cryptocurrency as payment.

**Insurance**

In April 2021, Swiss insurer AXA announced that it had begun accepting Bitcoin as a mode of payment for all its lines of insurance except life insurance (due to regulatory issues). Premier Shield Insurance, which sells home and auto insurance policies in the US, also accepts Bitcoin for premium payments.

If you want to spend cryptocurrency at a retailer that doesn't accept it directly, you can use a cryptocurrency debit card, such as BitPay in the US.

**Cryptocurrency fraud and cryptocurrency scams**

Unfortunately, cryptocurrency crime is on the rise. Cryptocurrency scams include:

**Fake websites:** Bogus sites which feature fake testimonials and crypto jargon promising massive, guaranteed returns, provided you keep investing.

**Virtual Ponzi schemes:** Cryptocurrency criminals promote non-existent opportunities to invest in digital currencies and create the illusion of huge returns by paying off old investors with new investors' money. One scam operation, BitClub Network, raised more than \$700 million before its perpetrators were indicted in December 2019.

**"Celebrity" endorsements:** Scammers pose online as billionaires or well-known names who promise to multiply your investment in a virtual currency but instead steal what you send. They may also use messaging apps or chat rooms to start rumours that a famous businessperson is backing a specific cryptocurrency. Once they have encouraged investors to buy and driven up the price, the scammers sell their stake, and the currency reduces in value.

**Romance scams:** The FBI warns of a trend in online dating scams, where tricksters persuade people they meet on dating apps or social media to invest or trade in virtual currencies. The FBI's Internet Crime Complaint Centre fielded more than 1,800 reports of crypto-focused romance scams in the first seven months of 2021, with losses reaching \$133 million.

Otherwise, fraudsters may pose as legitimate virtual currency traders or set up bogus exchanges to trick people into giving them money. Another crypto scam involves fraudulent sales pitches for individual retirement accounts in cryptocurrencies. Then there is straightforward cryptocurrency hacking, where criminals break into the digital wallets where people store their virtual currency to steal it.

**Is cryptocurrency safe?**

Cryptocurrencies are usually built using blockchain technology. Blockchain describes the way transactions are recorded into "blocks" and time stamped. It's a fairly complex, technical process, but the result is a digital ledger of cryptocurrency transactions that's hard for hackers to tamper with.

In addition, transactions require a two-factor authentication process. For instance, you might be asked to enter a username and password to start a transaction. Then, you might have to enter an authentication code sent via text to your personal cell phone.

While securities are in place, that does not mean cryptocurrencies are un-hackable. Several high-dollar hacks have cost cryptocurrency start-ups heavily. Hackers hit Coincheck to the tune of \$534 million and BitGrail for \$195 million, making them two of the biggest cryptocurrency hacks of 2018.

Unlike government-backed money, the value of virtual currencies is driven entirely by supply and demand. This can create wild swings that produce significant gains for investors or big losses. And cryptocurrency investments are subject to far less regulatory protection than traditional financial products like stocks, bonds, and mutual funds.

**Four tips to invest in cryptocurrency safely**

According to Consumer Reports, all investments carry risk, but some experts consider cryptocurrency to be one of the riskier investment choices out there. If you are planning to invest in cryptocurrencies, these tips can help you make educated choices.

**Research exchanges:**

Before you invest, learn about cryptocurrency exchanges. It's estimated that there are over 500 exchanges to choose from. Do your research, read reviews, and talk with more experienced investors before moving forward.

**Know how to store your digital currency**

If you buy cryptocurrency, you have to store it. You can keep it on an exchange or in a digital wallet. While there are different kinds of wallets, each has its benefits, technical requirements, and security. As with exchanges, you should investigate your storage choices before investing.

**Diversify your investments:**

Diversification is key to any good investment strategy, and this holds true when you are investing in cryptocurrency. Don't put all your money in Bitcoin, for example, just because that's the name you know. There are thousands of options, and it's better to spread your investment across several currencies.

**Prepare for volatility:**

The cryptocurrency market is highly volatile, so be prepared for ups and downs. You will see dramatic swings in prices. If your investment portfolio or mental wellbeing can't handle that, cryptocurrency might not be a wise choice for you.

Cryptocurrency is all the rage right now, but remember, it is still in its relative infancy and is considered highly speculative. Investing in something new comes with challenges, so be prepared. If you plan to participate, do your research, and invest conservatively to start.

One of the best ways you can stay safe online is by using a comprehensive antivirus. Kaspersky Internet Security defends you from malware infections, spyware, data theft and protects your online payments using bank-grade encryption.

**RESEARCH OBJECTIVES**

**The broad objective of this study is to analyze the consumer attitude towards Crypto-currency. The specific objective is to:**

- Discover perceived advantages of Crypto-currency to the customers
- Identify perceived disadvantages of Crypto-currency to the customers.
- To know the satisfaction level of customers in the usage of Crypto-currency.
- To study consumer awareness on cashless transactions.

**HYPOTHESIS****LITERATURE REVIEW**

Customer satisfaction is one of the major concerns for all kind of activities of a business organization. Almost every business organization tries to make a loyal customer base in the market to get a competitive advantage over other organization. Basically, customer satisfaction is the vital issue for the service industries like banking, health, restaurant, education etc. for their success. **Bennet (1992)** found that customer driven strategy is the major factor to gain competitive advantage in the banking sector. According to **Coldwell (2011)**, a customer who is fully satisfied may support a firm to produce 2.6 times much revenue as the one who is somehow satisfied. Moreover, a completely disappointed customer may cause a 1.8 times reduce in revenue as compared to a fully satisfied customer. However, commercial banks have performed various functions for the customers and Crypto-currency is the most vital and modern function (**Deviranjitham & Thamilarasan, 2014**). Crypto-currency is a contemporary context-taking place of conventional system of paying through paper money cash. The customer's buying behavior and lifestyle is now dominated by the crypto.. **Panagiotis et al. (2018)** had thrown light on the use of new technology by elderly people contributing significantly on their better quality life. The usage of innovative electronic trading devices defend the elderly population from theft and fake cases since such cards in his/her wallet can be used immediately and easily in each transaction. The most of the customers use and prefer to have Crypto-currency above cash money. These Crypto-currency or electronic payments was and used only by higher income group people (**Manivannan, 2013**). Most of the customers like to use debit card rather than credit card for their transactions. Moreover, majority of Crypto-currency users use

it for online transaction as they feel secure transaction in online but they completely avoid it when they use it for others financial activities (Bishty et. al., 2015).

**RESEARCH METHODOLOGY**

This study reviews literature chosen with the primary as well as secondary data. Research methods or technique refers to the methods the researcher uses in performing research operations. In other words, all those methods, which are used by the researcher others during the course studying his research problem, are termed as research methods. Since the objective of research, particularly the applied research is to arrive at a solution for a given problem; the available data and the unknown aspects of the problem have to be related to each other to make a solution possible. Research methodology is away to systematically solve the research problem, it may be understood as a science of studying how research is done specifically. The questionnaire, like the schedule, is designed to collect data from large, drivers and widely scattered groups of people. The researcher can interpret the question when necessary. Webster defines the schedule as “a formal list”, a catalogue or inventory”, and it may be added that it is counting device, used in formal and standardized inquiries, the sole purpose of which is aiding in the collection of quantitative cross-sectional area.

**A. RESEARCH DESIGN**

The research is analytical and descriptive in nature. The researcher for the purpose here had made use of primary data and secondary data. The researcher has made use of close ended questionnaire where sample of 95 was used. The data was collected and was analyzed by using SPSS Software. Secondary sources were also used with respect to Review of Literature, Journals and articles. Using Mean, Standard Deviation, Frequency did descriptive Statistics and inferential statistics was used like correlation, regression and chi-square test.

**B. Sources of Data:** The data required for doing the research has been collected mainly by using primary and secondary sources. The primary sources include the questionnaire. The secondary source includes the various journals, research paper and Internet websites.

**C. Size of Sample** The study has been conducted by using the sample of 95 from the city Ghaziabad.

**DEMOGRAPHIC PROFILE OF RESPONDENTS**

Particulars	Classification	Frequency	Percentage
<b>Gender</b>	Male	61	64.21%
	Female	34	34.78%
<b>Age group</b>	Below 25	12	12.63%
	26-36	24	25.26%
	37-45	31	32.63%
	46&above	28	29.47%
<b>Profession</b>	Students	15	15.78%
	Salaried	32	33.38%
	Entrepreneurs	38	40%
	Senior-citizen	10	10.52%
<b>Monthly income</b>	Below-5000	4	4.21%
	6000-20000	12	12.63%
	21000-35000	35	36.84%
	36000-50000	21	22.10%
	50000&above	23	24.21%

As revealed from the table 1. It has been observed that 64.21 % respondents are male and rest is female. In the parameter of age group 32.63% of the respondents have 37-45 years, 29.47% are ranking from 46& above, 25.26% are ranking from 26-36.

40% respondents are entrepreneurs, 33.38% are salaried, 15.78% are students and 10.52% are senior citizens. Also it has been found that 36.84% have their monthly income as rs. 21000-35000, 24.21% respondents have their monthly income above 50000, 22.21% respondents have their monthly income as rs. 36000-45000.

**DO THE CUSTOMER CARRY CRYPTO-CURRENCY**

Response	NO. Of Respondents	Percentage
YES	72	75.78%
NO	23	24.21%

As observed from the table 2, 75.78% of the respondents carries Crypto-currency and remaining 24.21% do not carry Crypto-currency.

**Table 3 Types of Crypto-currency**

Types of Crypto-currency	NO. Of Respondents	Percentage
Bitcoin	38	40%
Etherium	45	47.36%
Both	12	12.63%

As observed from the table 3, 47.36% use debit card, 40% of the respondents use credit card and 12.63% use both.

**Table4** most convenient way to pay

Most convenient mode	NO of respondents	Percentage
Cash/Card	70	73.68%
Crypto-currency	25	26.31%

As observed from the table 4, 73.68% of the respondents uses Crypto-currency and 26.31% of respondents use cash.

**Table 5 preferences towards Crypto-currency**

Preference towards Crypto-currency	No. of respondents	Percentage
Security	25	26.31%
Convenient	45	47.36%
Do not carry paper money	17	17.89%
Risk of paper money	08	8.425

As observed from the table 5, 47.36% of respondents find it convenient to use Crypto-currency, 26.31% of respondents find it secure to use Crypto-currency. 17.89% Do not carry paper money WHILE 8.42% find risk of carrying paper money.

**Table 6 safest mode of transaction**

Problem face while using Crypto	No. of respondents	Percentage
Lack of trust while making transaction	24	25.26%
Unacceptability at retail outlet	18	18.94%
High interest rate	35	36.84%
Complexity of terms and policy	10	10.52%
Information linkage issue	8	8.42%

Response	No. of respondents	Percentage
Yes	58	61.05%
NO	47	49.47%

According to table 6, 21.05% respondents do agree Crypto-currency is safest mode of transaction and rest 79.47% do not agree its safest mode of transaction.

**Table 7: Future prospects of Crypto-currency**

Future Prospects of Crypto-currency	No. of Respondents	Percentage
Rapid Growth	13	34.73%
Steady Growth	19	20%
Stagnant	25	26.31%
Can't predict	10	10.52%
Decline	08	8.42%

34.73% respondents said that Crypto-currency would grow rapidly, while according to 26.31% respondents the growth of Crypto-currency will be stagnant. Only 8.42 respondents opined that net Crypto-currency would not grow in future.

Ho: There is no significant relation between customer gender & type of Crypto-currency used

Chi Square Test

Gender	Type of Card Used			Total
	Bitcoin	Etherium	Specific outlet Card	
Male	22	31	8	61
Female	16	14	4	34
<b>Total</b>	38	45	12	95

Calculation of Chi Square

O	E	(O-E)	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
22	24.4	-2.4	5.76	0.236
31	28.89	2.11	4.45	0.154
8	7.7	0.3	0.09	0.0116
16	13.6	2.4	5.76	0.423
14	16.1	-2.1	4.41	0.273
4	4.29	-0.29	0.084	0.0195
				1.1171

Tabulated Value= 5.99

For 2 degree of freedom & at 5% level of significant the calculated value is less than tabulated value, which leads to the acceptance of hypothesis, So it can be concluded that there is no significant relation between customer gender & type of Crypto-currency used.

**FROM PERCENTAGE ANALYSIS**

From that table inferred that Maximum of the Respondents are supporting Crypto-currency only few respondents are not supporting Crypto-currency.

From that table inferred that 32.37% Respondents supports Crypto-currency, because of fear of theft of using Paper money

From that table inferred that 27.36% Respondents supports Crypto-currency, because they found it convenient mode of payment

From that table inferred that 26.31% Respondents supports Crypto-currency, because of security reasons. According to table 6, 61.05% respondents do agree Crypto-currency is safest mode of transaction and rest 49.47% do not agree its safest mode of transaction.

From that table 6 inferred that 25.26% Respondents not supporting Crypto-currency, because of lack of trust while making transaction.

From that table 6 inferred that 36.84% Respondents not supporting Crypto-currency, because of high interest rates.

From that table 6 inferred that 8.42% not supporting it because of information linkage issues. 18.94% respondents found it tough to use at it retail outlets.

According to table 6, 61.05% respondents do agree Crypto-currency is safest mode of transaction and rest 49.47% do not agree its safest mode of transaction.

From the table 7 34.73% respondents said that Crypto-currency would grow rapidly, while according to 26.31% respondents the growth of Crypto-currency will be stagnant. Only 8.42 respondents opined that net Crypto-currency would not grow in future.

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**BRIDGING OF EMOTIONALLY BROKEN HEART TO A HAPPY & SUCCESSFUL LIFE**

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**ABSTRACT**

*This Research paper is about to make a Comprehensive study of Consciousness & Remedies to handle emotional breakdowns. The pang of a broken heart seems to be more severe than that of poverty and unemployment. In 2020, more than 10,600 people died by suicide because they were either unemployed, poor or bankrupt. This data shows 8% increment in the number of deaths than that of in the year 2019, due to suicide attributed to these causes collectively. Therefore in present scenario it is important to find the solution/way-out by which an emotionally broken person can survive and make his/her life Happy & Successful. In this study we interviewed around 50 persons from different age groups of 15-70 years old. In our study we included Men/Women having different job profiles. Reference of Shlokas from Shrimad Bhagwat Geeta also has been taken into consideration to conclude the results of the study.*

*Keywords: Emotional Breakdowns, Broken Heart, Happy, Successful*

**INTRODUCTION**

After COVID-19 people round the world has become very health conscious, study says. Simultaneously, not all but some of the people have learned to balance their emotions. Millions of people lost their loved-ones or Jobs due to pandemic, and everyone in this world has suffered in many ways during that time of Pandemic. Physical immunity can be built by vaccines or medicines, but there is no vaccine or medicine for the people feel broken within themselves. This invisibility, inexpressibility & inapproachability makes the problem very complicated & unsolvable for the Medical Science. Though there are many psychologists available in the world but they are not enough to handle such a complex problem of Billions of people. To get some insight & information about the problem we conducted a survey with a questionnaire Titled as “Survey for the welfare of the Emotionally hurt People in India”. For survey we approached to around 500 people, but out of 500 only 37 agreed to fill our questionnaire. Out of 37 most of the respondents were students from the age group of 20-25 years old. As we promised with them, we are not sharing their Identity during our research. In questionnaire we gave them options like; “Girl-friend/Boy-friend, Brother/Sister, Parents, Economical Condition, Lack of Job, Lack of Love in life, Not having any person in life with whom you can share your personal thoughts, Got failed in any class, Got failed in any competition, Husband/Wife, Without any reason” to answer the question- Reason, because of which you have experienced extremely broken by heart? Out of 37; 8 answered for “Boy-Friend/Girl-friend”, 7 for “without any reason”, 6 for “Not having any person in life with whom you can share your personal thoughts”. Which shows that around 22% of the people have experience emotional breakdown because of “Boy-friend/Girl-friend”, around 19% people have felt broken “without any reason” and around 16% people have felt broken for “not having any person in life with whom you can share your personal thoughts”. Only above 3 aspects are the reasons of deep sorrow for around 57% of the surveyed people. If we look at these aspects carefully, we will find that, within these three aspects happiness of the people is being dependent on others. And very important hidden feeling within these 3 aspects is expectation from others.

In Shri-Mad Bhagwat Geeta; Shri Krishn says to Arjuna;

**मात्रास्पर्शास्तुकौन्तेयशीतोष्णसुखदुःखदाः।**

**आगमापायिनोऽनित्यास्तांस्तितिक्षस्व भारत ॥ (Chapter-2, Shlok-14)**

**MEANING**

O son of Kunti, the non-permanent appearance of happiness and distress, and their disappearance in due course, are like the appearance and dis-appearance of winter and summer seasons. They arise from sense perception, and one must learn to tolerate them without being disturbed.

**बाह्यस्पर्शेष्वसक्तात्माविन्दत्यात्मनियत्सुखम्।**

**सब्रह्मयोगयुक्तात्मासुखमक्षयमश्नुते ॥ (Chapter-5, Shlok-2)**

**MEANING**

Such a liberated person is not attracted to material sense pleasure or external objects but is always in trance, enjoying the pleasure within. In this way the self-realized person enjoys unlimited happiness, for he concentrates on the Supreme.

From the above shlokas it is being said that if someone is conscious about him/herself and knows that all the actions and reactions are happening because of three states of nature i.e. Satva-guna (Goodness), Rajo-guna (Passion) & Tamo-guna (Ignorance) and Soul is doing nothing, then nobody can affect our emotions. Neither we will become highly excited nor we will become broken due to any good or bad incidence in our life respectively. But how it is possible for any person to become conscious about him/her self. Further Krishna said;

प्रकृतेः क्रियमाणानिगुणैः कर्माणिसर्वशः |

अहङ्कारविमूढात्माकर्ताहमितिमन्यते|| (Chapter-3, Shlok-27)

#### MEANING

All activities are carried out by the three modes of material nature. But in ignorance, the soul, deluded by false identification with the body, thinks of itself as the doer.

We can see that the natural phenomena of the world are not directed by us, but are performed by *prakṛiti*, or Nature. Now, for the actions of our own body, we usually divide them into two categories:

1) Natural biological functions, such as digestion, blood circulation, heartbeat, etc., which we do not consciously execute but which occur naturally.

2) Actions such as speaking, hearing, walking, sleeping, working etc. that we think we perform.

Both these categories of works are performed by the mind-body-senses mechanism. All the parts of this mechanism are made from *prakṛiti*, or the material energy, which consists of the three modes (*gunas*)—goodness (*sattva*), passion (*rajas*), and ignorance (*tamas*). Just as waves are not separate from the ocean, but a part of it, similarly the body is a part of Mother Nature from which it is created. Hence, material energy is the doer of everything.

Why then does the soul perceive itself to be doing activities? The reason is that, in the grip of the unforgiving ego, the soul falsely identifies itself with the body. Hence, it remains under the illusion of doer-ship.

Now question arises that a worldly person how can remain conscious all the time without being distracted? Krishna Says;

उद्धरेदात्मनात्मानं नात्मानमवसादयेत् |

आत्मैव ह्यात्मनो बन्धुरात्मैव रिपुरात्मनः || (Chapter-6, shloka-5)

#### MEANING

Elevate yourself through the power of your mind, and not degrade yourself, for the mind can be the friend and also the enemy of the self.

In order to be able to use our mind as a friend, it is important to understand the mind's nature. Our mind operates at four levels:

(i). Mind: When it creates thoughts, we call it *mana*, or the mind.

(ii). Intellect: When it analyses and decides, we call it *buddhi*, or intellect.

(iii). *Chitta*: When it gets attached to an object or person, we call it *chitta*.

(iv). Ego: When it identifies with the bodily identifications and becomes proud of things likewealth, status, beauty, and learning, we call it *ahankār*, or ego.

These are not four separate entities. They are simply four levels of functioning of the one mind. Hence, we may refer to them all together as the mind, or as the mind-intellect, or as the mind-intellect-ego, or as the mind-intellect-*chitta*-ego. They all refer to the same thing.

#### LITERATURE REVIEW:-

Describing mental breakdown symptoms is very personal, says Curtis. People have their own indications of a mental break or emotional breakdown; it's the point at which someone feels that he/she can no longer handle the things. If we were cars, a mental breakdown is a total tire blowout that has made us on the side of the road. According to Curtis, signs of a nervous breakdown are the same as signs of a mental breakdown, though potentially involving more anxiety. "Whether your breakdown is, 'I'm so depressed that I don't want to do anything' or if your nervous breakdown symptoms are anxiety-based, with panic attacks limiting your ability to

do anything, it's functionally the same." "Sometimes having a definition that's not appropriately broad becomes a barrier to us getting the help we need or doing something about it, because we tell ourselves our problems aren't that bad," says Curtis. "In fact, we train our staff around the idea that you don't define crisis for the patient - the patient defines crisis for themselves."

Maintenance = Best Mental Help.

In the Mental Health World, we're trying to create more of awareness within the community, that care isn't focused on the breakdown. It's focused around avoiding the breakdown. How many times would we find ourselves broken down? Yet, we're so disconnected from the routine needs of our own emotional well-being. The best way to avoid a breakdown is maintenance. We all need that, but there's something about mental health, whether it's anxiety, depression, or something else, that we somehow think it's not worth getting help for, or it's not bad enough to need help, until it's totally debilitating and we're completely non-functional," says Curtis.

We all got our social life; work life, home and family responsibilities. Each of these unique domains could start to show signs of stress. So, look at them and ask yourself, am I feeling emotionally overwhelmed? Am I starting to think, 'How long can I keep doing this?' Then know that's when it's time to get support."

### **The magnitude and burdens of the problem**

- As many as 450 million people suffer from a mental or behavioural disorder.
- Nearly 1 million people commit suicide every year.
- Four of the six leading causes of years lived with disability are due to neuropsychiatric disorders (depression, alcohol-use disorders, schizophrenia and bipolar disorder).
- One in four families has at least one member with a mental disorder. Family members are often the primary caregivers of people with mental disorders. The extent of the burden of mental disorders on family members is difficult to assess and quantify, and is consequently often ignored. However, it does have a significant impact on the family's quality of life.
- In addition to the health and social costs, those suffering from mental illnesses are also victims of human rights violations, stigma and discrimination, both inside and outside psychiatric institutions.

### **Emotional breakdown and Depression Remedies From Bhagwat Geeta**

The Mahabharata was composed by Maharishi Ved Vyas and written by Lord Ganesha. When the war between the Kauravas and the Pandavas was about to begin, Shri Krishna preached the Gita to remove Arjuna's sadness. It is said that in the Gita, the solution of many problems related to life is found. In today's era, people are very much worried due to the corona epidemic. Due to which the disease of depression is also increasing. So in such a situation, these few teachings of Gita can prove to be effective in keeping you stress free.

Advice and deliberation and guidance may be taken by everyone, but the decision should be taken by one's own intellect. Despite giving full knowledge to Arjuna, Shri Krishna had given freedom to take decisions and act at his own discretion. By calling upon not to be dependent, to be self-dependent, a message has been given to the person to become self-reliant and self-reliant. There are three types of tapas – body, speech and mind. All three should be used in public interest. Speech is man's best friend. With this, a person can make the whole world his friend or can make an enemy. Therefore, keep the importance of speech, the effect of words and speech controlled and limited.

To fulfill any resolution, it is necessary for the mind to be stable and immovable. We should keep striving to achieve our objective. The process of moving the mind away from other points and focusing on the goal should be repeated. The miraculous effect of this process is visible. And the work gets done with gusto. Therefore, interest should be awakened towards the goal. Be free from the worries of the past and the past, one should move forward on the path of action. Events are a chain of events in nature and they keep on happening over time. Engaging in unnecessary worries is wasting the precious time of life. Therefore, you should go on doing your work without stress. In order to progress in life, it is necessary to stay healthy along with the mind and body. Any work is done by the body. If the body is unhealthy, it will never be able to do any work. Therefore body cultivation is very important.

Lord Shri Krishna tells Arjuna that O Arjuna. You have the right to act. Do not think about its fruits. So don't be the cause of the fruit of your actions and don't insist on not doing the work.

No man can live even for a moment without doing action. All living beings are subject to nature and nature makes every living being act according to its own accord and also gives its results.

**RELATIONSHIP ADVICE**

When boundaries are broken, distances grow, the only word left now is to assimilate someone. Don't know when its intimacy has died. In Kaliyuga, only a made-up relationship is going on. Now the relationship has become so weak that a minor injury breaks it. Lord Krishna has said that in any relationship sourness arises when the boundaries between the two are broken. There is often a boundary in two relationships. As soon as one crosses that limit, the distances automatically increase. Not allowing others to judge Relationship is not a ritual that one should be a preacher and everyone else should be his supporter or follower. In a relationship, the juice of love flows equally from both the sides, but today it is no longer in the relationship. Whenever one in a relationship overestimates himself and imposes his judgment on the other, their relationship does not last long. This is the reason the relationship breaks down.

Even though it has been years since the country became independent, but even today the thought of ruling over others has not been removed from the minds of human beings. The

Break-down in a relationship comes only when one does not give space to each-other. Tries to keep each-other according to himself/herself. That's why the rift starts in the relationship. Whatever the era, the intimacy of the relationship is equally important. Don't let the intimacy end from your relationship. Keep it handy.

**CONCLUSION**

The findings of this research raised specific issues in relation to the role of depression, anxiety, and stress in the disruption of the executive functions of sufferers. Selective and shifting attention and cognitive abilities are specifically affected in this regard. Meanwhile, the role of stress in impairing decision making and the major role of anxiety in impairing sustained attention were shown to be considerable.

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**STUDENTS' PERCEPTIONS TOWARDS LEARNING NUMERICAL BASED PAPER IN HIGHER EDUCATIONAL INSTITUTES THROUGH BLENDED LEARNING DURING COVID 19 PANDEMIC****Dr. Gurpreet Kaur and Ritika Rathore**

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**ABSTRACT**

*In the academic year 2020, all the Higher Educational Institutes (HEIs) were forced to introduce an online learning mode to teaching and learning all the courses for the students due to the coronavirus pandemic. This study aims to explore students' readiness for learning the Numerical Paper course through a blended learning environment and investigate problems and challenges that the students faced in their online learning. Drawing upon 350 questionnaires with closed questions, the findings revealed that the students showed relatively positive responses to the blended learning approach. They tended to be able to learn Numerical Paper through the combination of two different learning modes. But they find learning numerical paper in a face-to-face classroom to be more agreeable as compared to online mode. Though learning in online mode motivated them to be more self-disciplined and responsible for their own learning and encouraged them to set up their own Numerical Paper learning plans and learning goals. However, the major problems and challenges the students confronted in learning included losing focus on learning in online sessions due to technical issues, the difficulty of online interaction with teachers and classmates, lack of experience and skills for digital tools, and time management.*

*Keywords: Covid-19, Online Learning, Blended Learning, Higher Educational Institutes, Student perception*

**INTRODUCTION**

The coronavirus pandemic evolved in Wuhan city, China, and spread throughout the world. The covid-19 entered India on January 27, 2020, and spread like a fire in the forest. On March 23, 2020, the deadly virus forced the Indian government to lock down the whole country, so that the government could curb the pandemic caused by Covid 19. The pandemic impacted each and every sector of India and brought unfamiliar and unseen testing times for the entire nation. The education sector was also deeply impacted, throwing all private and public schools, Higher Education Institutes into crisis mode. They tried to ride over the lockdown phase by juggling between instruction modes like classrooms, online, home-schooling, student pods, hybrids, and blends of these (Stahl, 2021). There was a drastic change in the scenario of traditional learning in the education sector. It becomes necessary to opt for E-Learning to make a bridge between the teachers and students and to reduce the devastating effect of Covid-19 on the student and teacher fraternity.

Understandably, the COVID-19 epidemic has radically altered the teaching methods utilized by school and college teachers who are accustomed to classroom instruction (Zhang, W., Wang, Y., Yang, L., & Wang & J, 2020). With the virtual model of education being a mostly new experience for most teachers in other developing nations, this shift from face-to-face classroom teaching to online teaching practice has an impact on school teachers' teaching norms, professional roles, and teaching tactics. (Noor et al., 2020).

The outbreak of covid -19 has drastically changed the scenario of the traditional education system of India. There was a transition from offline learning to the online learning phase to reduce the hazardous effect of covid on the learners. Our motive of research is to observe the readiness of the higher education apprentices towards blended learning, after tasting both modes of learning primarily for a numerical-based paper.

The study is inspired by trends of new learning pedagogy in the education sector after the outbreak of the pandemic. The objective of the study is: -

- (1) To identify students' inclination in learning Numerical paper based on a blended learning approach.
- (2) To identify problems and challenges faced by the students in learning the Numerical paper in Online mode

**LITERATURE REVIEW**

The traditional methodology of teaching and learning comprises teacher-student interaction, student-student interaction, teacher's knowledge (Borkar et al., 2017) (Lin et al., 2017), student willingness, and many other components. The traditional way of teaching and learning is evolving. E-learning brought a revolution in the teaching-learning process. As the name indicates, E-learning means "learning electronically". This type of learning can be delivered through computers, the internet, satellite, or other remote technologies. Firstly, e-learning was used for training in organizations (Thornbory, 2003). Gradually it is becoming a part of the education sector.

Generally, synchronous and asynchronous are the two classifications of e-Learning (Assareh & Hosseini Bidokht, 2011). Synchronous is defined as the delivery of lecture and learning events that occur simultaneously, for example, webinars. While in the case of asynchronous learning, when an online course is opted, course content and communication regarding it are not occurring at the same time.

In the past two decades, there has been tremendous growth in the higher education sector on online courses. In India, the government is also facilitating education through online courses from reputed institutes like IIT, IIM, IGNOU etc. So, the best teaching-learning resources can be accessed by anyone, anywhere at any time. As online courses are gaining popularity among students, it has enhanced the number of online universities also. Covid also played an important role to uplift this count significantly (*The Pandemic Pushed Universities Online. The Change Was Long Overdue.*, n.d.) (UGC Approved 38 Universities to Offer Online Degree Program, n.d.) Blended learning is one more pedagogy. This is also known as a hybrid model (Powell et al., 2015). This methodology is a combination of online learning and face-to-face learning (Bonk & Graham, 2006).

Though the demand for online courses is increasing and almost all types of courses are made available online, the preference and perception of the learners towards a certain type, of course, is also a very important aspect while developing these courses. And one such course is a numerical-based paper containing mathematical calculations. It is a challenging job to explain the mathematical-based courses online.

This paper is an attempt by the authors to analyze learners' perception of learning numerical based paper through blended learning (classroom and online mode).

## METHODOLOGY

The questionnaire was developed using the six elements of preparation for learning offered by (Tang, 2013) and the idea of preparedness for adopting blended learning proposed by Osman and Hamzah (2017) as a framework.

The statements in the questionnaire were adapted from their studies and divided into 7 parts: classroom learning, online learning, online interaction, technology, learning flexibility, learning management, and readiness for blended learning. The instrument utilized a 5-point Likert scale (1 = strongly disagree, and 5 = strongly agree). The items were discussed with a few prospective respondents and their inputs were taken to reframe the statements for a better understanding of the questionnaire contents.

A total of 350 students' valid responses were collected from the NCR region. As this group of students belonged to both private and government universities, they have experienced almost two years of the online classroom due to the pandemic. So, they were able to provide better insights into learning aspects using blended learning.

### Validity and Reliability of the Instruments

The questionnaire was tried out with 20 students to verify the reliability, and Cronbach's Alpha value was 0.94 which suggested strong internal consistency.

## DATA COLLECTION

A total of 350 valid responses were collected from students of Higher Educational Institutes of NCR, India. The research was carried out in October 2021 with the students who have undertaken online classes during sessions from July 2020 to August 2021. The data were collected for Numerical papers from learners in different years of their study. Descriptive Statistical Analysis was carried out on the dataset using SPSS.

## DATA ANALYSIS

Frequency and percentage were used to figure out the students' demographic data from part one of the questionnaire. Mean and standard deviation were employed to examine students' readiness in 7 aspects. For the interpretation of mean values, the following criteria (Sözen & Guven, 2019) is used: -

Value	Range	
1	1.00-1.80	Students have a low level of perception toward numerical paper
2	1.81-2.60	Students have a slightly low level of perception toward numerical paper
3	2.61-3.40	Students have a neutral perception toward numerical paper
4	3.41-4.20	Students have slightly high perception towards numerical paper
5	4.21-5.00	Students have high perception towards numerical paper

## FINDINGS

The demographic data samples of different colleges and different streams from the NCR region were presented in Table 1. There were 350 participants from 5 different courses. Most participants were from the Management course (256 in number, 73%). Also, the majority of them were from the first or second year of their study

comprising nearly 81% of the total respondents. The female respondents were 38% as compared to male respondents 62% which fairly emulates the population division on the basis of gender in HEIs. Also, the majority of the respondents, around 73%, had their residential location in urban areas which was identified as a positive indicator of their ease of access to online learning platforms.

**Table 1: Demographics Analysis**

		<b>Number</b>	<b>Percentage</b>
<b>Gender</b>	Female	133	38.0
	Male	217	62.0
<b>Course</b>	B. tech	15	4.3
	B.Sc.	38	10.9
	BCA	26	7.4
	Management	256	73.1
	MCA	15	4.3
<b>Year</b>	I year	177	50.6
	II year	110	31.4
	III year	45	12.9
	IV year	18	5.1
<b>Residential Location</b>	Rural Area	92	26.3
	Urban Area	258	73.7

**Students’ Perception towards Learning Numerical Based Paper**

The outcomes of the student’s perception of 7 aspects based on the circulated questionnaire are given below:

**Table 2: Classroom Learning**

<b>S.No.</b>	<b>Items</b>	<b>Mean</b>	<b>S.D.</b>	<b>Interpretation</b>
	<b>Classroom Learning</b>			
1	Classroom sessions of Numerical paper help me to generate ideas to do course assignment.	3.986	.9679	Slightly High
2	In offline Numerical paper class, I have a chance to get supports or feedbacks from my teacher and peers immediately.	4.260	.9354	High
3	I learn Numerical paper better through teacher-directed classroom-based activities.	4.209	.9779	High
4	I learn Numerical paper better when I collaborate with others in classroom	4.097	1.0499	Slightly High
5	I believe offline learning of Numerical paper is more effective than online learning.	4.326	1.0392	High
6	I am bored when learning Numerical paper in classroom	2.691	1.4108	Neutral
	Overall Mean:	3.928		

Table 2 depicted the students’ enthusiasm for classroom learning for the numerical paper. The overall mean score value of 3.928 was at a slightly high level. Among the individual parameters, item 5, “I believe offline learning of Numerical paper is more effective than online learning”, had the highest mean score (4.326), while boredom in classroom sessions had the lowest mean value.

**Table 3:** Online Learning

S.No.	Items	Mean	S.D	Interpretation
<b>Online Learning</b>				
1	I do not resist having my lessons online.	3.349	1.2410	Neutral
2	Learning Numerical paper online during covid 19 was interesting.	2.889	1.4230	Neutral
3	I feel comfortable with self-directed learning when I learn Numerical paper online during covid 19.	3.134	1.3336	Neutral
4	I like learning Numerical paper online as it provides richer instructional content (e-books/ppts/ notes/external links).	3.117	1.3920	Neutral
5	I would like to have online class for the Numerical paper course rather than in the offline classroom.	2.691	1.4705	Neutral
6	I am bored when learning Numerical paper online.	3.394	1.3975	Neutral
7	I feel that online learning reduces chance of favouritism and partiality.	3.386	1.2968	Neutral
	Overall Mean:	3.14		

Table 3 portrayed that the overall mean of online-based learning was 3.14 which showed a neutral perception of the students. Out of seven items only item 5, i.e. “the inclination of the students towards the online class as compared to offline class” was low. Whereas, the rest of the items depicted the neutral perception of the students towards online classroom learning.

**Table 4:** Learning Flexibility

S.No.	Items	Mean	Std. Deviation	Interpretation
<b>Learning Flexibility</b>				
1	I can organize my time efficiently in learning Numerical paper.	3.771	1.0152	Slightly High
2	I would like to study the Numerical paper without limits of time and place	3.657	1.1137	Slightly High
3	I like to study Numerical paper lessons at my own pace.	3.571	1.1199	Slightly High
	Overall Mean	3.666		

Table 4 demonstrated the slightly high mean (3.666) rating of the students’ willingness towards learning flexibility in numerical based paper. All the three items were rated slightly high. The most highly rated item was item 1 where the students could manage their time effectively.

**Table 5:** Online Interaction

S.No.	Items	Mean	Std. Deviation	Interpretation
<b>Online Interaction</b>				
1	I would like to interact with my teacher when I learn Numerical paper online.	3.734	1.1459	Slightly High

2	I would like to interact with my classmates when I learn Numerical paper online.	3.549	1.2424	Slightly High
3	I am able to communicate effectively with others using online technologies (e.g. email, chat, discussion board).	3.474	1.2568	Slightly High
	Overall Mean	3.58		

Table 5 describe the students’ perception in the direction of the online interaction with slightly high mean at 3.58. In this all the items contain slightly high mean. The item 1 “I would like to interact with my teacher when I learn numerical paper online” was rated highest whereas item 3 was rated lowest.

**Table 6: Technology**

S.No.	Items	Mean	Std. Deviation	Interpretation
	<b>Technology</b>			
1	I think online learning platforms used in Numerical paper is easy to adapt	3.077	1.342	Neutral
2	Online quizzes helped me to learn effectively.	3.586	1.240	Slightly High
3	I am comfortable using Web technologies during online classes	3.514	1.213	Slightly High
	Overall Mean	3.392		

Based on Table 6 the overall mean of technology used during online learning was 3.392 and it depicted the neutral perception of the students. Though items 2 and 3 relating to general technology questions were slightly high but item no. 1 “I think online learning platform used in the numerical paper is easy to adapt” had a neutral attitude.

**Table 7: Learning Management**

S.No.	Items	Mean	S.D	Interpretation
	<b>Learning Management</b>			
1	Learning Numerical paper in both offline and online learning mode motivate me to be more self-disciplined and responsible for my learning.	3.797	1.042	Slightly High
2	Learning Numerical paper in both offline and online mode encourage me to set up my own learning plans and goals.	3.789	1.063	Slightly High
	Overall Mean	3.793		

Table 7 exhibited slightly high results of learning management with an overall mean as 3.793. Both the items were rated slightly high.

**Table 8: Readiness for Blended Learning**

S.No	Items	Mean	Std. Deviation	Interpretation
	<b>Readiness for Blended Learning</b>			
1	I want to learn Numerical paper in blended learning environment rather than learning in classroom only.	3.557	1.176	Slightly High
2	I want to learn Numerical paper in blended learning environment rather than learning online fully.	3.643	1.090	Slightly High

3	I am ready to face challenges in learning Numerical paper in blended learning environment (combining offline and online learning).	3.749	1.062	Slightly High
4	If I have an opportunity, I want to register in Numerical paper course that adopt blended learning approach.	3.737	1.076	Slightly High
	Overall Mean	3.671		

Table 8 revealed the results of the readiness of students toward blended learning. All the four items of this table contained slightly high means and the total mean was 3.671. Furthermore, the highest-rated mean was item no 3 “I am ready to face challenges in learning Numerical paper in a blended learning environment (combining offline and online learning)”, with a mean score 3.749.

## RESULTS AND DISCUSSION

Understanding the readiness of students to learn numerical paper using different learning aspects is critical for the assessment of their adaptability towards blended learning and eventual readiness to adopt it. Our findings show that students who have a neutral approach towards online learning and technology are more likely to adapt to blended learning as the factor readiness towards blended learning is slightly high. On the other hand, the students showed a slightly high preference for classroom learning, learning flexibility, online interaction, and learning management

The overall mean score of the offline mode was more than the online mode. The mean score of classroom learning was a maximum 3.92 and depicts the slightly high perception of the students towards classroom learning. The probable reason that the respondents chose this over online learning was that they got support and feedback from teachers and their peer groups immediately. Furthermore, the classroom activities were engrossing leading to the inclination of students toward face-to-face learning. As per the data analysis, the factor in Classroom learning, “I am bored when learning Numerical paper in the classroom” (Mean value = 2.69) and “I am bored when learning Numerical paper Online”(Mean Value= 3.69), both falls in neutral range which signifies that there is inherent anxiety and boredom associated with the numerical based paper due to its difficulty level. But referring to these mean values individually, it is seen that in Classroom learning, this factor is leaned towards “disagree”, while in online learning, it is leaned towards “agree”. This clearly indicates that in classroom learning, the boredom of learning numerical paper could be reduced through teacher’s individual interaction and class management techniques whereas, in online learning, this boredom increases due to a lack of human touch and one-to-one interactions.

The descriptive statistics revealed that online learning has scored the least and had a neutral preference. However, item 5 (“I would like to have an online class for the Numerical paper course rather than in the offline classroom.”) reflected the preference of students toward face-to-face learning. It seemed that their interest in learning numerical papers through online mode was toward the lower range of neutral perception which may be due to the fact that the technology and techniques used to facilitate online courses were not that effective. While technology problems, e.g., broadband internet connectivity and computer skills, could be hindrances in taking up blended learning today’s technology-savvy generation of students, especially those living in urban areas, do not face such problems. However, in light of the numerical nature of the paper, the technology issues in the usage of learning platforms, constraints in the use of online math problem-solving tools etc. could be attributed in positioning the technology factor at the second least mean value by the respondents.

## CONCLUSION AND SUGGESTIONS

As per the above study, we got a positive inclination of learners towards blended learning. Blended learning is a mixture of classroom learning and online learning. Through the study, it was disclosed that the students preferred the face-to-face learning mode over the online mode for numerical-based papers. The hindrance to taking online learning was attributed to the technology factor.

As we know, blended learning is in trend these days which can be corroborated by the fact that National Educational Policy (NEP 2020) also introduced Blended learning for both school and HEIs curriculum. Thus, it becomes important to focus on technology and technique aspects of online learning, so that all types of courses are learnt effectively through this medium. The teaching fraternity of HEIs should work on the techniques or activities to lower the anxiety level and create interesting content to engross the student during the online session. In addition, technology part should be worked at. The advent of 5G might give an edge to online

learning programs. Furthermore, it is suggested that better, easy to adapt and interactive platforms should be devised to make numerical-based paper learning interesting and engaging.

### **LIMITATIONS**

The few limitations to this study were that the respondents were mainly from the Management domain, which led to the data set being skewed towards a specific course rather than covering different courses offered in HEIs proportionately. Also, the students were majorly from their first and second year of study, who had been subjected to online sessions right from the start due to the pandemic. They did not have a valid comparison to be made between offline and online sessions. They were merely drawing comparisons from their previous learnings in schools or undergraduate colleges.

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**ML-BASED HAND SIGN DETECTION SYSTEM FOR DEAF-MUTE PEOPLE****Nikita Malik\*<sup>1</sup> and Nipun Walia<sup>2</sup>**<sup>1</sup>Assistant Professor and <sup>2</sup>Student, Department of Computer Science, Maharaja Surajmal Institute, New Delhi**ABSTRACT**

*Communication is imperative to human existence and pervasive in all aspects of our lives. It is also an important right to everyone. This paper focuses on solving the communication problem with the deaf and mute population of the world. This is done using real-time machine learning (ML) for sign language detection along with certain APIs (Application Programming Interfaces). The discussed system detects the signs in the region of interest (ROI) and then converts them into the appropriate format. Computer vision has been used for detection and API function for many other functionalities. This idea here is focused on reducing the communication gap within the deaf-mute population and bringing a sense of normal in their daily life.*

*Keywords: Hand Signs, Computer Vision, Object Detection, Machine Learning, Transfer Learning, Cloud Bucket*

**INTRODUCTION**

Communication is a way of exchanging information, opinions, and feelings among individuals in order to reach a common understanding. People with disabilities may require assistance due to complex communication needs, but they are still left behind in communicating their ideas to the general public to some extent because the majority of people are not educated enough to understand their first language, resulting in one-way communication. It's easy to be scared by the thought of communicating with someone who has a disability, particularly if you're not sure what to say or how to say it. As a result, we hope to use artificial intelligence and other technologies in our project to bridge these gaps and bring everyone, special or not, on the same level, resulting in a better world. For the general public also this application will be a very useful platform as it will completely demolish the different prerequisites that were required earlier to communicate to people with different special needs.

The transmitter and the receiver are the two basic components of any communication. The sender expresses a sentiment or emotion, seeks information, or transmits an idea or notion, and the recipient receives the message. To summarize, each communication entails a sender and a receiver, a message, and both sides' interpretations of the message's meaning [1]. We interact with individuals on a daily basis and it's crucial to remember to treat each person with a disability as an individual while talking with them. To communicate responsibly and respectfully with and about an individual, people-first language is utilized which emphasizes the person first, not the disability.

When it is impossible or undesirable to speak orally, sign language is any form of communication involving physical movements, mainly hand gestures. It is possible that the practice precedes speech. Sign language can be as crude as frowns, shoulder shrugs, or gesticulation or it can be a fine combination of manually coded signals complemented by face expressions or spelled out words. When voice communication is impossible, such as between speakers of mutually incomprehensible languages or when one or more potential communicators are deaf, sign language can be employed to bridge the gap. The deaf and hard-of-hearing community uses sign language as their primary mode of communication, but it can also be useful for other groups.

The BSL (British Sign Language) alphabet is fingerspelling. There is a symbol for each letter of the alphabet. On your hand, you can use these letter signs to spell out words – most common names and places – and sentences. If you don't know or can't remember some BSL signs, you can use fingerspelling to communicate.

With the help of deep learning method, computer vision, we plan to read the hand sign of the user and translate it to the appropriate format. For example, a deaf person who wants to communicate with a person with no disability can do so using our website in which we read the hand sign of the person with a disability and convert it to audio for the other person to hear.

The key features implemented in this paper are:

- Taking video inputs of sign language used by differently abled people.
- With the use of artificial intelligence, convert these video inputs of various signs used by the user, interpret them to their corresponding speech and text, making it more comprehensible for the respective auditor.
- Personalize the application for each user as per their preference, if needed.

## BACKGROUND STUDY

### OBJECT DETECTION

Object detection is a method of identifying objects and locating them in images or videos using computer vision. It draws boundary boxes around the objects that are identified in the image or video so we can see their position and movement across a scene. Object detection is different from picture recognition. Image recognition is used to label a picture. In a photograph of a dog, the term "dog" is used. A photograph of two dogs still bears the label "dog." On the other hand, object detection draws a box around each dog with the word "dog" written on it. The model predicts the location of each object as well as the label that should be attached to it [2].

### OPENCV

OpenCV is a free and open-source computer vision and machine learning library, developed to provide a general infrastructure for computer vision based applications. A wide-range of optimized algorithms are included that cover machine learning techniques and integration of machine perception. These can be used for detecting or identifying objects, recognizing faces or classifying actions in videos, tracking and following movements, set markers or even extract 3D models of objects and stitch images together to create a high-resolution image of an entire scene. There are several key domains involved with computer vision, including image processing, video capture and analysis, face detection, and object detection, but developing real-time applications requires a cross-platform library. This is where OpenCV, a C++ based program that was later followed by a Java-based version, comes in [3].

### TENSORFLOW

TensorFlow is an open-source machine learning platform that may be utilized from start to end. It's a symbolic math toolbox for deep neural network training and inference that solves a wide range of issues using data flow and differentiable programming. It allows programmers to develop machine learning applications using several tools, libraries, and open-source resources [4]. By receiving inputs as a multidimensional array (referred to as Tensor), TensorFlow allows you to make structures that govern the flow of data through a graph. The input enters at one end, passes through the complex actions of preprocessing, creating model and its training and estimation, and exits at the other end as output. [10].

### Single Shot Detector (SSD)

The SSD (Single Shot Detection) technique is used for object-detection in real-time. The SSD architecture comprises a single convolutional neural network (CNN) which learns to predict and classify the bounding box positions for object detection in a single pass. Therefore, it can be trained from start to the end. MobileNet, the basic SSD network architecture used in this work consists of numerous convolution layers. It implements multi-scale features and other enhancements to improve accuracy while utilizing images of lower resolution, and thus further increasing the speed [8] [9].

### Tensorflow Detection Model Zoo

Similar to Facebook's Detectron2 computer vision library, the TensorFlow Object Detection API model zoo includes a wide range of object detection models that you can deploy to your custom dataset and build from.

The TensorFlow Object Detection API lets you to quickly try out novel architectures in the TensorFlow ecosystem and provides deployment solutions for developers by offering model export scripts to .pb protobuf files that contain the inference graph description. These models can then be exported to venues like TF Lite or TFJS [5].

These models are evaluated on the basis of speed per step, mAP (Mean Average Precision), and even frame style.

For each class, one can calculate the

- True Positive TP(c): There was a proposal for class c, and there was a class c object.
- False Positive FP(c): Class c has been proposed, yet there is no class c object.
- Average Precision for class c, as shown through equation 1.

$$\frac{\#TP(c)}{\#TP(c)+\#FP(c)} \quad (1)$$

Then mAP is calculated as shown in equation 2 [6]:

$$mAP = \frac{1}{|classes|} \sum_{c \in classes} \frac{\#TP(c)}{\#TP(c)+\#FP(c)} \quad (2)$$

**CONCEPT OF TRANSFER LEARNING**

Transfer learning is a machine learning technique in which a model developed for one task is used as the foundation for another task's model. It is a common deep learning approach that employs pre-trained models. Given the massive compute and temporal resources required, as a starting point for research into computer vision and natural language processing challenges construct neural network models for these issues, and from the massive amount of data leaps in a skill that they offer in connection with a problem. A pre-trained model is a previously trained network, typically on a huge dataset, preserved on a large-scale picture classification assignment. This pre-trained model can be used as it is or transfer learning can be used to adapt it to a specific task. For image classification, transfer learning involves training the model on a general huge dataset such that it may serve as a generic model of the visual world. One is then able to use these feature maps that they have learned without having to re-learn them [7].

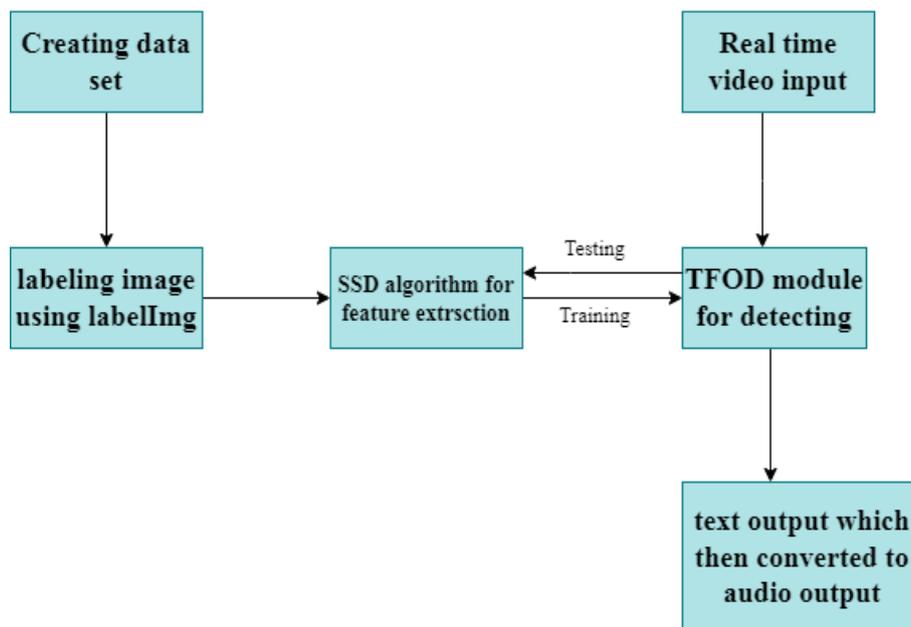
**WORKING AND IMPLEMENTATION**

**System Design**

In this work, we will be using the concept of transfer learning to train our model to reduce the training time. We are going to extract a model from the tensor flow model zoo for the same.

First, we will collect images to create a dataset of our own. For this, we made an automated system to capture the images. These images are then labeled using a library called *labelImg*. Labeling each image creates an XML file that contains data about the image such as its label name, height, width, dimensions on the x-y axis, etc. After this, all the images with their respective XML files are divided into two segments where ¾ images go to the training folder and the rest to the testing folder. This creates data for the model to train itself and then test itself. Then we provide the data and the training process begins, where we use SSD Mobilenet V2 FPNLite 320x320 to train our model. After a successful training session, the model is tested for efficiency and after receiving satisfactory results, the model is frozen and converted into TensorFlowJS format to be stored inside a cloud bucket to be accessible anywhere.

This bucket is then accessed in our web app which takes video inputs and then provides them to the model which then detects and provides the output in form of text. This text is accessed by a text to speech API which also provides the audio outputs simultaneously. Figure 1 represents the architecture we discussed.



**Fig 1 : System Architecture**

**DATASET CREATION**

The LabelImg software is used to graphically label the images, which is then utilized to recognize the images. We must remember that labeling must be done correctly, i.e., the gesture must be labeled with the correct label in order for the movements to be recognized correctly later with the correct label. After the photographs have been labeled and saved, an XML file is created for each one. During the training phase, this XML file contains information on where the model should look in the image. Figure 2 shows the file structure of one such XML file.

```
[annotation]
<folder>hello</folder>
<filename>hello5ba31f92-de1e-43a6-866e-137d126365da.jpg</filename>
<path>C:\Users\Mr.N\Desktop\TFODCourse\TensorFlow\workspace\images\collectedimages\hello\hello5ba3
<source>
  <database>Unknown</database>
</source>
<size>
  <width>637</width>
  <height>1344</height>
  <depth>3</depth>
</size>
<segmented>0</segmented>
<object>
  <name>hello</name>
  <pose>Unspecified</pose>
  <truncated>0</truncated>
  <difficult>0</difficult>
  <bndbox>
    <xmin>35</xmin>
    <ymin>479</ymin>
    <xmax>486</xmax>
    <ymax>968</ymax>
  </bndbox>
</object>
</annotation>
```

Fig 2: Label data for “Hello”

### TRAINING AND TESTING

As discussed, we used ¾ of our collected images along with their XML files to train the model and the rest to test the model.

For the training, we used the SSD Mobilenet V2 FPNLite 320x320 model. It had a speed of 19ms per step and mAP of 20.5. For testing, we used the TensorFlow object detection API.

Figure 3 shows the learning rate at 10,000 steps.

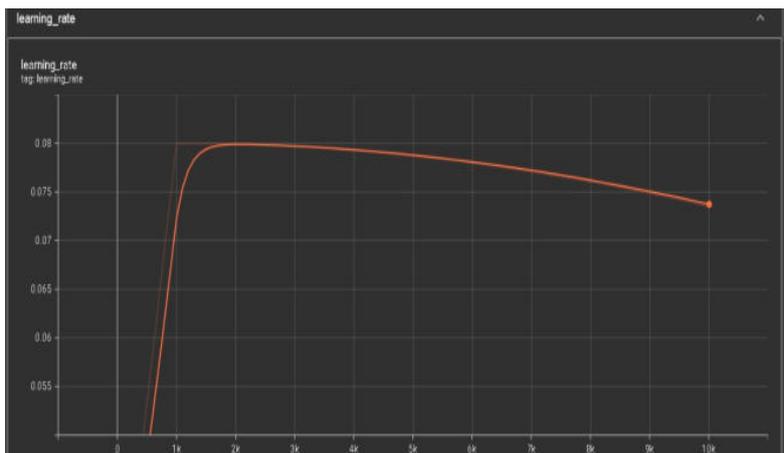


Fig 3: Learning rate at 10,000 steps

Loss function is used to optimize the ML algorithm. The loss is estimated based on the model's performance in both training and testing, and its interpretation is based on the model's performance in both training and testing sets, i.e. the total number of errors committed in each. The value of this loss function specifies the model's performance after every optimization iteration. Our machine learning model's loss has been lowering with each iteration, indicating that the model's detection accuracy has improved. Figure 4 shows the loss of the model.

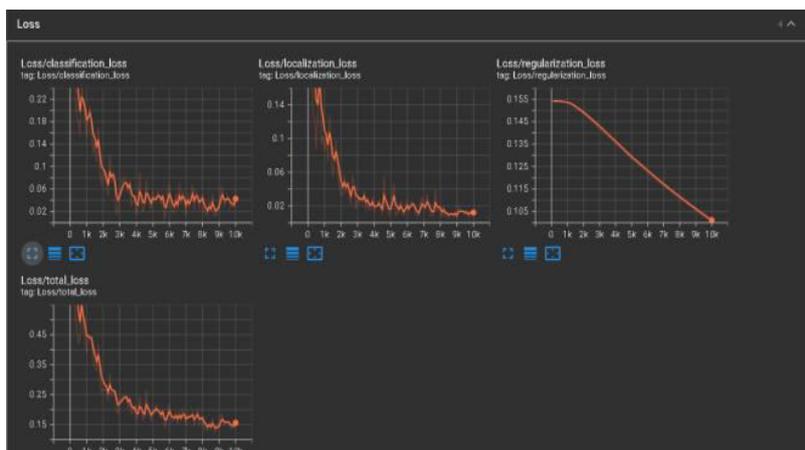


Fig 4: Loss graph on various parameters

The mismatch between the ground truth box and the anticipated boundary box is known as the localization loss. Only forecasts with positive matches are penalized by SSD. To get closer to the ground reality, only the predictions from the good matches are required. Negative matches aren't worth paying attention to. The predicted boundary box is the box that is predicted by the model while testing the photos, while the ground truth box is the box that is constructed in the Labellmg software while making the labels. Our model has a localization loss of 0.05.

### Storing the model in cloud bucket and website integration

After a successful training session, we freeze the model and store the model in a cloud bucket. We used IBM cloud storage bucket for this project. Then we extract the bucket link and integrate it with our web application. The web app is specially designed to make the user experience easy and smooth. The web app also has a text to speech API that converts the text results that we receive from the model and converts them to audio. Figure 5 shows a working example of one such gesture i.e. "hello". The output text also displays the accuracy percentage, like in Fig.3 the accuracy is 95%.

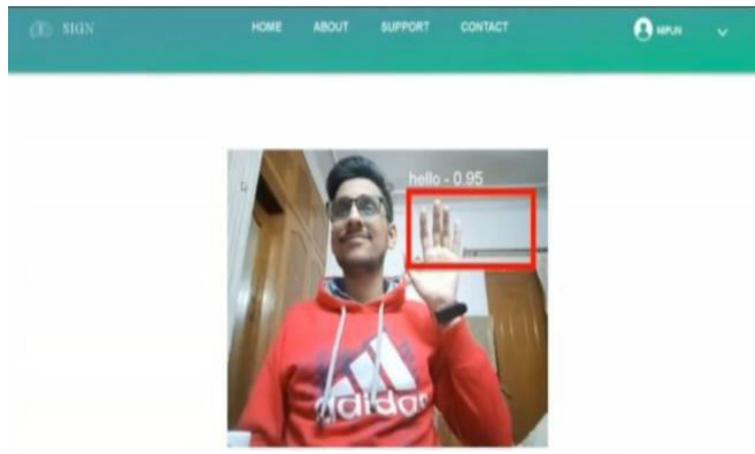


Fig 5: Sign detection from the web app

### FINDINGS

After evaluation, the precision rate of the model came out to be 69% and the recall rate came out to be 70%, which is not a great result but still it's a start. And also it was observed that the increase in the number of images and adding a more and more different variety of data from various angles also increased the stats significantly. Even after that, as seen in figure 5, the detection is being performed with a high accuracy rate.

### CONCLUSION

In this age where nothing seems to be impossible, leaving a section of our society out just because of their physical disability is unfair to them. Thus our project is a small step to bridge this gap. Although we have a lot of bases to cover, still this will hopefully start a process that might go on further ahead. With the use of object detection, we have made the model very easy to recreate and expand or improve wherever required.

### FUTURE SCOPE

We are still capturing still images, but in the future, we can train our model to capture more complex live hand signs that require more than one gesture. Also, we plan to add many other features such as performing certain daily life actions using hand gestures or voice commands. And also this can be also incorporated into a mobile application which would make it easier to use.

### ACKNOWLEDGEMENTS

We are very thankful to the head of our department and the institute and its management, for giving us the inspiration, training, and tools to carry out the research work. Despite the constant spread and emergence of covid-19 pandemic, it was possible to continue with the research work and even request for online suggestions at any time.

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**USE OF AI TO HELP FARMERS IN SELLING THEIR CROPS****Karan Mishra**

ITS School of Management

**ABSTRACT**

*Using the real life data and talking with many farmers I observed that they are facing several problems in selling their crops in grain markets. Problems are like:- In current process of selling the crops in market the process is very time consuming, because after the registration they have to take token and then wait for 2-4 days in large queues. Sometimes mediators take a lot of commission in illegal way for breaking the queue and they also use traditional way of weighing the crops, which is also a very time consuming process.*

*After some research and analysis I found that, farmers facing so many problems in selling their crops in government markets. In the Research Paper I want to give some Technological solutions through AI, so that government can take major steps to facilitate the farmers.*

**❖ INTRODUCTION**

Previously before the government of BJP the farmers had to sell their crops to the unauthorised markets where they get very less price for their produce and get disappoint sometimes there was also no proper system for selling the crops in the government markets but from last 5 years the process had been changed totally. The online market or mandi started by Prime Minister Narendra Modi Government to make farmers easy for selling their crops. According to the data, around 1.64crore farmers of the country have registered themselves at this online platform known as National Agricultural Market Scheme (e-NAM).

The main motive of this scheme is to provide good price of the grains to farmers without any broker or middlemen between the farmers and the buyers. Not only farmers but customers also get its benefits because of direct business is done between farmers and the buyers. The biggest problem for a farmer is to get a good market and better price of his product and the motive of launching the e-NAM is to solve all their problems.

**So now the question is what is e-NAM?**

National Agriculture Market or e-NAM is an online trading platform to sell various agricultural products thought the country on the same platform. This platform facilitates farmers, traders & buyers with online trading in commodities. It also helps farmers get better price and provide other facilities for better marketing for their produce.

**How to register in the e-NAM?**

There are following steps for registering in the e-NAM website

- First you have to visit the online website of e-NAM - [www.enam.gov.in](http://www.enam.gov.in).
- On typing registration, farmer will get an option wherein they will have to provide their valid email ID.
- They will be sent a temporary login ID and at their registered email.
- Now they have to register themselves on the e-NAM website and provide the KYC details and documents.
- As soon as APMC approves your KYC, you can start your business.

**Process of Selling the Crops**

**Step 1:** First step is to register your crop online.

**Step 2:** After the registration you get the dates between you sell your produce

**Step 3:** On your date you have to go to the market with your produce and then you have to take the gate pass or token

**Step 4:** Aftertaking the pass you should have to wait for your no.

**Step 5:** Then you sell your crops.

**❖ PROBLEMS**

So the main problem is for farmers which they are facing after this scheme is the literacy rate of them they are not much educated to understand technology easily as far as we think. And because of this many middlemen or brokers get chance to make their income through unwanted resources. There are two major problems which may come in front of the farmers after this type of advance system are:

- 1. The waiting time after taking the token:** The waiting time for their number after taking the token may reached sometimes 2 to 5 days because the number of entry in the market is limited to 50 people. During the period of Rabi Crops like wheat, peas, mustered, etc. After cutting of cutting of these crops the season of monsoon getting started and the risk of rain is every time in their minds and sometimes rain occurs and all the crops get naturally destroy at the time of selling. So the time taken in the process may affect the life of some farmers.
- 2. Unwanted Mediators:** Due to the fear of losing the crops at the time of selling and due to the waiting time period of 2 to 5 days farmers take help of unauthorised mediators or brokers which take 100/- to 200/- rupees per 100KG of grains. And they help them in selling their crops immediately due to this farmers never get their full amount of price for their hardworking and for their produce. And the one who never did anything in the whole year get earn more than farmers.

After having these types of smart technology farmers still not get the proper amount of their produce.

❖ **SUGGESTION**

After research and talking with many farmers I found that how we use AI Technology to help farmers in selling their Crops:

I found that there is no problem in the registration process of the farmers through the online portals. Some of the villages are also vacant one computer operator for the village during every 5 year. The computer operator does all type of online activities for the people of that particular village. The problem is in the process after taking the token. We have to change the purchasing system of the grain market through AI technologies.

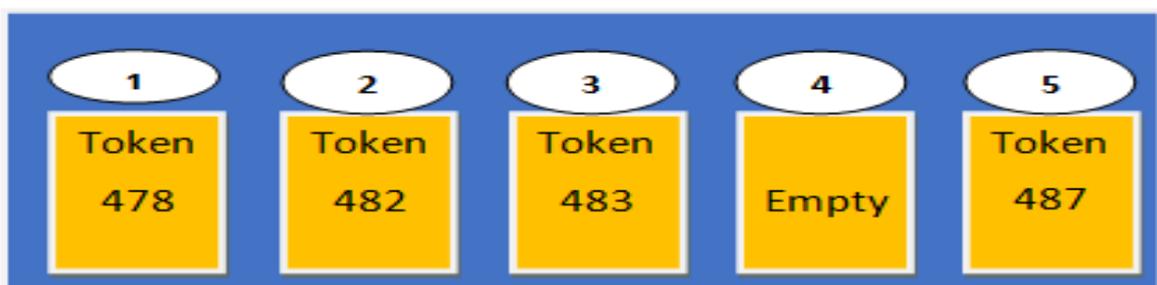
**Installation of Weighing Stations:** Installation of weighing stations in the grain market and replace it with the old method of weighing systems. Currently the weighing is happen with the small weighing machines.

**New process though AI technology:**

**Step 1:** Initially farmers will have to register their land and their crops through online portals which government enabled for them. Due to this only real farmers can able to sell their produce in the market this may protect farmers from third parties. There are many e- portals line e-nam.



**Step 2:** When farmer reaches in the market after the registration they have to collect the token and then go to their assign counter where biometric device should be installed and then he has to put his finger on it from that all of his details of registration get displayed which is already linked with his Aadhar Card.



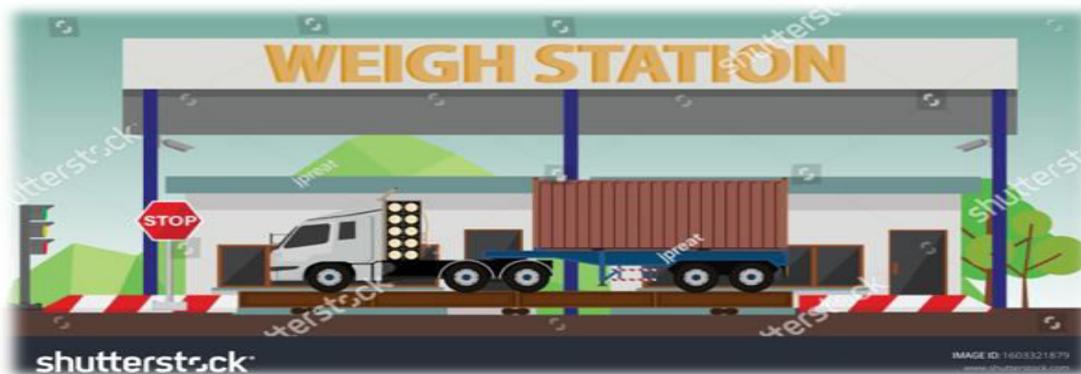


Step 3: Then after the biometric he has to go into the weighing machine with his transport like tractor, truck, etc. After weight have been recorded he has to go to the warehouse and should clear out his crops then come back to the weighing station and then weight again the empty vehicle. The difference of weight one and weight two is the weight of his crop.



Step 4: After taking the slip he should go out to his home and the payment of his crop is done within 24hours through the help of his aadhar card in the account directly.

The following picture shows the model of weigh machine how it actually works we can established at least 5 stations in the market for making this process easy and understandable by the farmers too.



❖ CONCLUSION

So the overall conclusion is that the AI Technology helps farmers for saving their valuable time and they do not want to take any kind of the help from the mediators and also don't want to pay any type of unnecessary commission they get all what they produce which help them to get the appropriate price for their crop without paying any unnecessary expenses.

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A CRITIQUE OF STANDARD BETA ESTIMATION FOR INVESTMENT VOLATILITY AND A SIMPLE SOLUTION

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**ABSTRACT**

*Beta in finance is a widely used statistic in investment analysis. We assess the common interpretations that are used for beta in finance and show that the standard method of estimation—OL S regression—is not consistent with these interpretations.*

*We make an attempt to present a case for an alternative beta estimator which is more suitable, as well as being easier to understand and to estimate. Unlike regression, the straight line fit, we propose to treat both the variables in the same way. Surprisingly, it gives a slope that is precisely the ratio of the volatility of the investment's rate of return to the volatility of the market index rate of return (or the equivalent excess rates of returns). Hence, this line fitting method gives an alternative beta, which corresponds exactly to the relative volatility of an investment—which is one of the usual interpretations attached to beta.*

*Keywords: investment analysis, beta, volatility, systematic risk.*

**Beta as a volatility measure**

In the world of finance the term ‘beta’ refers to the slope in a linear relationship fitted to data on the rate of return on an investment and the rate of return of the market (or market index). This usage stems from Sharpe’s 1963 paper in Management Science where he actually used the Roman letter B rather than the Greek  $\beta$ . (Strictly speaking, in statistics Roman letters refer to measured or estimated values based on a sample of data, whereas Greek symbols refer to the true, but unknown population values.)

The relationship is usually stated in one of two forms:  $R_i = \alpha + \beta R_m$  (1)

Where  $R_i$  represents the rate of return on an investment (e.g. in percentage terms), and  $R_m$  is the rate of return on the market or an index of the market. As it stands, (1) is the equation of a line fitted to the data, with  $\alpha$  and  $\beta$  being the intercept and slope of that line; an error term will be required when referring to particular data points.

It is well worth stressing that verbal explanations of beta are often incorrect and give the wrong impression. For example, the head of investment funds at Cazenove Fund Management in an article explaining various risk measures, makes the usual mistakes: “if a stock has a beta of 1.5 and the market rises by 1%, the stock would be expected to rise by 1.5%” (Minter-Kemp, 2003). This is wrong on two counts: firstly, it should

be referring to a change in the *rate of return* of the market – not changes in the index itself, and secondly, it should refer to a change in the stock’s rate of return, not in its price. Sadly, such careless wordings sometimes appear in textbooks too (e.g.

Hirschey, 2001, p.540). In fact, on a graph with  $R_i$  on the vertical axis versus  $R_m$  on the horizontal axis, if the market rises by 1% then this will merely refer to a single point on the graph and so there is no slope to be measured! To estimate beta one needs (at the very least) two data points. Each data point refers to rates of return over a time *interval*, say  $t$  to  $t+1$ . Hence to estimate the slope one needs measurement over at least two time intervals, say  $t$  to  $t+1$  and  $t+1$  to  $t+2$ , which implies knowledge of stock and index prices at *three* points in time. The incorrect explanation gives the impression that only two points in time are needed to understand beta.

The other form of the linear relationship deals with ‘excess returns’ i.e. the rate of return above and beyond that which is available from a risk-free investment such as lending to the government:

$$R_i - r_f = \alpha + \beta (R_m - r_f) \tag{2}$$

where  $r_f$  is the rate of return of the risk-free asset. An excess return is sometimes called a ‘risk premium’. The line associated with (2) is called the characteristic line for that investment.

If we re-plot our graph and replace the variables by *excess* rates of return, then each original point will have each of its coordinates reduced by  $r_f$ . However, this does not mean that all points will have been shifted by the same amount. This is because the risk-free rate is not always the same: when this rate changes, then subsequent data points will be shifted by a different amount. Consequently, estimates of beta from these two

equations will not be identical. According to Bodie et al (2002, p304) most commercial providers of beta data do not use the excess return form.

Bodie et al (2002, p304) most commercial providers of beta

**Standard beta estimation**

The standard textbook way of estimating beta uses ordinary least squares (OLS) regression with the left hand side of (1) or (2) as the dependent variable. The resulting slope can be expressed as

$$\beta = r_{i,m} / \sigma_m \tag{3}$$

where the  $\sigma$ 's are the standard deviations of the rates of return and  $r$  is the correlation between the rates of return. We shall refer to this as 'standard beta'. An equivalent formula is the ratio: (covariance between market and investment returns) / (variance of the market returns).

This method of estimation makes the important assumption that the independent variable (market return) does not have any error associated with it. If one is using a market index as a proxy for the market (as in the capital asset market model, CAPM) then there will be error present. This is called the errors in variables problem or benchmark error. Note that simply moving from an index such as the Dow Jones Industrial Average (only 30 stocks) to a broader index such as the S&P500 hardly dents this problem since the 'market' in CAPM refers to the universe of all investments, which includes foreign equities, bonds, land, property, gold, derivatives, foreign currencies etc. In fact, it was part of Roll's (1977) famous critique of CAPM that it was not a testable theory unless we know the exact composition of the market portfolio. Whilst there are estimation methods for dealing with measurement error in the independent variable, they require knowledge about the variance of the error – and this is simply not known. What can be said however is that the resulting betas would have a higher value than standard beta. This under-estimation is true for the usual case of positive values of beta; if beta were negative then the measurement error estimator would be even more negative. Thus, in general, the correction arising from the benchmark error will move the beta estimates further away from zero.

Let us suppose that we are not using the market index as a proxy and that we are quite content to relate our returns with those of our chosen index as benchmark. Regression

models minimize the sum of squared errors in the dependent variable only – this is because the purpose of regression is to fit a relationship for predicting the dependent variable (rate of return of the investment) for a stated value of the explanatory variable (the market rate of return). Statisticians might however be surprised to learn that betas are rarely used for such a purpose! It thus makes sense to survey the common uses of beta in finance and see if the least squares estimator is ever appropriate. We shall do this in the remainder of this paper and we will argue that the widely used least squares estimator is inappropriate.

**Beta used to apportion risk to the market**

In general, the linear relationship with the market returns (1) will not be perfect: most points will not lie on the line and so there is an error term (e) to consider:

$$R_i = \beta + \beta R_m + e \tag{4}$$

The term  $\beta R_m$  is supposed to represent the part of the return which is explained by market variations, and the error term accounts for non-market variations.

This seemingly plausible decomposition is very likely untrue - we need to be more careful: We have made a huge assumption in thinking that the relationship between  $R_i$  and  $R_m$  is a nice straight line. If a non-linear relationship were fitted the error term would no doubt be lower, this is quite simply because nonlinear relations are obviously more flexible and can get closer to the data. As a result of the better fit the variation attributed to the market would then be higher and the remaining 'non-market' variation lower. Hence the relative attribution ('sharing out the risk') into market risk and investment-specific risk is highly dependent on the functional form of the underlying model that is chosen.

But that is not the only problem with this apportionment. Let us play along for a while longer and assume the relationship with market rate of return is truly linear. The argument for decomposition of risk into market risk (also known as systematic risk) and investment-specific risk (unsystematic risk) runs as follows. Let 'var' denote variance, then assuming the terms on the right hand side of (4) are uncorrelated, we have:

$$\text{var}(R_i) = \text{var}(\beta) + \text{var}(\beta R_m) + \text{var}(e) \tag{5a}$$

we are then told that " $\beta$  and  $\beta R_m$  are constant" from which it follows that  $\text{var}(\beta) = 0$ , and

$$\text{var}(\beta R_m) = \beta^2 \text{var}(R_m)$$

hence

$$\begin{aligned} \text{var}(R_i) &= \beta^2 \text{var}(R_m) + \text{var}(e) \\ &= \text{market risk} + \text{investment-specific risk} \end{aligned} \tag{5b}$$

This shows beta's role in apportioning risk. "For very well diversified portfolios, non-systematic risk tends to go to zero and the only relevant risk is systematic risk measured by beta" (Elton et al 2003). Thus the term containing beta is also called the non-diversifiable risk.

The trouble with the above argument lies in the assumptions: the fact is that beta (and therefore alpha) are *not* constant – this effectively destroys the above derivation. (For example Hirschey (2001, p.546) shows that for Dow Jones stocks the correlation between current year betas and previous year betas is only 0.34. Chawla (2001) reviews the literature on beta stability and uses hypothesis tests to demonstrate instability.) If betas were constant then we could look them up for any particular stock in some *Eternal Beta Bible* knowing that the value we found would be true for all time. In fact, it is precisely because they are changing that there is a demand for 'beta books' which is catered to by data providers such as Value Line Investment Survey, Bloomberg, Standard and Poor's, Ibbotson Associates and the Risk Measurement Service of the London Business School. The literature tells us of a tendency for standard beta values to approach the value of unity over time. As a result there have been attempts to capture this tendency. These include Blume's beta (a weighted average of standard beta and one) and Vasicek's beta (a weighted average of standard beta and the average beta for a sample of stocks). Shalit and Yitzhaki (2002) discuss the instability of OLS estimators of beta, and blame the quadratic loss function which makes extreme observations have a magnified effect. They propose the use of a coefficient to represent the investor's risk aversion. Martin and Simin (2003) also focus on the effect of such outliers, and observe that the effect is particularly noticeable for small firms. They recommend using a weighted least squares estimator where the weights are determined by the data. Other models which specifically aim to capture the time-variation of beta have been developed, see Faff et al (2000) for a comparison.

Fabozzi and Francis (1978) investigated 700 stocks on the New York stock exchange and found that "many stocks' betas move randomly through time rather than remain stable as the ordinary least squares model presumes". They demonstrate that the partitioning of risk "will be confounded with the noise from the shifting beta. As a result it will not be possible to estimate empirically the separate effects of systematic and unsystematic risk... this particular implication undermines too many empirical studies to list here".

In conclusion, the fact that beta values change means that the standard apportioning of risk into market risk and diversifiable risk as derived above (5a, 5b) is flawed, because the derivation assumes a constant beta.

**Beta as relative volatility**

We shall now show that the standard interpretation of beta is not consistent with the formula used to estimate it. This is extremely important because many financial decisions are being made daily by analysts using this interpretation.

Volatility is measured in the financial context by the standard deviation of the rates of return, and is often used as a measure of risk. Hence, if we wish to compare the volatility of an investment's rates of return with the volatility of the market rates of return then one would expect to simply use the ratio

$$\sigma_i / \sigma_m = \text{relative volatility or volatility ratio} \tag{6}$$

Logical, yes, but disappointingly it is not this ratio, but rather formula (3) i.e. beta, that according to textbooks is supposed to give us the relative volatility: "Beta measures the volatility of a given asset relative to the volatility of the market" (Levy, 2002); "Beta measures how volatile a fund has been compared with a relevant benchmark" (Hirschey, 2001). Sharpe (the originator of this financial statistic) et al (1999, page 183), make the same interpretation: " Stocks with betas greater than one are more volatile than the market and are known as aggressive stocks. In contrast, stocks with betas less than one are less volatile than the market index and are known as defensive stocks". Yet, one look at equation (3) shows us that standard beta is not the same as relative volatility, (6). There is something inconsistent here. If an investment had the same risk (volatility,  $\sigma_i$ ) as the market then its volatility ratio would equal unity, but standard beta would not equal unity. Instead, its beta value would, from (3), equal its correlation with market returns, and hence would always be less than unity. Hence, the usual classification into aggressive and defensive stocks falls apart if one is using these terms to refer to relative volatility. The formula for standard beta (3), confounds (mixes together) relative volatility and correlation.

Therefore, a low beta could actually represent a high relative volatility that is being masked by a low correlation. Investors would then be mistaken in thinking that they had selected an investment whose volatility was low. For example take a look at Figure 1.

Figure 1 compares a monthly time series plot of AT&T's excess returns with those of the S&P500 Index over the same five-year period. From the graph, one can see that AT&T (telecom stock) is more volatile than the index. Yet the beta value for AT&T over this period is actually 0.75, and since this is less than unity this statistic gives the impression that this stock is less volatile than the index. One can understand how this arises when one is informed that the correlation is only about 0.32. One can now deduce the relative volatility (6) as  $\sigma/r = 0.75/0.32 = 2.34$ . This being in excess of one is in agreement with our intuition when looking at the graphs. On repeating the analysis with the 30 stocks making up the Dow Jones Industrial Average, one finds that half of them had standard betas less than unity. Since any index is essentially a weighted average of its components, basic statistics tells us that we would expect it to be less variable than its components (central limit theorem), not more so. It is strange that analysts accept unquestioningly claims that so many stocks are less volatile than the market as a whole.

Camp and Eubank (1985), observed that many investors do not hold well-diversified portfolios, and so for them market risk is an incomplete risk measure. So they suggested use of the ratio of standard deviations (6) – which they called 'beta quotient' – as a measure of risk. "Because beta fails to consider unsystematic/diversifiable risk... the authors propose a risk measure that takes into account total variation of return relative to overall market variation". "The return performance of a portfolio should be evaluated on the basis of its beta quotient instead of its beta, since it is bearing diversifiable risk in addition to its systematic or non-diversifiable risk".

### Beta in CAPM Model

The security market line is a linear relation that is fitted to data on average excess returns of a number of assets (dependent variable) and their standard beta values (explanatory variable). Since beta is here being used as a measure of risk, there is an expectation that higher beta stocks will have higher returns. The parameter values (slope and intercept) of this fitted line have been used to test the CAPM theory. A famous study by Fama and French (1992) showed that the slope was not significantly different from zero i.e. there was no positive association between return and standard beta. However there are other researchers who disagree with these findings. Roll and Ross (1992) claim that the choice of market index that is used to estimate beta can affect such conclusions. This is the errors-in-variables problem: since there is error in our measurement of the "market" return, this will affect the estimate of the slope (beta). OLS only assumes error in the dependent variable.

One can prove (e.g. see Elton et al, 2003, p358) that if the explanatory variable has a random error and even if the mean of the errors is zero, this will still lead to a slope estimate in the security market line which is too low (downward biased). This in turn implies that the estimate for the intercept will be too high.

It would therefore seem desirable to:

- (i) Estimate beta in a way that allowed for measurement error in the variable which is chosen as a proxy for market return, and
- (ii) Estimate the security market line in a way which allowed for error in the explanatory variable

### Alpha as a risk-adjusted performance measure

Betas often play a part in the construction of risk-adjusted measures of performance. These measures are subsequently used for ranking the desirability of investments. The idea is that if two investments have the same total returns, we should prefer the one that has been less volatile. One sometimes sees discussions in the financial press that mention a fund manager's alpha. This is not a part of their anatomy. It is used as a measure of performance that takes into account the level of risk (as measured by beta) that has been taken. To see this, take a look at equation (1): the return produced by an investment is split into two parts. One part ( $\square R_m$ ) shows the return attributable to market changes for the level of risk ( $\square$ ) taken on. The other term ( $\square$ ) is unrelated to market movements and is interpreted as being the return attributable to the fund manager's skill (or luck). Hence positive alpha is often used as a hallmark for investment talent. For a given set of data, the way we estimate  $\square$  will have an effect on the consequent value of  $\square$ : if we under-estimate beta, then we shall over-estimate alpha. If the arguments in the next section are to be believed then that is precisely what has been done in the past: beta (risk) has been underestimated, and consequently the skill of fund managers has been over-estimated. This is not something that applies uniformly to all investment managers i.e. their alpha scores will not merely be shifted such that their rankings stay unchanged, rather, the new alphas will rank managers in a different order.<sup>1</sup>

### AWAYHEAD

We have looked at various roles that beta has been given and found that the standard method of estimating beta has shortcomings. Let us return to the beginning and see if we can do things differently. We start with a set of points on our graph with investment rates of return on the y-axis and market rates of return on the x-axis. The following arguments are unaltered if excess rates of return are used. We want to plot a straight line and

estimate the slope of this line. Previously we used ordinary leastsquares (OLS) regression. But wait, there are two regression lines! The OLS line minimizes the sum of squared deviations in the y-direction. The reverse regression line minimizes in the x-direction. If our purpose is predicting y for a specified x-value, statisticians will advise use of OLS regression. If our purpose is to predict x for a specified y-value we are advised to use reverse regression. However none of the usual interpretations for beta that we have discussed includes either of these purposes. What we in fact require is the slope of the functional relationship between x and y. As Kendall and Stuart emphasise in their classic statistics text (1979, p 402): “A regression line does not purport to represent a functional relation between mathematical variables or a structural relation between random variables”. Many practitioners and researchers – even statisticians – often forget this; they inadvertently slip into thinking that their OLS model estimates the underlying relationship between variables. This probably arises because methods for fitting functional relations do not usually appear in current statistics textbooks, and so students are not aware of the fact that there are other ways of fitting lines to data.

One basic fact from statistical theory is that the slopes of the two least squares regression lines bracket the slope of the estimated functional line. This is to be expected since the ordinary regression line is estimated by minimizing all the variation in one direction and the reverse regression minimizes all the variation in the other. Booth and Smith (1985) therefore suggested using the two regression estimates as bounds on the true value.

We now have upper and lower limits for the slope but which value shall we settle upon? A sensible approach is to choose one that carries with it those roles that beta has been used for in the past that have not been put into question. Let us consider the relative volatility role (volatility relative to the market). We said earlier that a more logical estimator for this purpose would be the ratio of standard deviations (6). Since this is always positive we need to attach a sign. This will be given by the correlation; this ensures that we can also deal with downwards sloping characteristic lines. We now investigate this alternative estimator of beta, denoting it by  $\beta^*$ .

$$\beta^* = (\text{sign of } r) \sigma_i / \sigma_m \tag{7}$$

or the equivalent form which uses the standard deviations of the excess rates of return. The connection with the standard OLS beta is apparent from (3):

$$\beta \beta^* = r \tag{8}$$

Does this estimator lie between the two regression slopes as required? The reverse regression slope is given by  $\beta^2/r$ . (Incidentally, this shows how large the differences in regression estimates can be: a correlation of 0.71 implies that reverse regression has a slope twice as high as the standard regression!) Since  $\beta^*$  equates to  $\beta/r$  and since  $r$  lies between -1 and +1 it follows that our proposed estimator does satisfy the requirement of lying in between. For the usual case of positive correlation between market and the investment, we have the standard beta giving the lowest value and the reverse regression the highest, so we have:

$$\beta \leq \beta^* \leq \beta^2/r \tag{9}$$

The equalities hold only when there is perfect correlation in the data. This is as one would expect, as then all points lie exactly on a straight line and so there can be no disagreement on where the line should be.

Does this new slope estimator correspond to an established line fitting procedure? In fact it does: it is precisely the geometric mean functional relationship (Draper and Smith, 1998). Its name refers to the fact that the slope is the geometric mean of the slopes from the two least squares regressions: i.e. multiply those slopes and take the square root. This also implies that its value lies between the ordinary and reverse regression slopes. This line also passes through the centroid of the data i.e. the point whose coordinates are the mean values of the plotted variables. This is the only point which all three lines pass through.

Another point in favour of our estimator is its symmetric functional form. If we had only two data points we would estimate the slope as “(rise in y)/(rise in x)”; notice that this treats changes in the y-variable in the same way as changes in the x-variable. The volatility ratio, equation (6), maintains this symmetry in the treatment of the two variables. However the equation for standard beta (3) does not – one need only inspect the formula for correlation to see this.

Is this line optimal in any way? Yes it is, and what is more it is optimal in a way that involves both the vertical and horizontal deviations from the line. In fact it minimizes the sum of products of these deviations.

This is equivalent to saying that it is the line that minimizes the sum of the areas of the triangles made by the points and the line (see Figure 2). This was proved by Woolley (1941). From this it follows that the estimated relationship between the two variables will be the same irrespective of which variable is plotted on each axis i.e. there is symmetry of treatment: each variable is treated with equal importance. This is just how we would want to treat variables if we were aiming to discover an underlying relationship between them.

To compare values of the proposed estimator with standard beta refer to Table 1. Notice how, as well as the new values being higher, the relative risk rankings are also now quite different.

Draper and Smith (1998 p.92) have started to promote the use of this line in the latest edition of their book on regression, but are unaware that one can also establish relevant confidence intervals. Kermack and Haldane (1950) demonstrated that the formula for the variance of our estimator can be approximated by that for the OLS case,

i.e. the variance of the slope is

$$s^2 = \frac{1 - r^2}{n - 2} \quad (10) \text{ where } n \text{ is the number of data points.}$$

A confidence interval can be constructed in the usual way using the Student t-distribution:  $\beta^* \pm t s$

An exact form for the confidence interval due to Jolicoeur and Mosimann is given in Ricker (1984), namely:

$$\beta^* [(B+1)^{1/2} \pm B^{1/2}] \quad (11)$$

where  $B = t^2 (1 - r^2) / (n - 2)$ .

What can we say about the stability of the proposed beta estimator? Francis (1979) looked at stability from the point of view of the different parts of the formula for standard beta (see equation (3)). He found “explicit evidence pinpointing each stock’s correlation with the market as the most unstable statistic within beta”. His conclusion is that “the correlation with the market is the primary cause of changing betas... the standard deviations of individual assets are fairly stable”. This bodes very well for our estimator since it differs from standard beta in precisely not including the correlation between the investment and the market. Hence we expect it to be more stable overtime. As a small test we looked at stocks of NIFTY 50 calculating their standard betas for the period 2010-2015 and comparing them with those of 2015-2020. The absolute percentage change ranged from 1% to 90%, with a mean change of 22%. When this comparison was done using  $\beta^*$ , the change ranged from 0.2% to 42% with a mean change of only 10.7%. So we have some preliminary evidence that  $\beta^*$  is more stable in time.

**CONCLUSION**

A key message of this paper is that OLS regression lines are not intended to represent an underlying relationship between two variables. Sadly, this misconception is one that is widespread. Rather, regression lines are intended for predicting the value of a dependent variable for a given value of an explanatory variable. If you switch the variables in an OLS regression you produce a different line, and so you don’t have a unique relationship. This confusion between functional relationships and regressions can be traced back to Sharpe’s seminal 1964 paper. When speaking of a plot of the rate of return on an asset ( $R_i$ ) versus the rate of return on an efficient combination of assets (the market portfolio), he says (p.438): “Part of the scatter of  $R_i$  is due to an underlying relationship with the return on the combination, shown by B, the slope of the regression line”. [Our italics.]

In an effort at estimating a unique underlying relationship, we therefore proposed a fitting technique which treated both variables on an equal footing. The resulting line is variously referred to in statistics as the geometric mean functional relation or the reduced major axis. It is optimal in the sense that it is a ‘least area line’, see Figure 2.

The magnitude of its slope,  $\beta^*$ , is precisely the ratio of volatilities (standard deviations) and so we can now accurately refer to it as ‘relative volatility’. This slope value lies between the slope values arising from ordinary regression and reverse regression. The only difference between its calculation and that from OLS is that its formula does not contain the correlation. Since it is the correlation that has been found to be the main contributor to instability in betas (Francis, 1979) we expect that  $\beta^*$  will be more stable overtime, and indeed we gave some preliminary evidence for this.

Furthermore, the removal of the correlation from the formula brings clarity to what is being measured – there is no longer the confounding of two quantities: relative volatility and correlation. There is also a computational advantage in that it is easier to calculate the ratio of standard deviations than the OLS slope.

Our estimator is a measure of *total* risk and so it can be applied to all portfolios -whether they are diversified or not. A consequence of this, of course, is that it cannot play a part in splitting up risk into components (market risk and investment-specific risk). It must be stressed however that standard beta's claim to measure market risk is highly questionable – as we demonstrated the difficulty is primarily due to the instability of beta over time. Fabozzi and Francis, (1978) make this point most emphatically:

“After Markowitz and Sharpe suggested estimating the beta systematic risk coefficient for market assets, finance professors, stock brokers, investment managers, and others began expending large quantities of resources each year on estimating betas. Unfortunately however, it appears that the ordinary least squares regressions used in nearly every instance may be inappropriate”.

For any given data set the absolute value of our proposed estimator  $\beta^*$  will be higher than that of standard  $\beta$ . From this it follows that alpha values will be revised downwards (since the line will always pass through the centroid point - which can be viewed as a fixed point of rotation). An important implication is that if the new alpha is used to rate investment managers or funds then there will be fewer of them with the much sought after positive alpha.

Very importantly, the proposed estimator for beta finally allows for consistency between its standard interpretation (as relative volatility) and the formula used for its calculation. This gives an alternative, and we would argue a more logical classification of stocks as being either aggressive or defensive. One dread to think of the fortunes that have been invested on the basis that beta values were interpreted as meaning investments were less volatile than the market when in fact they were nothing of the sort.

#### **We End With A Few Wise Words of Advice:**

Before deciding what straight line to use, you must decide what you want it for. Do you wish to estimate (predict) one quantity from another, or do you want a descriptive trend line relating two sets of observations. (Ricker, 1984)

In the light of this we need to critically review past research as well as current decision-making which is based on inappropriate statistical analysis because:

OLS continues to be by far the most frequently used method even when it is obviously inappropriate. As a result, hundreds if not thousands of regression lines with too-small slopes are being published annually. (Riggs et al, 1978).

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**COVID 19 IMPACTS ON BUSINESS ACTIVITIES****Dr. Laxmi Sharma**

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**ABSTRACT**

*This study uncovers the impact of the coronavirus disease (COVID19) on the business performance, outlook, and regional supply chains of manufacturing and non-manufacturing firms in India. To address the aim, we conducted an extensive questionnaire survey via internet from November 2020 to February 2021 and received effective replies from 1,789 companies – comprising local firms, including large and small and medium-sized enterprises and multinational firms in all 11 countries. The results show vigorous private dynamism in the region. Firms' business performance during the pandemic was distributed widely from positive to negative, and the firms that were adaptive to the COVID-19 shock – in terms of quickly arranging their supply chains – were more likely to perform well and have a better outlook. Many firms restructured their supply chains to a certain extent in response to the COVID-19 shock. Furthermore, most of the supply chain adjustments are unlikely to be reversed. The COVID-19 outbreak resulted in a number of reduced transaction links in the regional supply chains, while it delivered almost the same number of expanding transaction links. A somewhat disappointing outcome was that the least selected supply chain measure in the wake of the COVID-19 outbreak was supply chain digitalisation, which should have been an accelerator of digital transformation in the regional economy.*

The coronavirus disease (COVID-19) pandemic has brought unprecedented challenges to India's regional economies. Lockdown measures, including closing businesses and work-from-home orders, disrupted the movement of goods and services in the region and forced firms to change their way of running their businesses. In addition, the uncertainty regarding the timing of the end of the pandemic has put pressure on the regions' economic activities. The impact of COVID-19 on the region is significant. According to the International Monetary Fund, the gross domestic product (GDP) growth rates of India in 2020 plummeted to -3.3% and -8.0% from 4.7% and 4.0% in the previous year (IMF, 2021a). Indian economies have experienced three types of economic shock caused by the COVID-19 pandemic. The first one is negative supply shocks to international production networks. As seen in the Great East Japan Earthquake case, direct damage in one place, including a reduction in production or closing businesses, causes indirect damage to companies in other places through supply chains. For instance, suppose company X's production is stopped in one country. In that case, its customer company Y's output production in another country that uses the parts produced by company X will also be stopped or decline. The impact will be even more significant if the parts are difficult to replace. Moreover, its supplier company Z's production will also jam because of the reduction in company X's demand. In January and February 2020, the AMS economies experienced and responded to a shortage of intermediate inputs originating in China (Kimura, 2020). At the beginning of the COVID-19 pandemic, the COVID-19 impact was negative supply shocks. The second one is negative demand shocks to the macro economy. A typical example is the global financial crisis shock in 2007–2009. The crisis started in the United States and spread to other advanced economies, followed by its negative impact on emerging economies (Kose, Otrok, and Prasad, 2012). The subprime mortgage problem affected the soundness of financial institutions, and governments had to bail out some financial institutions. The financial sector's vulnerability impacted the real economy through negative wealth effects (sharp drops in housing and stock prices), consumer confidence decreases, and a credit crunch. Moreover, small open economies faced decreases in demand for exports and difficulty in securing external funding (Brzoza-Brzezina and Makarski, 2011). These phenomena are considered as negative demand shocks on the macroeconomy. Regarding the case of COVID-19, even negative supply shocks caused by lockdown measures can bring a demand shortage, leading to recessions (Guerrieri et al., 2020). This demand shortage can be interpreted as negative demand shocks. 1 Additionally, even if an economy contains COVID-19 when other foreign economies struggle with the containment of the disease, the economy will suffer negative demand shocks for exports. COVID-19 spread globally in March 2020 and has continued suppressing economic activities in the world. As such, the AMS and Indian economies have experienced negative demand shocks since the global spread of COVID-19.

COVID-19 has heightened human suffering, undermined the economy, turned the lives of billions of people around the globe upside down, and significantly affected the health, economic, environmental and social domains. This study aims to provide a comprehensive analysis of the impact of the COVID-19 outbreak on the ecological domain, the energy sector, society and the economy and investigate the global preventive measures taken to reduce the transmission of COVID-19. This analysis unpacks the key responses to COVID-19, the efficacy of current initiatives, and summarises the lessons learnt as an update on the information available to

authorities, business and industry. This review found that a 72-hour delay in the collection and disposal of waste from infected households and quarantine facilities is crucial to controlling the spread of the virus. Broad sector by sector plans for socio-economic growth as well as a robust entrepreneurship-friendly economy is needed for the business to be sustainable at the peak of the pandemic. The socio-economic crisis has reshaped investment in energy and affected the energy sector significantly with most investment activity facing disruption due to mobility restrictions. Delays in energy projects are expected to create uncertainty in the years ahead. This report will benefit governments, leaders, energy firms and customers in addressing a pandemic-like situation in the future.

Coronavirus (COVID-19), a virus that grew stealthily has become one of the deadliest viruses that are killing people worldwide. This virus took birth in Wuhan city of China and since then have travelled to more than 160 countries. The World Health Organization (WHO) has declared Coronavirus as a pandemic. It has become a mass scare and is leading to the deaths of thousands of people in numerous countries including China, Italy, Iran, Spain, the US, and many more. In India, this pandemic started on 30 January 2020 by affecting an individual who had a travel history from Wuhan, China.

The spread of COVID-19 continues to threaten the public health situation severely (Chinazzi et al., 2020) and greatly affect the global economy. Labour displacement, business closures and stock crashes are just some of the impacts of this global lockdown during the pandemic. According to the International Monetary Fund (IMF), the effect of COVID-19 will result in a worldwide economic decline in 2020 and a decline in the economic growth to 3% COVID-19 has a detrimental impact on economic growth due to two primary factors. In the beginning, the exponential growth of the global epidemic directly contributed to considerable confusion about instability in the financial and capital markets. Secondly, countries have strictly regulated human movement and transport to monitor the growth of the epidemic and significantly reduced economic activity, putting pressure on both consumer and productive economic activity.

Since the 1970s, the link between economic growth and pollution has been an important global concern. The assessment of energy and financial efficiency is usually connected to environmental pollution research. Green practices at a national level, the inclusion of renewable energy, regulatory pressure and the sustainable use of natural resources are associated with environmental sustainability. One study has shown that environmental pollution increases with economic growth and vice versa). The strict control over movement and business activity due to COVID-19 has led to an economic downturn, which is in turn, expected to reduce environmental pollution. This paper systematically assesses how the novel coronavirus has had a global effect on society, the energy sector and the environment. This study presents data compiled from the literature, news sources and reports (from February 2020 to July 2020) on the management steps implemented across the globe to control and reduce the impact of COVID-19. The study will offer guidelines for nations to assess the overall impact of COVID-19 in their countries.

### **Impact of COVID-19 on the Socio-Economic Domain**

COVID-19 has created a global health crisis where countless people are dying, human suffering is spreading, and people's lives are being upended. It is not only just a health crisis but also a social and economic crisis, both of which are fundamental to sustainable development. On 11<sup>th</sup> March 2020, when WHO declared a global pandemic, 118,000 reported cases spanning 114 countries with over 4,000 fatalities had been reported. It took 67 days from the first reported case to reach 100,000 cases, 11 days for the second 100,000, and just four days for the third (United Nations Development Programme (UNDP), 2020). This has overwhelmed the health systems of even the richest countries with doctors being forced to make the painful decision of who lives and who dies. The COVID-19 pandemic has pushed the world into uncertainty and countries do not have a clear exit strategy in the absence of a vaccine. This pandemic has affected all segments of society. However, it is particularly damaging to vulnerable social groups, including people living in poverty, older persons, persons with disabilities, youths, indigenous people and ethnic minorities. People with no home or shelter such as refugees, migrants, or displaced persons will suffer disproportionately, both during the pandemic and in its aftermath. This might occur in multiple ways, such as experiencing limited movement, fewer employment opportunities, increased xenophobia, etc. The social crisis created by the COVID-19 pandemic may also increase inequality, discrimination and medium and long-term unemployment if not properly addressed by appropriate policies.

The protection measures taken to save lives are severely affecting economies all over the world. As discussed previously, the key protection measure adopted universally is the lockdown, which has forced people to work from home wherever possible. Workplace closures have disrupted supply chains and lowered productivity. In many instances, governments have closed borders to contain the spread. Other measures such as travel bans and

the prohibition of sporting events and other mass gatherings are also in place. In addition, measures such as discouraging the use of public transport and public spaces, for example, restaurants, shopping centres and public attractions are also in place in many parts of the world. The situation is particularly dire in hospitality-related sectors and the global travel industry, including airlines, cruise companies, casinos and hotels which are facing a reduction in business activity of more than 90% (Fernandes, 2020). The businesses that rely on social interactions like entertainment and tourism are suffering severely, and millions of people have lost their jobs. Layoffs, declines in personal income, and heightened uncertainty have made people spend less, triggering further business closures and job losses (Ghosh, 2020).

A key performance indicator of economic health is Gross Domestic Product (GDP), typically calculated on a quarterly or annual basis. IMF provides a GDP growth estimate per quarter based on global economic developments during the near and medium-term. According to its estimate, the global economy is projected to contract sharply by 3% in 2020, which is much worse than the 2008 global financial crisis (International Monetary Fund (IMF), 2020). The growth forecast was marked down by 6% in the April 2020 World Economic Outlook (WEO) compared to that of the October 2019 WEO and January 2020 WEO. Most economies in the advanced economy group are expected to contract in 2020, including the US, Japan, the UK, Germany, France, Italy and Spain by 5.9%, 5.4%, 6.5%, 7.0%, 7.2%, 9.1%, and 8.0% respectively. The effect of COVID-19 on the GDP of different countries around the globe. On the other hand, economies of emerging market and developing economies, excluding China, are projected to contract by only 1.0% in 2020. The economic recovery in 2021 will depend on the gradual rolling back of containment efforts in the latter part of 2020 that will restore consumer and investor confidence. According to the April 2020 WEO, the level of GDP at the end of 2021 in both advanced and emerging market and developing economies is expected to remain below the pre-virus baseline (January 2020 WEO Update). A particular example of a country hardest hit by COVID-19 is Italy. During the early days of March, the Italian government imposed quarantine orders in major cities that locked down more than seventeen million people. The mobility index data by Google for Italy shows there has been a significant reduction in mobility (and therefore economic activity) across various facets of life. The reported decline of mobility in retail and recreation, grocery and pharmacy, transit stations and workplaces were 35%, 11%, 45% and 34% respectively. The Italian economy suffered great financial damage from the pandemic. The tourism, and hospitality sectors were among those most severely affected by foreign countries prohibiting travel to and from Italy, and by the government's national lockdowns in early March. A March 2020 study in Italy showed that about 99% of the companies in the housing and utility sector said the epidemic had affected their industry. In addition, transport and storage was the second most affected sector. Around 83% of companies operating in this sector said that their activities had been affected by the coronavirus pandemic. In April 2020, Italian Minister Roberto Gualtieri estimated a 6% reduction in the GDP for the year 2020. The government of Italy stopped all unnecessary companies, industries and economic activities on 21<sup>st</sup> March 2020. Therefore The Economist estimates a 7% fall in GDP in 2020. The Economist predicted that the Italian debt-to-GDP ratio would grow from 130% to 180% by the end of 2020 and it is also assumed that Italy will have difficulty repaying its debt.

**Impact on India's GDP-**The world economy is seeing its greatest fall ever. Coronavirus has largely impacted the growth of almost every country and is responsible for the slump in GDP worldwide. Like other countries, India is also impacted by this virus but not largely. Almost every industry sector has seen a fall in their sales and revenue. India's GDP growth has fallen to 4.7% in the third quarter of 2020.

**Efforts from CII and Govt. of India-** Confederation of Indian Industry (CII) has suggested the RBI reduce repo rate up to 50 basis points and also asked for a reduction of 50 basis points on the cash reserve ratio. The government is planning to set up an amount to support to overcome the crisis during this phase of shut down, cash flow difficulty, and working capital issues.

**Inflation and Affected Industry-** China is one of the largest exporters of many raw materials to India. Shutting down of factories has damaged the supply chain resulting in a drastic surge in the prices of raw materials. Some of the other products that have seen a rise in their prices are gold, masks, sanitizers, smartphones, medicines, consumer durables, etc. The aviation sector and automobile companies are the hardest hit among the rest. With no airplane landings or take-offs globally and restricted travel has brought the aviation and travel industry to a halt.

**Slump in Share market-** Share markets that include Sensex and Nifty are on nose dive since the occurrence of this pandemic (COVID-19). Sensex has declined close to 8000 points in a month. As of 12 March 2020, share market investors have lost approximately Rs. 33 lakh crore rupees in a month. This could be the beginning of a recession that the Indian market will never want to witness. Investors are advised to stay safe and invested in

this virus-infected stock market. Few industries that can benefit from novel coronavirus during the time of the market crash are pharmaceuticals, healthcare, and Fast Moving Consumer Goods (FMCG).

**Cash flow Issue** -Due to this outbreak, almost 80% of Indian companies have witnessed cash flow difficulty and over 50% of companies are facing operations issues. As per the Federation of Indian Chambers of Commerce and Industry (FICCI), 53% of companies are impacted by COVID-19. Slow economic activity is resulting in cash flow problems eventually impacting repayments, interest, taxes, etc.

**Steps and measures by the Government of India-** To avoid the large impact of this outbreak, India has taken some measures that include corporate tax cuts, increased moratorium period, fiscal stimulus up to Rs. 2 lakh crore to needy people through their Aadhar based benefit transfer. Presently, the best option for investors is to invest in mutual funds or Systematic Investment Plans (SIPs). With the help of SIPs, people can invest a fixed amount every month in various mutual funds schemes available in today's financial market. The government of India started taking measures from the start of this pandemic. Some of the key measures taken by the Government include:

- Orders of self-isolation or self-quarantine
- Travel restrictions
- Sanitizing on a large scale
- Disabling group gatherings
- Closing inter-state borders
- Screening at domestic and international airports
- Banning entry of foreigners
- Denial of any form of Visas to any country
- Helping in the recovery of several positive cases
- Increasing the number of testing centers
- Lock-down of cities, districts, and even states
- Shutting down schools, colleges, temples, malls, shopping centers, local bazaars, gymnasiums, cinema halls, and various facilities of public gatherings
- Providing work-from-home options for employees and much more.

As of now, there is no light at the end of the tunnel and people are facing hard times. Indian economy is not highly impacted, as compared to economies of nations like China, Spain, Italy, Iran, or the USA. As India started taking early precautionary measures to prevent the spread of coronavirus. The financial year 2019-2020 is about to end and during this phase, the Indian economy is facing testing times in which instant or fast recovery is not possible by any means. To overcome this financial crunch situation or to reduce their loss, entrepreneurs as per their requirements.

However, with people's persistent patience, will and determination can fight back and win over COVID-19 disease. Every individual on this planet has to stand and fight against this pandemic. People need to remove coronavirus from its roots and start to rebuild the Indian economy from the point it will fall. RBI announces Rs. 50,000 crore funding support to fight COVID. May 2021: RBI Governor, Shaktikanta Das introduced new measures to tackle the second wave of COVID-19 in India. The Governor announced on-tap liquidity funding of Rs 50,000 crore, as a credit facility to be offered to banks, NBFCs, and other lending institutions. This funding support is in the form of incentivized loan schemes that shall be offered to the enterprises engaged in the healthcare, manufacturing, and logistics sectors. Vaccine manufacturers, hospitals, medical equipment makers, as well as patients shall be offered loan schemes by the private and public sector banks, NBFCs, Micro Finance Institutions (MFIs), and Small Finance Banks (SFBs).

Overall, this research reaffirms the dynamism of corporate firms in India – even in facing this devastating pandemic. Vigorous entrepreneurship and diligent workers have always been at the core of our rapid and inclusive economic growth. To move ahead, we must become more innovative. COVID-19 provides an opportunity for our region to engage in a new phase of economic development.

In this Paper, comprehensive analyses of energy, environmental pollution, and socio-economic impacts in the context of health emergency events and the global responses to mitigate the effects of these events have been provided. COVID-19 is a worldwide pandemic that puts a stop to economic activity and poses a severe risk to overall wellbeing. The global socio-economic impact of COVID-19 includes higher unemployment and poverty rates, lower oil prices, altered education sectors, changes in the nature of work, lower GDPs and heightened risks to health care workers. Thus, social preparedness, as a collaboration between leaders, health care workers and researchers to foster meaningful partnerships and devise strategies to achieve socio-economic prosperity, is required to tackle future pandemic-like situations. The impact on the energy sector includes increased residential energy demand due to a reduction in mobility and a change in the nature of work. Lockdowns across the globe have restricted movement and have placed people primarily at home, which has, in turn, decreased industrial and commercial energy demand as well as waste generation. This reduction in demand has resulted in substantial decreases in NO<sub>2</sub>, PM, and environmental noise emissions and as a consequence, a significant reduction in environmental pollution. Sustainable urban management that takes into account the positive benefits of ecological balance is vital to the decrease of viral infections and other diseases. Policies that promote sustainable development, ensuring cities can enforce recommended measures like social distancing and self-isolation will bring an overall benefit very quickly. The first generation of COVID-19 vaccines is expected to gain approval by the end of 2020 or in early 2021, which will provide immunity to the population. It is necessary to establish preventive epidemiological models to detect the occurrence of viruses like COVID-19 in advance. In addition, governments, policymakers, and stakeholders around the world need to take necessary steps, such as ensuring healthcare services for all citizens, supporting those who are working in frontline services and suffering significant financial impacts, ensuring social distancing, and focussing on building a sustainable future. It is also recommended that more investment is required in research and development to overcome this pandemic and prevent any similar crisis in the future.

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**ARTIFICIAL INTELLIGENCE IN HUMAN RESOURCE MANAGEMENT: USES, IMPACTS & CHALLENGES**

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*Artificial intelligence is a youthful discipline of sixty years, which is a bunch of sciences, hypotheses and strategies (counting numerical rationale, insights, probabilities, computational neurobiology, and software engineering) that intends to copy the mental capacities of a person.*

*Artificial Intelligence & HRM is focused on the workplace ecology created by two species, humans and AI. Ironically, in the present HRM models, humans are dehumanised and AI is anthropomorphised. Anthropomorphised AI looks more humanlike; it is capable of both "agency", the ability to think, and "experience", the ability to feel. Recently, AI deployment at work-particularly in HRM-has attracted tremendous interest from strategic leaders and executives.*

*The pervasiveness of AI integration is re-shaping organisations and broadening the outreach of management to understand the development and deployment of AI from mechanical AI to cognitive AI systems. Artificial intelligence permits HR divisions to work on the applicant or worker encounters via robotizing tedious, low-esteem assignments and saving chance to zero in on the key, imaginative work that HR groups require and want. Some of the roles that artificial intelligence can perform for human resources are perceiving worker references, Expanding the adequacy of learning and improvement programs, utilizing labour force examination as a wellspring of data, Recruitment and on-boarding;, Internal and retention, Computerization of managerial undertakings, Talent acquisition and recruitment, Orientation of more up to date selects, Training the recruits, Enhancement of worker experience etc.*

*There are many challenges in the uses of AI in HRM like many individuals who trust that in the event that AI is taken on, they might lose the employment. Along with the Absence of worker abilities, Budget limitation, Talent gap, Privacy, Continuous support, Integration capabilities, Information challenges for HR activities & Fairness & legal constraints employee reaction to AI management.*

**INTRODUCTION**

Artificial intelligence is the capacity of machines to play out specific undertakings, which need the insight exhibited by people and creatures. It permits machines to comprehend and accomplish explicit objectives.

Artificial intelligence frameworks work by consolidating huge with astute, iterative handling calculations. This blend permits AI to gain from examples and highlights in the broke down information. Each time a man-made brainpower framework plays out a series of information handling, it tests and measures its exhibition and utilizations the outcomes to foster extra mastery.

In the cutthroat world Industries, collet the precise information and broke down the gathered information for the utilization of organizations development and everyday working is fundamental. Artificial intelligence assists the business with working in quicker way and effective manner to finish the work. Artificial intelligence is going into different office like human resource division, finance department, marketing and production department. With utilizing AI framework organization can ready to illuminate the current exhibition and everyday capacities.

Artificial intelligence advancements offer huge chances to further develop association's HR functions like enrolment, finance, and self-help exchanges, access arrangements and systems. Learning Machines and people are cooperating to make tremendous measure of HR information in the cloud and execution of artificial intelligence give better understanding into how to work and execute. The development of any association relies upon how productively it blends labour, strategies and hardware brilliantly to bring ground-breaking worth at least expense. In the present worldwide economy in the event that organization wishes to stay cutthroat, they need to run over at ways of teaming up AI and HR exchanges in their dynamic interaction. Organization should sure on AI to perform managerial obligations to turn out to be more compelling. Numerous HR experts can't comprehend that AI has abilities and interesting traits to reclassify HR and can give it better importance.

**Artificial Intelligence: Background:**

Artificial intelligence is a youthful discipline of sixty years, which is a bunch of sciences, hypotheses and strategies (counting numerical rationale, insights, probabilities, computational neurobiology, and software engineering) that intends to copy the mental capacities of a person. Started in the breath of the Second World War, its advancements are personally connected to those of registering and have driven PCs to perform progressively complex errands, which could beforehand just be designated to a human.

Notwithstanding, this computerization stays a long way from human knowledge in the severe sense, which makes the name open to analysis by certain specialists. A definitive phase of their exploration is by no means similar to current accomplishments. The "solid" AI, which has just yet emerged in sci-fi, would require propels in fundamental exploration to have the option to show the world overall.

Simulated intelligence was a term initially instituted at Dartmouth College in 1956. Mental researcher Marvin Minsky was hopeful with regards to the innovation's future. The 1974-1980 saw government subsidizing in the field drop, a period known as "Man-made intelligence winter", when a few reprimanded progress in the field.

In any case, the enthusiasm was resuscitated a short time later during the 1980s when the British government began subsidizing the innovation once more, particularly on the grounds that they were stressed over rivalry with the Japanese. In 1997, IBM's dark blue started the main PC to beat a Russian grandmaster, impacting the world forever.

Here is a concise course of events of the beyond sixty years of how simulated intelligence advanced from its commencement.

**Development of Artificial Intelligence (1943-1952)**

The primary work which is presently perceived as AI was finished by Warren McCulloch and Walter Pitts in 1943. They proposed a model of fake neurons. Donald Hebb showed a refreshing guideline for adjusting the association strength between neurons. His standard is currently called Hebbian learning. The Alan Turing who was an English mathematician and spearheaded Machine learning in 1950. Alan Turing distributes "Processing Machinery and Intelligence" in which he proposed a test. The test can actually look at the machine's capacity to show wise conduct comparable to human knowledge, called a Turing test.

**The introduction of Artificial Intelligence (1952-1956)**

Allen Newell and Herbert A. Simon made the "principal man-made consciousness program" which was named as "Rationale Theorist". This program had demonstrated 38 of 52 Mathematics hypotheses, and track down new and more exquisite verifications for certain hypotheses.

"Computerized reasoning" first embraced by American Computer researcher John McCarthy at the Dartmouth Conference. Interestingly, AI instituted as a scholastic field.

Around then undeniable level codings like FORTRAN, LISP, or COBOL were developed. Furthermore, the excitement for AI was exceptionally high around then.

**The brilliant years-Early excitement (1956-1974)**

The specialists stressed creating calculations which can take care of numerical issues. Joseph Weizenbaum made the first chatbot in 1966, which was named as ELIZA.

The principal keen humanoid robot was inherent Japan which was named as WABOT

**The main AI winter (1974-1980)**

The length between years 1974 to 1980 was the main AI winter span. Simulated intelligence winter alludes to the time span where PC researcher managed a serious lack of financing from government for AI investigates.

During AI winters, an interest of exposure on computerized reasoning was diminished.

**A blast of AI (1980-1987)**

After AI winter term, AI returned with "Master System". Master frameworks were customized that imitate the dynamic capacity of a human master. In the Year 1980, the primary public gathering of the American Association of Artificial Intelligence was held at Stanford University.

**The subsequent AI winter (1987-1993)**

The term between the years 1987 to 1993 was the subsequent AI Winter length.

Again Investors and government halted in financing for AI research as because of significant expense yet not effective outcome. The master framework, for example, XCON was extremely practical.

**The development of intelligent agents (1993-2011)**

In the year 1997, IBM Deep Blue beats world chess champion, Gary Kasparov, and turned into the principal PC to beat a world chess champion. In the year 2002, interestingly, AI entered the home as Roomba, a vacuum more clean. In the year 2006, AI came in the Business world till the year 2006. Organizations like Facebook, Twitter, and Netflix likewise began utilizing AI. Profound learning, huge information and fake general insight (2011-present)

In the year 2011, IBM's Watson won risk, a test show, where it needed to settle the intricate inquiries as well as conundrums. Watson had demonstrated that it could get normal language and can settle interesting inquiries rapidly. In the year 2012, Google has sent off an Android application highlight "Google now", which had the option to give data to the client as a forecast.

In the year 2014, Chatbot "Eugene Goostman" won a contest in the notorious "Turing test."and in the year 2018,the "Task Debater" from IBM bantered on complex points with two expert debaters and furthermore performed incredibly well.

Google has exhibited an AI program "Duplex" which was a menial helper and which had taken stylist arrangement ready to come in case of an emergency, and woman on opposite side didn't see that she was conversing with the machine.

Presently AI has created to a surprising level. The idea of Deep learning, huge information, and information science are currently moving like a blast. These days organizations like Google, Facebook, IBM, and Amazon are working with AI and making astonishing gadgets. The eventual fate of Artificial Intelligence is motivating and will accompany high knowledge.

**Artificial Intelligence (AI) and Human Resource Management Practices:**

(HR) is one of the quintessential pieces of any organization as it is straightforwardly subsidiary with the existences of the representatives working under the organization. The representatives need to have a very much imparted and sound workplace for them to be effective and useful.

The job of HR is to ensure each worker is having a solid sense of security and getting the necessary assistance, and give them space to inventiveness, knowledge, and compassion to offer magnificent work.

Man-made consciousness, which is one of the most exceptional and developing advances today, has helped a great deal in further developing the HR office. Computer based intelligence robotizes and finishes most of low-esteem HR undertakings with the goal that more consideration might be centered around the essential extent of work.

HR is tied in with drawing in organizations with existing and likely specialists on an individual level. This should be made conceivable by utilizing versatile computer based intelligence innovation in the HR branches of associations for an enormous scope. Simulated intelligence can be incorporated into the worker life cycle from enrolment and on boarding to giving an actually fitting work insight through HR administration conveyance.

Numerous organizations have put resources into AI to assist them with evaluating a candidate's previous professional training and inclinations and adjust them to open places that are unmistakably fit for them while they focus on the up-and-comer experience for their enlistment tasks.

Artificial intelligence permits HR divisions to work on the applicant or worker encounters via robotizing tedious, low-esteem assignments and saving chance to zero in on the key, imaginative work that HR groups require and want. Rather than investing energy regulating each progression of the new worker on boarding process, those means can be insightfully robotized.

Artificial intelligence can possibly change representative encounters in an assortment of ways, from enrolling to ability the executives, by handling monstrous measures of information rapidly and precisely.

Artificial intelligence uses pre-modified calculations to settle on constant choices, as well as intelligible processing draws near. Computerized reasoning will affect the HR office.

Organizations will encounter an updated and advanced condition for their candidates and labourers because of the panoptic human part of HR joined with the insight of innovation. Not exclusively will that, however AI in HR additionally add to the advancement of the benefit of creating better and quicker results.

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The following are some of the practices that artificial intelligence can perform for human resources

**1. Perceiving Worker References:**

Artificial intelligence is permitting HR groups to acquire a more prominent comprehension of representative references by analysing the kinds of applicants that workers are alluding and realizing who alludes the most dynamic up-and-comers. Whenever AI examinations execution information from past references, it might recognize candidates that are near fruitful workers.

Via robotizing standard, low-esteem exercises and saving opportunity to focus on the vital, imaginative work that HR groups need and need to do, AI permits HR divisions to upgrade the candidate and representative experience.

**2. Expanding The Adequacy Of Learning And Improvement Programs:**

Learning and Development (L&D) includes preparing staff for new places that will unavoidably request more human ranges of abilities, as well as showing AI abilities and computerized adroitness. Artificial intelligence is a distinct advantage in the arising universe of limit deficiencies and upgrade. Through conversational examination, Artificial intelligence is aiding the formation of customized learning ways; at last prompting new skylines in L&D. HR supervisors ought to perform expertise whole examinations and timetable advanced preparation potential open doors as needs be. Directors and representatives can utilize conversational man-made intelligence to monitor such preparation.

**3. Utilizing Labour Force Examination As A Wellspring Of Data:**

Labour force examination and arranging are turning out to be progressively famous among organizations. Simulated intelligence and AI are turning out to be more unmistakable in these labour force examination applications. Artificial intelligence in HR will assist administrators with addressing difficulties and settle on better choices that impact representative and authoritative execution

**4. Recruitment And On-Boarding:**

Artificial intelligence can smooth out application processes by planning more easy to use shapes that a task candidate is bound to finish, successfully lessening the quantity of deserted applications. AI assumes a significant part in competitor rediscovery by keeping an information base of past applicants. AI innovation can examine the current pool of candidates and distinguish those that would be ideal for new jobs as they open up rather than consuming time and assets looking for new talent. AI can be utilized to recognize qualified workers more rapidly and effectively than any other time in recent memory before. Artificial intelligence permits on-loading up or fresh recruits to use HR support whenever of day and in any area using Chabot's and remote help applications. This change not just furnishes workers with the capacity to go through the on-boarding process at their own speed, yet in addition diminishes the managerial weight and commonly results in quicker integration. AI is utilized right now in rating and positioning profiles in light of profile photograph, feature, vocation even-handed, synopsis, watchwords, schooling, experience. AI is at present utilized in voice controlled ability innovation answers for interfacing, screening, planning and on boarding applicants by means of conversational calls and informing.

**5. Internal And Retention:**

HR office can use AI to help inward portability and worker maintenance through customized criticism reviews and representative acknowledgment frameworks, can check worker commitment and occupation fulfilment more precisely today than any time in recent memory before. AI is unimaginably valuable in understanding the general necessities of workers, but there are a few vital hierarchical advantages to having this data, as well. AI programming can assess key marks of worker achievement to distinguish those that ought to be advanced, consequently driving inside versatility.

**6. Computerization Of Managerial Undertakings:**

Computerizing low worth, effectively repeatable authoritative assignments gives HR experts more opportunity to add to vital preparation at the hierarchical level. Brilliant innovations can computerize cycles like the organization of advantages, pre-screening competitors, planning meetings, from there, the sky is the limit.

The branch of HR assumes a dreary part in the enlistment and preparing of representatives. To reduce the manual weight of individuals working under HR, man-made brainpower offers a ton of applications like:

**7. Talent Acquisition And Recruitment:**

Ability securing is a vital assignment of the HR office as getting skilled people under the gathering will prompt the likely development of the organization. The most noticeable utilization of computerized reasoning in HR might be found in ability procurement.

From screening candidates to keeping up with data sets, orchestrating interviews, and tending to and settling challenger questions, AI diminishes the time and exertion expected to finish these and other exhausting exercises.

It altogether lessens the employing system and time, permitting the HR group to zero in on more fundamental errands like obtaining, staff the executives, enlistment promoting, and other useful exercises.

The AI-helped enrolment will support the determination of an up-and-comer that meets most of the organization's guidelines. Accordingly, the screening system is straightforward, speedy, and meriting.

The applicants with higher potential are followed and imparted through Chabot's. These programmed Chabot's handle the recently enlisted representatives and dole out them occupations and positions according to their work profile. It will pick the best and most meriting person who precisely matches the expected set of responsibilities. Subsequently, the best up-and-comers will be reserved for work interviews.

### **8. Orientation Of More Up To Date Selects:**

On the primary day in the wake of selecting qualified people, man-made intelligence based united frameworks will show recently enlisted representatives to corporate information and rules.

New specialists will get all fundamental data, for example, work profile information, business guidelines, task tasks, colleague data, etc., through a versatile application or organized data on their PC. On boarding is the term for this methodology.

On boarding is a basic advance for further developing the HR group's memorable ability and effectively. Applicants that go through an efficient and enlightening on boarding process are bound to remain with the firm over the long haul. There are a great deal of inquiries that may be posed by the enlisted people, and the AI for HR answers every one of them so the representatives don't need to do that physically.

Artificial intelligence in HR permits systems to be altered to require labourers and their related jobs to be isolated. Man-made intelligence additionally monitors all the significant contact subtleties of the organization and other significant errands like confirmation of authoritative records, and so forth.

### **9. Training The Recruits:**

Workers will actually want to study and show themselves fitting jobs and needs utilizing AI advancement administrations. It will likewise help them in remaining current by giving data on current advances and programming headways in the business. By assessing the papers and tests, the AI will consequently understand and relegate fitting preparation to the representative.

Important range of abilities data will be given in view of their set of working responsibilities for further developed development. Simulated intelligence in HR innovation might assess information and alarm the HR group to the workers' preparation needs. This cunning strategy will improve workers' efficiency and cerebrums, as well as show them all the more rapidly and actually. They can instruct specific projects and showing abilities with the goal that workers can self-learn and execute as per the requests of the organization.

### **10. Enhancement Of Worker Experience:**

Representatives expect an accommodating and useful experience when they join modified commitment due to the serious level of robotization and a major spotlight on client experience encompassing the climate.

Representative encounters are being moulded by purchaser innovation nowadays, and they are looking for options for how they need to be locked in and upheld.

Man-made intelligence might be productively coordinated across the representative lifecycle, from enlisting and on boarding through HR administration conveyance and profession pathing, bringing about a customized worker experience.

HR divisions could now assess representative commitment and occupation fulfilment more exactly than any time in recent memory with custom fitted input polls and worker acknowledgment programs.

This is particularly valuable given that it is so fundamental to comprehend representatives' overall prerequisites; however there are likewise various critical authoritative advantages to having this information.

### **11. On Boarding Process:**

Artificial intelligence incorporated HR programming will improve on the on boarding process for the fresh recruits. On boarding assumes a urgent part in lessening whittling down and improving HR efficiency. Man-

made reasoning aides HR groups customize their on boarding cycle to take care of every representative as per their position. Associations can characterize and set the calculation in view of their plan.

- Plan and put together the induction program.
- Shares applicable contact data
- Confirms archives and structures filled.
- Award and confine gadget solicitations from there, the sky is the limit.

### **12. Analytical Decision Making**

Artificial intelligence assists associations with settling on information driven choices. Information driven choices will assist with thriving the association's development. The HR office is answerable for the general prosperity of representatives separated from their work inputs. Reconciliation of AI will assist with understanding the state of mind of the representative. Then, at that point, the group can choose if they need a break or no. It likewise measures the uneasiness through the representative's voice so the HR group can take things in charge with impeccable timing.

### **13. Business HR Leaders**

As examined above, AI is a progressive innovation that supports representative efficiency. It helps HR pioneers to perform and dominate in their work. Artificial intelligence empowers the HR group to accumulate input with regards to the pioneers. Contingent upon the inputs, pioneers can settle on choices to alter their point of view.

The pioneers can without much of a stretch access the information and analyze the group execution. It assists the group with measuring their techniques and choose the areas of progress.

### **14. Administrative tasks:**

HR programming with man-made reasoning installed in it will mechanize numerous unremarkable and authoritative errands. It assumes an essential part in methodologies, worker commitment, and consistence with organization strategies, finance the executives, and some more. Computer based intelligence mechanizes and accelerates a great deal of authoritative assignments.

Artificial intelligence helps associations HR to make an essential move. The HR office doesn't need to coddle the workers with the data they need. Artificial intelligence Chabot's can deal with every one of the inquiries of the worker and give a suitable answer for them.

All the organization costs and buys get refreshed on the HR programming. Artificial intelligence assists the group with concluding whether or not the consumption is vital. It assists with eliminating superfluous costs.

### **MAJOR CHALLENGES:**

There are not many individuals who trust that in the event that AI is taken on, they might lose the employment. Certain individuals think about AI as a significant danger to humankind assuming advancement keeps on dismissing the dangers related with AI. While embracing AI in HRM rehearses, associations will confront inner and outer difficulties. The greatest danger to adjust the AI is the anxiety toward losing the employment. Obviously AI sets off a gigantic shift from physical to specialized exertion and in this manner gets such a terrible name in assuming control over crafted by individuals. Much of the time, individuals accept AI can completely supplant human association.

Organizations will confront difficulties to adjust AI in HRM rehearses from inward and outside sources. For adjusting AI in HRM rehearses the absolute first difficulties, association face is monetary compel. The following interior test is to persuade worker the significance of AI and its advantages to adjust. Internal challenge is to decrease the employment cutback dread from workers and the last internal challenge is nonstop preparation offices. Artificial intelligence preparing is a constant cycle; thus association needs to keep up with nonstop preparation offices. Be that as it may, the variation of AI may likewise confront external challenges like information back-up issues, assuming taking help from the outsider of different nations, the association will likewise confront difficulties to safeguard hacking and guaranteeing information security

Artificial intelligence isn't yet worldwide piece of the HRM nevertheless a few administrators are not satisfactory with the AI technology. HR is one of the areas of business where AI execution is slacking. Others challenges are:

- ✓ Absence of worker abilities

- ✓ Budget limitation
- ✓ Talent gap
- ✓ Privacy
- ✓ Continuous support
- ✓ Integration capabilities
- ✓ Restricted demonstrated applications
- ✓ Variation of new innovation
- ✓ Absence of trust
- ✓ Monetary obstruction
- ✓ Improving retention & integral mobility
- ✓ Recruiting& maintenance estimating profit from venture
- ✓ Biases in HR direction
- ✓ Complexity of HR phenomena
- ✓ Information challenges for HR activities
- ✓ Fairness & legal constraints employee reaction to AI management.

**WAY FORWARD:**

The major future areas of concern may be as follows.

**➤ More Noteworthy Cloud And AI Cooperation**

Man-made brainpower will assume a huge part in the expansive reception of cloud arrangements, through the arrangement of man-made brainpower, it will be feasible to screen and oversee cloud assets and the huge measure of accessible information.

**➤ Artificial Intelligence Will Help In Organizing Information**

More unstructured information is organized with regular language handling and AI processes. Associations will use these advances and make information that RPA or Robotic Process Automation innovation can involve when they need to mechanize conditional action in an association. RPA is one of the quickest developing regions in the product business. The main restriction that it faces is that it can utilize organized information. With the assistance of AI, unstructured information can without much of a stretch be changed over into organized information, which can give a characterized yield.

**➤ Perceiving Worker References**

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**➤ Utilizing Labour Force Examination As A Wellspring Of Data**

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On boarding is a basic advance for further developing the HR group's memorable ability and effectively. Applicants that go through an efficient and enlightening on boarding process are bound to remain with the firm over the long haul. There are a great deal of inquiries that may be posed by the enlisted people, and the AI for HR answers every one of them so the representatives don't need to do that physically.

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Representative encounters are being moulded by purchaser innovation nowadays, and they are looking for options for how they need to be locked in and upheld.

Man-made intelligence might be productively coordinated across the representative lifecycle, from enlisting and on boarding through HR administration conveyance and profession pathing, bringing about a customized worker experience.

HR divisions could now assess representative commitment and occupation fulfilment more exactly than any time in recent memory with custom fitted input polls and worker acknowledgment programs.

This is particularly valuable given that it is so fundamental to comprehend representatives' overall prerequisites, however there are likewise various critical authoritative advantages to having this information.

**➤ LEADERSHIP**

Since AI will help and foster students, it will likewise work on the functioning strategies of mentors and venture pioneers in a firm. The AI will assess the design of the pioneer's attributes by posing inquiries of the individuals from their different groups and will give them the abilities they need or the qualities they need to adjust.

Second, by checking out the dashboard, pioneers might dissect themselves and upgrade their ranges of abilities following the requests of the work environment.

Artificial intelligence in HR permits systems to be altered to require labourers and their related jobs to be isolated. Man-made intelligence additionally monitors all the significant contact subtleties of the organization and other significant errands like confirmation of authoritative records, and so forth

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**DESIGN AND IMPLEMENTATION OF HEALTHIT - AN APPLICATION FOR PRIMARY HEALTHCARE SERVICES****<sup>1</sup>Dr. Menal Dahiya and <sup>2</sup>Komal**<sup>1</sup>Associate Professor and <sup>2</sup>Student, Maharaja Surajmal Institute, Janakpuri, New Delhi**ABSTRACT**

*Healthit is a healthcare application developed with the aim to provide detailed information to its users about a health issue or disease along with the basic information of the illness and also the various methods which can be followed to improve their health. The methods include practice of Yoga asanas, medication prescribed by medical professionals and also the food supplements that can benefit the user in improving their condition.*

*It is an android mobile application that involves various features to keep the user updated on the new researches that are being carried out in the medical field and the health-related news around the world. It also presents the atmospheric condition around the user by taking information from the database used (firebase).*

*The application has been developed using Java and XML. Both the languages are user friendly and consist of a suitable algorithm for the development of an interactive application.*

*The features added are based on an online survey consisting of people of different age groups based on their requirements and expectations from a healthcare application.*

*Keywords: Healthcare; Health Monitoring; Mobile Computing; Mobile Application;Java;Firebase; Online Survey.*

**1. INTRODUCTION**

Mobile Health Care is the integration of mobile computing and health monitoring. It is the application of mobile computing technologies for improving communication between the patients, doctors and health care workers. And now that mobile devices have become an inseparable part of our lives, it is easier to integrate healthcare to our everyday lives more seamlessly.[1]

After facing the multiple waves of the recent Covid-19 pandemic, people all around the world have come to realize the importance of keeping their health on track. As the scientists have mentioned several times, the chances of getting the virus solely depends on the immunity and internal wellness of the people.

Monitoring of patients' vital parameters very often is limited to hospitals or other healthcare centers which makes the process time consuming and expensive.[2] Rapid advancements in information and communication technology offers great opportunities for development of online healthcare systems which not only saves travel time and reduces cost but also increases service efficiency and user satisfaction.[3]

And hence, it comes up as the most important thing to keep a track of their health and get trustworthy solutions and advice regarding any minor as well as major health issue and that's when Healthit comes into play.

Healthit is an android mobile application that has been developed to help and improve the online medical facilities

The major objective of the application is to provide the users with trustworthy information regarding the do's and don'ts while suffering from a disease. The various other features keep the user updated as well as knowledgeable about the illnesses and health issues. And with the use of the News Updates feature, the user can also stay up to date with the advancements in the medical field.

Healthit is a one-stop shop for all the clinical information help that one can need, which not only saves time but provides all the services in the comfort of their home so that the physical contact is minimum from the other people, which also is the need of the hour in these active years of Covid-19.[10]

2. MATERIALS AND METHOD

2.1 Procedure of Execution

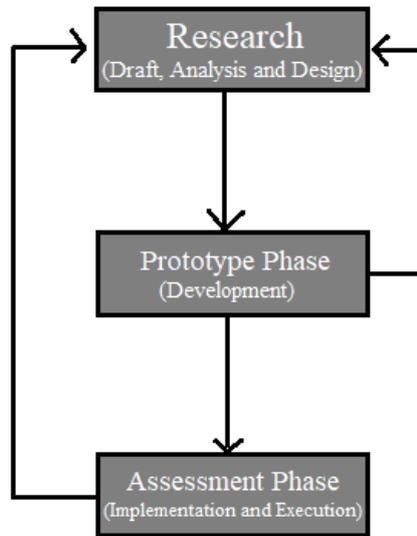


Fig.1 Flow Chart representing the levels of development of the application

The chart above shows the various phases of development of the application. The first step being Research where a survey was conducted along with the designing of the application. It also included the analysis of the data taken and creation of a rough draft that needed to be improved.

The next step being Prototype Phase where the major development of the application took place including the coding part for the front as well as the backend. And then finally, the Assessment Phase where the debugging and re-checking of the application was done. And after that, the same process was repeated until the final application was developed with the required features.

2.2 PARTICIPANTS

The Sample Space of this online survey is 250 users where 65% were aged between 18-30 years and the rest were between 31-45 years of age with a varying range of occupations. Since the application is not limited to a particular age group, the survey also consisted of people of all ages and health conditions.

2.3 DATA COLLECTION

For collection of the data from the user’s quantitative methodology of research has been used. The survey consisted of several Multiple-Choice Questions related to their expectations from an app and the answers were taken as input which also set the base for planning of Healthit.[8]

3. AN ONLINE SURVEY TO UNDERSTAND THE NEED OF THE USERS

3.1 Preference for the Diagnosis of an illness by the user

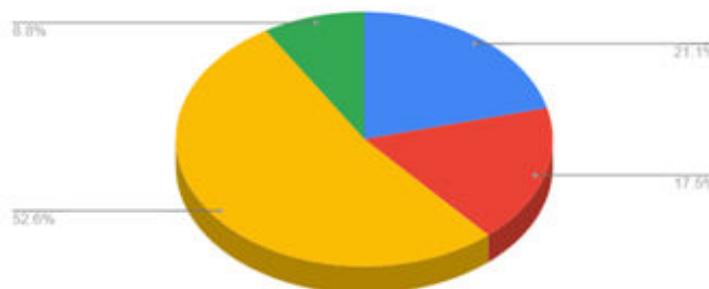


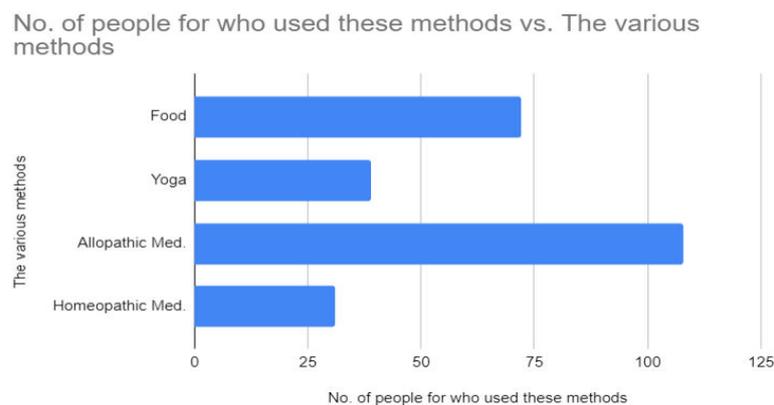
Fig 2. Representing the method used by users for diagnosis

The Pie Chart represents the number of users that

- Self Diagnosis through the internet(52.6%)
- Go to the Doctor instantly(8.8%)
- Take home made remedies(17.5%)
- Consult a medical professional(21.1%)

As it is visible in the graph above, despite the availability of hospitals and clinics everywhere yet the people prefer to look up the symptoms and self-diagnose the illness. Since the highest number of users look on the internet for solutions, the information provider, be it a website or a healthcare application which needs to be very accurate and correct with the information that it is providing the users and that is what Healthit has been developed for.

### 3.2 Preference Regarding the Aid of illness



**Fig 3.** Represents the various preferred ways of curing an illness.

The graph above represents the data that depicts the choices people make while looking for the aid of an illness in which about half of the people chose to go for allopathic medications while the rest of them chose among trying the adequate and right food, yoga asanas, and taking homeopathic medicines.

As observed in the survey, the majority of people prefer the intake of allopathic medicines to help themselves, followed by various nutrient intake through food and Yoga to improve their health.

Based on this information, the application was created with the sole purpose of providing aids to people by using nutritional intakes, yoga postures and allopathic medications.

The Appstore and Playstore is filled with healthcare applications of different names and that promise different things but if gone through them individually you will notice that the majority of applications are either based to monitor your health, your calorie intake and maintains your basic physical health based on the information that you have provided without taking note of other factors like effect of excess workout on your health or the application is completely based to provide you with information about a specific illness or health condition. And that is where Healthit comes in, the application that not only monitors your health but also provides you with all the medications and non-allopathic ways you can take to improve your condition.

Healthit not only provides information on the medications but also educates you about the disease or illness.

And since most of the people look up for the symptoms on the internet before going to a doctor these days, it requires the information to be medically accurate and right and that is what the application presents as well[10]. All the information and details about the asanas, food supplements, medications and the illness is checked by a medical professional which makes the application highly reliable[4].

#### 4. HIGHLIGHTS OF THE APPLICATION

- Monitors the intake of nutrients: The application has been built to provide the user a more interactive environment which monitors their health and tracks the calorie intake accordingly.
- Provides solutions through yoga asanas: Since a lot of people are getting involved in the more natural way to improve their health, the application lays down a list of beneficial yoga asanas that would help improve the user's condition.
- Information on healthy food supplements: Since the application is monitoring the nutritional intake of the user, it is also the job of the application to suggest and provide information on the healthy food supplements that will help the user in certain illnesses.

- Updates on latest health news: A News API has been used in the application which features all the new researches and medical enhancements that one needs to know to keep updated has also been added to the features.
- Reminders on hydration timings and medication intake: What is the use of medications if not taken on time? So, the application has a feature for this too in which it would send notifications and ring the user’s phone when it is the time for their medicine. And the same can be done for the reminder for drinking water.
- Updates on AQI level of the locality: On the time of creation of the user’s profile, they also need to fill in their city, which later helps in presenting the Air Quality Index on the home screen.
- Watchlist for most searched diseases for quick results: A feature to save the user’s time as they can add their most searched illnesses on their home screen and keep the information handy.
- Interesting health facts on the main screen : The database of the application consists of a bunch of health, lifestyle and food related facts that would not only keep the user engaged but also enhance their knowledge and interest in general.

5. SPECIFICATIONS OF THE APPLICATION

The main purpose of the Healthit application is to provide a better healthcare knowledge and wellbeing surrounding to its users and for that the application uses a database that provides multiple ways to approach and solve a problem.

5.1 HEALTH NEWS

The user will get health-related news updates in the news section of the mobile application. The news provided in this section is updated regularly which would keep the user up to date with all the new researches, medical enhancements and since the news section is not county restricted, it provides the information from all around the world from all the reliable sources.

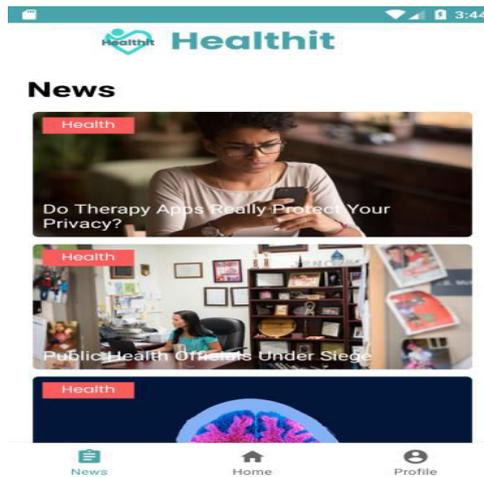


Fig.4 Image showing Health news feature

5.2 HEALTH FACTS

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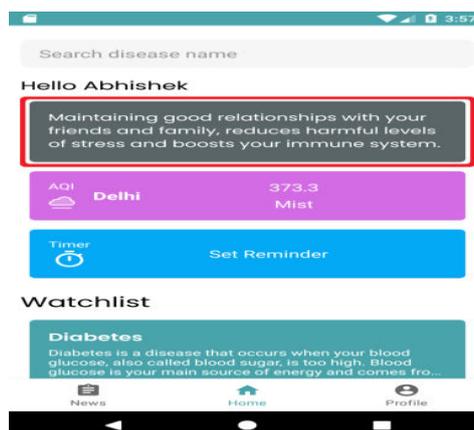


Fig.5 Image showing Health Facts Feature

### 5.3 Reminders for Water and Medicines

A feature to set reminder for taking medicines as well as water can also be set on the application. The permission for sending the notification is taken from the user at the time of creation of their profile.

### 5.4 Providing Yoga, Food and Medications for a Disease

For instance, the Yoga section of the application presents and provides the various asanas and postures that can be done to prevent any further harm to the body and improve the condition through asanas and yoga.

The Food section of the application consists of the variety of food that the user needs to intake for maintaining the balance of nutrients in their body. The food section includes both vegetarian as well as non-vegetarian food supplements to support their body.

And the Medication section provides the basic low dosed medicines to the user based on a Doctor's prescription that can be taken by them to help them ease the pain and symptoms at early stages.

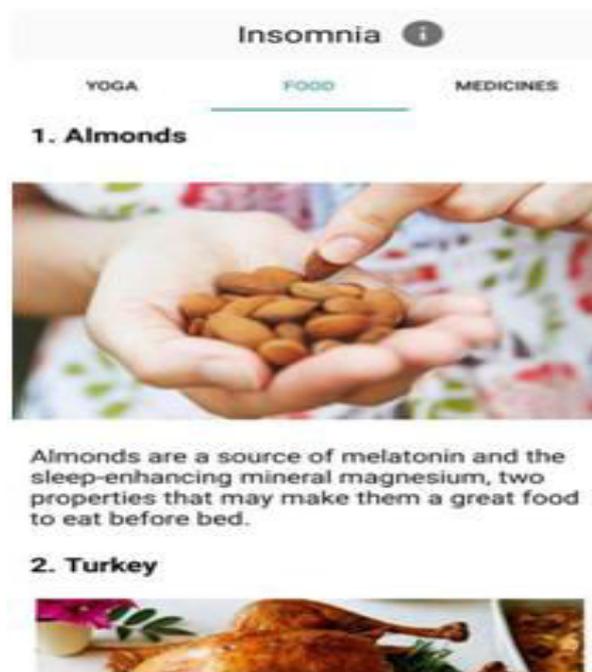


Fig. 7 (i)



Fig. 7 (ii)



Fig. 7(iii)

Fig. 7(i), 7(ii), 7(iii) Showing the Yoga, Food, Medication section of the application, respectively

### 5.5 User Authentication

The application is built to take some basic information for the betterment of the results shown to them and this also includes the creation of a separate account for every user. The sole purpose of this being the privacy of the user's personal details. The minimum age to register in the application has been set to 18 years as it is considered to be the precise age to gain the medical knowledge provided.

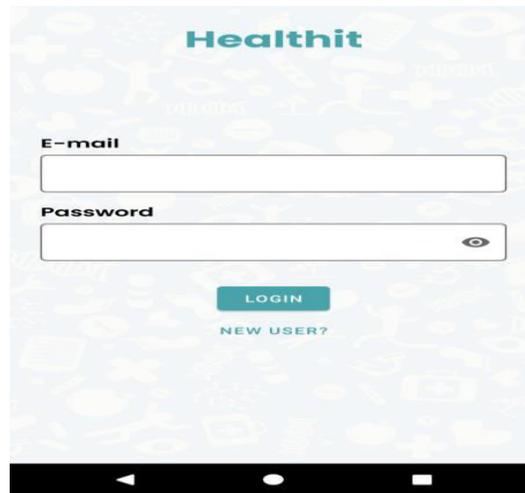


Fig.8 Image showing login screen.

## 6. SYSTEM SPECIFICATIONS OF HEALTHIT

### 6.1 LANGUAGE

The languages used in creating the Healthit application are as follows:

For the backend development **Java** has been used since it is the most user friendly and easy to understand language for Android applications in the present time.[5]

- Java is an object-oriented and multi-platform language. It is one of the most used programming languages around the world. Java is also used as a computing platform.
- It is used for developing Android Apps. It is mainly used for Server-Side Technologies like Apache, GlassFish, JBoss etc.
- Java has platform independent features. This is why it is best for Android Development.

- For the frontend development XML has been used since the data is stored in plain text format. This also provides a software- and hardware-independent method of storage, transportation, and sharing data. It also has easier ways to expand or upgrade the existing operating system to new operating systems, new applications, or new browsers, without any data loss.
- XML is a markup language. We first create the layouts in Android and later make changes using the logic in Java.

## 6.2 DATABASE

**Google Firebase** - Google Firebase as the name suggests is Google-backed app development software that lets the developers to develop applications on iOS, Android and on Web. Firebase also provides tools and techniques for tracking analytics, reporting and fixing app crashes, creating experiments for marketing and products.

A number of services are provided by Firebase, including:

- Analytics – Google Analytics for Firebase offers free, unlimited reporting on many separate events. Analytics presents data about user behavior in iOS and Android apps, which enables the developer to enhance decision-making about improvement of performance and app marketing.
- Authentication – Firebase Authentication builds secure authentication systems for the developers and also enhances the sign-in and onboarding experience for users. This feature offers a complete identity solution with the help of email and password accounts.
- Cloud messaging – Firebase Cloud Messaging (FCM) is a reliable cross-platform messaging tool that enables companies to receive and deliver messages on iOS, Android and the web at no cost.[6]
- Realtime database – the Firebase Realtime Database is a NoSQL and cloud-hosted database that stores data and syncs it between users in real time. The data is synced across all clients in real time and is also available to work on even when the app goes offline.
- Performance – Firebase Performance Monitoring is a service that provides the developers with the insights into the characteristics regarding the performance of their iOS, Android applications which helps them comprehend the scope of improvement in their applications.

## 6.3 SOFTWARE

The softwares used to create the Healthit application are:

1. **Figma** - Figma is a web based design app used for graphic design related work like wireframing websites, designing interfaces for various types of applications, creating social media posts and since it is a free user interface design app, it is widely used among app designers.
  2. **Android Studio** - Android Studio has been declared the official Integrated Development Environment (IDE) for android application development. It presents the ability of running debug routines and running the APK file from the interface.[7]
- Since it is the official integrated environment for Android Application Development it also allows the developers to create, edit, test and debug the code easily.
  - To create emulations of multiple Android devices on a single computer, Android Virtual Device is used which enables them to test the app's performance and responsiveness on the computer.

## 6.4 Application Programming Interface

1. **News API** - News API is a very simple HTTP REST API used for searching and retrieving live articles from all over the web. News API acts as a great data source for news tickers and other applications if you want to show your users live headlines. It tracks headlines in 7 categories across over 60 countries and almost all continents, and at over a hundred top publications and blogs, in near real time. The main use of News API is to search through every article published by over 70,000 news sources and blogs in the last few years.
2. **WeatherAPI** - As the name states, the weather API is used to access and use information regarding weather and geo data via a JSON/XML restful API. It allows developers to create desktop, web and mobile applications using this data very easily.

WeatherAPI provide following data:

- Real-time weather

- Air Quality Data
- 14 day weather forecast
- Historical weather
- Weather Alert
- Time zone
- Sports

## 7. CONCLUSION

Healthit would help the users save a reasonable amount of time that they would waste by surfing on multiple websites for the information that can now be easily found on this one application. It will provide the user with a wide variety of information using its numerous features. And since everything will be online, the only requirement being an internet connection and the user can cure the minor self-diagnosable issues through the application without them stepping out of their homes, which is also the need of the hour.

The application would also be very cost efficient for the user as all the information is reliable, effective and free. And as the information provided is regularly checked and updated, which makes it immensely dependable, it would also provide the most up to date solutions for the user.

## 8. FUTURE SCOPE

Healthit, being a one of its kind applications, will always have the scope for improvement. And as of now the application has only been created for the primary healthcare services of the user which can later be improved so that there are no limitations to its area of use.

It can be enhanced by providing more real-life solutions such as interactions with medical professionals for a better diagnosis as well as tests results so that the application will not be limited to primary and early-stage usage only.

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**ROLE OF CAPITAL BUDGETING DECISIONS IN PUBLIC SECTOR UNDERTAKINGS: A STUDY OF INDIAN RAILWAYS**

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**<sup>1</sup>Pankaj Jain and <sup>2</sup>Rajiv Goyal**<sup>1</sup>Assistant Professor, SGT University, Gurugram<sup>2</sup>Assistant Professor, SKITM, Bahadurgarh**ABSTRACT**

*In Public Sector, Indian Railways is one of the world's largest organizations. My paper undertakes a analytical examination of railway procurement process to understand the process and institutional mechanisms which have derive over time for safeguarding institutional interests. The inspect issues such as institutional framework, acquisition institution, authority selection methodology, acquisition oversight, regulation and their result on the economy, ability, transparency and accountability aspects of acquisition. It is construct that a different combination of insight vigil, oversight oversight by independent group and organizational features contribute to robust acquisition processes.*

*In the light of the past revelations of discrepancies in acquisition in Indian Railways, this quick talk the acquisition patterns in the sector and reflects on the today's government reformative initiatives for the tendering processes in order to ensure departmental transparency and answerability. The existance of structural discrepancies in the sector mars the process of its acquisition through prevailing confining and autocratic practices. scrutinize cartels and other opposed acquisition practices in the sector, the little concludes with the proposal that an incremental and evolutionary explanation will not suffice to address centralization, non- transparency, inordinate delay and non-countable in business and other decision-making that the Indian Railways has reached. Rather, there is a requirement to shake the system out of its cultural position and to enthuse a new quintessence to reorient it to the path of sound and fast effective business like decision-making.*

*Keywords: Indian Railways, public sector organizations, network, traffic, public sector.*

**INTRODUCTION**

In Public Sector, Indian Railways is one of the world's largest organizations. The Railway functions as a vertically integrated organization providing Passenger and Freight services. It is a single system which consists of 66,030 route km of track that criss-cross the country, on which more than 22,300 number of trains ply, carrying about 23 million passengers and hauling nearly 3.02 million tonnes of freight every day, thereby contributing to the economic growth of the country and at the same time promoting national integration. As compared to road transport, the railway has a number of intrinsic advantages as it is five to six times more energy efficient, four times more efficient in land use and significantly superior from the standpoint of environment impact and safety. Indian Railways, therefore, rightly occupies pride of place in the growth and development of the nation. The railway service is rendered through a nationwide rail infrastructure covering track, stations, sidings, freight terminals, locomotives, coaches and wagons and a myriad of infrastructure inputs like signaling, telecom, electrical installations, maintenance workshops etc. The output and outcomes achieved by the Railways in terms of Passengers and Freight carried results from the interwoven activities of the various infrastructure inputs comprising the Railway Infrastructure. While a direct one to one correlation in terms of inputs and outcomes of each activity is not easy to render in a transport sector like the Railways, the Performance cum Outcome Budget attempts to give a better insight in to the multifarious activities of the railways that, when combined, generate the outcome of transportation services.

**REVIEW OF LITERATURE**

The Indian Railway system, the second largest system in the world under a single management, and the fourth largest rail network with track length of over 64,600 kilometers is a public sector undertaking under the Ministry of Railways. 1 With a workforce of 1.4 million, it is the seventh largest employer in the world. Indian Railways is the lifeline of the country as it transports 25 million passengers and more than 2.8 million tonnes of bulk freight daily. 2 Railways commenced in India on 16th April 1853 when first train owned by Great Indian Peninsular Railway Company moved from Mumbai to Thana covering a distance of 22 miles. Rail traffic in Eastern India between Howrah to Hoogly was opened to public on 15th August 1854. In South India, the first railway line was opened on 1st July 1856 between Vyasarpadi and Wallajah Road, Arcot a distance of 63 miles. In the North, 119 miles of railway line was laid from Allahabad to Kanpur on 3rd March 1859. By 1880 Railways in India had a route mileage of about 9000 miles and were run by separate railway companies. The Railway Board was constituted in 1905 with the decision making power retained with the Viceroy of India. The Acworth Committee appointed in 1920 recommended nationalization of railway companies in India. In 1925

two big railway companies, The East India Railway Company and Great Indian Peninsular Railways were taken over by the state. The nationalization of entire railway system was completed in 1944. Electric Traction was first introduced in Railways in India in 1925. Air-conditioned coaches were introduced in 1936. By 1947 there were 42 rail systems in India with the total route length of railways as 543,760 kilometers. The Indian State Railways were added to Indian Railways in 1950.

After independence government regrouped the railways on zonal basis in order to secure economy, efficiency and uniformity in financial administration and control. The zones were further subdivided into divisions. At present there are 17 zones and 68 divisions. The Southern zone of Indian Railways was formed on 14th April 1951 with the merger of three state Railways - Madras and South Mahratta Railway, the South Indian Railway and the Mysore State Railway.

### **TRANSPORTATION**

India has not given due importance to the development of transport infrastructure even after six decades of independence. Sreedharan E. (2010), stresses that if India need to have a place among developed nations, it is high time India gives adequate attention to its transport systems.

GoyalAshima (2008) examines the weaknesses in India's public transport systems. It is suggested that the solutions are possible not just with ownership changes, industry structure and competition, but with individual motivation, changes in management structure and institutional design.

Public transport is said to consume less space per passenger and leads to lower congestion. Misra Siddhartha (2006) recommends that both incentive and disincentive for private transport are needed to promote their use and sustainability of public transport in India. Incentives include better quality and more comfortable public transport with higher frequency of trips, low waiting time and a unified transport system. Disincentives for private transport must include higher working and toll charges.

India is on the threshold of entering into the group of developed countries. Its power in science, engineering and technology has been recognized the world over. In transport infrastructure the nation is far behind even after 65 years of independence. Murthy V.A. (2005, 2004), finds that transportation in urban areas is in a very poor condition without tackling high budget new projects are being implemented. The paper states that in order to resolve the existing transportation problems and to implement new transportation projects in the urban transport in the urban areas in a cost effective way, India has to rely on innovative and indigenous equipments and methods.

In view of the limitation of capacity expansion as a structural solution and the complexities of travel demand as a strategic solution, Intelligent transport systems can assure optimal use of existing transportation infrastructure in general and road capacity in particular. In the light of increasing congestion in urban areas, Intelligent Transport Systems (ITS) represents a set of tools which, can enable local governments achieve integrated transport solutions as well as to ensure better use of existing transport infrastructure. Gupta Sanjay ( 2005, 2004), provides an insight into the potential application areas of ITS, reviews global practices and suggests possible priority areas for Indian situation.

The main objective of demand management policy is alleviation of traffic congestion thus improving traffic flow efficiency. Other common objectives include limiting adverse environmental impacts, reducing traffic accidents and risks, providing services for the urban poor as well facilitating economic activities of the city. According to Sharma Rajiv (2005, 2004), the role of demand management should however cover not just the negative approach of restraining transport demand but also encompass a positive and realistic managerial role of accommodating increases in transport demand through favorable changes in road user behaviour and modal split balance.

Sustainable transports can be defined as supportive system which will bear the traffic volume for long time both quantitatively and qualitatively and is a key factor for socio economic development. Qualitative and quantitative sustainabilities are interdependent and interactive due to common traffic attributes. Deshpande V.K. and DalviAshwini (2004), present an integrated approach for developing the sustainable transport which includes solutions like improved travel choices, incentives for public transport usages, non pollutant fuel usages and technological innovations.

The problem of environmental degradation caused by growing vehicular traffic has been gaining both national and international attention. Pundir B.P. (2004) strikes a note of caution against adhoc and whimsical steps for controlling emission related problems. He calls for a studied and sustainable approach which can be implemented effectively and monitored easily. He emphasizes the need to strengthen the handling and

distribution facilities for alternative and non polluting fuels.

Feeder public transport system to High Capacity Transit System plays an important role in ensuring an integrated multi modal public transport operation. With the implementation of Mass Rapid Transit System (MRTS) in a metropolitan city, the existing road based public transport

### **PURCHASE OF TRANSPORT SERVICES**

No policy or system of explicit payments exists for loss-making passenger Public Service Obligations (PSOs) in IR, but substantial internal cross-subsidy takes place for train operations within the passenger sector, as it does between individual ZRs. Also, most of the aggregate burden of infrastructure costs falls on freight customers. Therefore, the MOR (IRB) has accepted internal cross-subsidy of passenger services and an implicit tax on freight, rather than direct subsidy, to fund passenger service obligations. railway revenues covered railway operating costs and contributed about a third of capital investment. However, as of late, IR is facing difficulties balancing the budget. Passenger losses are placing an increasingly high burden on freight. Freight services in turn must compensate with high tariffs, reducing its competitiveness.

### **RAILWAY TRANSPORT MARKETS**

IR is the world's second largest passenger railway and fourth largest freight railway after the U.S.A., China, and Russia. India's large and rapidly expanding population provided steady but relatively slow growth in railway passenger traffic during the last decades of the twentieth century as other modes gained market share. During the last decade, accelerated economic development increased purchasing power and, in combination with politically imposed low fares, boosted railway passenger traffic growth by nearly 100 percent. India has a mix of passenger services. Over the last 30 years, as cities have expanded, suburban passenger journey length has increased from an average of about 20 kms/trip to 34 kms/trip, and average journey lengths for inter-city services increased from about 87 kms/trip to 268 kms/trip. In terms of modal share, IR is estimated to carry about 15 percent of non-urban passenger traffic. Historically, IR's passenger transport services could be categorized as poor to middling quality, suffering from long ticketing queues, slow travel times, and limited journey comfort and amenities. However, a series of investments in faster lines and customer-services initiatives have resulted in continual improvement and customer satisfaction. Followed by grain, 10.1 percent, cement, 8.9 percent, and iron ore, 5.5 percent. Rapidly growing container traffic now constitutes 13 percent of traffic task. The average freight haulage length is 620 kms, and IR carries an estimated one-third of national inland freight task. Despite what appears as significant absolute growth in passenger volumes and a freight market that is on the surface conducive of rail transport, IR's market share since the 1950s has been severely eroded by a shift to road transport. While rail market shares of the 1950s are unlikely to be achieved, considerable potential exists to increase Indian Railways market share of freight. One of the major challenges for the freight rail market has been insufficient capacity for freight trains. Nearly two-thirds of the IR network is allocated to passenger trains, and freight trains are dispatched with no timetable and with the lowest operational priority. In addition, the fact is that investment in expansion of the rail network has not kept up with the immense growth of the Indian economy. The issue of insufficient capacity, combined with IR being slow in improving its service offerings, led to stagnated growth in both passenger and freight traffic.

### **GROWTH FOR INDIAN RAILWAYS**

Revenue growth has been strong over the years; during FY07–17, revenues increased at a CAGR of 9.8 per cent to US\$ 25.62 billion in FY17. During April-December 2017, gross revenue of Indian Railways stood at US\$ 19.17 billion.

Revenues from the sector are estimated to reach to US\$ 44.5 billion by the end of FY20

Revenues would expand at a CAGR of 12.12 per cent during FY07– 20E

Indian Railway sector aims to boost passenger amenities.

In March 2017, Railways started a new segment of revenue generation channel through auctioning for advertising and branding contracts on 1000 trains. The front running brands are to sign this contract for 5 years.

### **CONCLUSION**

India has one of the largest and busiest railways in the world, but also, IR is arguably the most traditional and monolithic in its basic structure. In fact, it closely resembles the archetypal railway described in this toolkit— prior to considering the alternatives. Traffic growth has underpinned management initiatives to attain steady and significant improvements in staff productivity and equipment utilization. Nevertheless, IR was historically not notably innovative in using modern rail technology, nor in transforming to more commercial management structures, nor focused on service quality or market-responsiveness. Instead, when seeking commercial focus, it

has tended to create semi-autonomous enterprises that bypass its own structures.

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**A STUDY OF BRAND SALIENCE OF PRIVATE LABEL BRANDS IN APPAREL RETAIL SEGMENT****<sup>1</sup>Harsh Mohan Sharma and <sup>2</sup>Dr. Ajay Singh**<sup>1</sup>Assistant Professor, RKGIT, Ghaziabad<sup>2</sup>Associate Professor, ABES Business School, Ghaziabad**ABSTRACT**

*Brand salience is the probability that a customer will think of the brand at some point of time. This is a broader interpretation than the usual frame of reference for the term 'salience', which although conceptualized as the prominence of the brand, is commonly used interchangeably with, and measured via, top of mind awareness with the product category cue. To find out the salience level of some of the private label brands in apparel segment, the two types of research methods used were Primary research and secondary research. It was measured among the customers across various demographic segments. Primary research used involved a survey for a sample size of 300. 60 respondents were surveyed outside 5 retail outlets. The hypotheses formulated were tested using parametric and non-parametric tests. A detailed analysis was done.*

*Keywords: Brand Salience, National Brands, Private Label Brands*

**INTRODUCTION**

Today, in every category, retail outlets are aggressively stocking private label products next to national brands, and often using private labels to attract customers into their store. From packaging down to performance, private labels are giving the national brands a run for their money. It becomes important to understand how the private label brands can build their brand salience.

Salience is conceptualized as the probability that a customer will think of the brand at some point of time. This is a broader interpretation than the usual frame of reference for the term 'salience', which although conceptualized as the prominence of the brand, is commonly used interchangeably with, and measured via, top of mind awareness with the product category cue. The salience level was converted from the number of times the brand is mentioned to a percentage of the total possible number of times the brand could be mentioned.

**RESEARCH DESIGN****RESEARCH OBJECTIVES**

- To find the impact of brand presence at national level on apparel buying decisions
- To find out the factors those influence the consumers to buy private label brands.
- To find the impact of store image on consumer's buying decisions
- To find the correlation between quality perceptions of a national apparel brand

**TOOL**

Questionnaires were administered using survey method to gauge the buying behavior of respondents while choosing branded apparel over private label

**SAMPLE**

Sample Size: 300

Sampling Method: Quota Sampling

No. of Female Respondents: 150

No. of Male Respondents: 150

Age groups surveyed: 18-25, 26-35, >35

**DATA COLLECTION**

Survey was conducted using Questionnaires as a tool outside 5 Retail outlets namely, Westside, pantaloons, Shoppers Stop, Globus, Max

**DATA ANALYSIS****HYPOTHESIS 1**

H<sub>0</sub> - There is weak correlation between national brands and private label brands

HA – There is strong correlation between national brands and private label brands

In order to prove the following hypothesis, first the correlation among the consumers of the private label brands and national brands were found out for the attributes.

Using Pearson’s coefficient of correlation and spearman’s rank correlation, it was found that

<b>Correlations</b>				
		PRIVATE	NATIONAL	
PRIVATE	Pearson Correlation	1	.360**	
	Sig. (2-tailed)		.000	
	N	300	300	
NATIONAL	Pearson Correlation	.360**	1	
	Sig. (2-tailed)	.000		
	N	300	300	
**. Correlation is significant at the 0.01 level (2-tailed).				
<b>Correlations</b>				
			PRIVATE	NATIONAL
Spearman's rho	PRIVATE	Correlation Coefficient	1.000	.102
		Sig. (2-tailed)	.	.077
		N	300	300
	NATIONAL	Correlation Coefficient	.102	1.000
		Sig. (2-tailed)	.077	.
		N	300	300

The private label brands and the national brands are weakly correlated with respect to attributes. It means that the customers while purchasing the private label brands and the national brands, do not give importance to the same set of attributes.

**HYPOTHESIS 2**

H0: National Brands will not score more on quality related attributes than private brands.

HA: National Brands will score more on quality related attributes than private brands.

A two tailed Z-test was applied with the help of excel sheet to prove this hypothesis.

Z(cal) for the attribute better quality for the sample size of 300, applied in excel was 1.98 where the standard deviation was 1.40.

Interpretation: As in a two tailed Z-test, the critical area is between -1.96 to +1.96, therefore, the null hypothesis is rejected and the alternative hypothesis is accepted since Z(cal) is greater than Z(crit) and the calculated value of Z for better quality, through excel sheet, does not fall within this area.

The most important attributes in case of private brands is low price as 180 respondents out of 300 said that low price is the most important attribute for them when purchasing private label brands, 50 respondents said it is good value that they look for, followed by 40 respondents who said better quality and 20 of them said store image and just 10 of them said that they are looking for more variety of choice while purchasing private label brands.

**HYPOTHESIS 3**

H0: Store image of the private label brands do not have an effect on consumer buying decision.

HA: Store image of the private label brands have an effect on consumer buying decision.

To test whether store image has any impact over purchase decisions, **Chi-Square Test** was used.

Frequencies				
	Store Image			
	Category	Observed N	Expected N	Residual
1	Yes	240	150.0	90.0
2	No	60	150.0	-90.0
Total		300		

	Store Image
Chi-Square	108.000 <sup>a</sup>
Df	1
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 150.0

The critical value with the degree of freedom (d.f) of 1 and significance of 0.05 is 3.84 and the calculated value of 108 is greater than the critical value, so the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore it can be interpreted that the store image of the brand has an impact on the consumer buying decision.

**HYPOTHESIS 4:**

H0: Private label brands will not score more on pricing attributes than National brands.

HA: Private label brands will score more on pricing attributes than National brands.

A two tailed Z-test was applied to prove this hypothesis. Z(cal) for the attribute low price for the sample size of 300, applied in excel was 2.05 where the standard deviation was 1.41.

Interpretation: As in a two tailed Z-test, the critical area is between -1.96 to +1.96, therefore, the null hypothesis is rejected and the alternative hypothesis is accepted since Z(cal) is greater than Z(crit) and the calculated value of Z for low price, through excel sheet, does not fall within this area.

**RESULTS**

**AWARENESS**

- 17% of the sample was not aware of private label brands

Of those aware of private label brands,

- Gender wise distribution
  - 56% were females and 44% were males
- Age wise distribution
  - 36% lie between the age group of 18-25 years
  - 32% lie between the age group of 25-31years
  - 32% are over the age of 31 years

**Purchase Decisions**

- Purchase the private label brand
  - Only 73% purchase the private label brand (55% females, 45% males)

**Factors Affecting Purchase Decisions**

**First preference among various attributes was marked as**

Low Price	-	32%
Better Offers	-	29%
Store Image	-	21%
Better Quality	-	13%
Any Other	-	5%

**Factors Affecting Preference of Branded Apparel Over Private Label Brand**

Various attributes ranked on the basis of their relative importance in purchase decision of branded apparel over private label

Better Quality	-	31%
More Variety	-	15%
Competitive Pricing	-	11%
Marketing Communication	-	12%
Brand Image	-	27%
Any Other	-	4%

**DISCUSSION AND RECOMMENDATIONS**

Mostly, ie 83%, of the sample observed was aware of private label brands with the awareness level being higher in females, 56% than in males 44%. Moreover, on the basis of age, the age group of 18-25 recorded the highest level of brand recall and hence brand salience for all the premium retail outlets as compared to the other age groups.

Low price, better offers and value related attributes can draw in more customers to the stores as they associate the private label brands with these three attributes. It will create brand awareness among them and once brand awareness is created, it will automatically increase brand recall and hence a higher degree of brand salience.

Respondents, in some of the cases, misunderstand the retail outlets itself as brands. So it is important for the retail outlets to create brand salience of their private labels by focusing more on low price and value related attributes as it was found out from the research.

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## DIGITAL CUSTOMER EXPERIENCE

Mehak Goyal<sup>1</sup> and Dr. Pankaj Deshwal<sup>2</sup><sup>1</sup>PhD Scholar, Department of Management Studies, Netaji Subhas University of Technology, New Delhi, India<sup>2</sup>Assistant Professor Department of Management Studies, Netaji Subhas University of Technology, New Delhi, India**ABSTRACT**

*Digitization brought a transition in the retailing sector as well, now from a needle to a refrigerator are being purchased online. Less switching cost among the brands creates the hustle leading to stiff competition between the companies. With advanced technology and easy access to the markets, it became very crucial for the marketers to focus on customer experience in order to have competitive advantage*

*Purpose: To present new insights into the field of marketing research. The same will also be helpful for the managers to formulate strategies to better understand online customer experience and predict their future actions.*

*Findings: This study highlights some aspects related to the domain of online shopping such as Omnichannel retailing, Q-Commerce. This will help the retailers to formulate their strategies and thus better understand and anticipate customer behavior. Also, this paper provides directions for future research in this area.*

*Keywords: Customer Experience, Digitization, Omnichannel retailing, Q-Commerce.*

**1. INTRODUCTION**

Digitization has transformed the framework of retailing sector. Majority of the online retailers now work on online mode or have both the paths of offline and online open for their customers. This leads to customer's improved satisfaction (Cao et al., 2018; *Customer Satisfaction in Automobile Industry* –, 2012; Hult et al., 2019; Kim et al., 2008; Nilsson & Wall, 2017; Shankar et al., 2003; Szymanski & Hise, 2000; Vakulenko et al., 2019; Wu et al., 2007) and loyalty (Anderson & Srinivasan, 2003; Chang & Chen, 2008; Cyr et al., 2008; Ieva & Ziliani, 2018; Prasarnphanich, 2007; Shankar et al., 2003; Shim et al., 2015). Which is the ultimate objective of a retailers. However, as a result of easy entry and exit facilities every retailer is facing tough competition, everyday they get to know new entrants in the market with more speedy strategies. Therefore, in order to sustain the competitive advantage, marketers must focus on what the customer is demanding and what all factors are important to understand their experience and behaviour (Bilgihan et al., 2015; Bleier et al., 2019; Broekhuizen & Huizingh, 2009; Gefen, 2003; Gentile et al., 2007; Klaus et al., 2013; Wu et al., 2007).

This study deals with conceptualizing the term digital customer experience and will also highlight the various factors that influences the customer experience in online mode.

**2. Digital customer experience**

According to the extant literature, initially Customer experience was termed as a “flow” concept by the authors later on it was termed as cognitive and affective psychological states experienced by the customer while interacting to the company. Later on, a holistic definition was given in literature which defined the online customer experience to be an overall experience the customer has while interacting to the brand during the purchase journey of the merchandise.

**3. FINDINGS**

In this era of digitization two trends in the domain of online customer experience were identified: omnichannel retailing and personalization. Following paper describes both the concepts and their influence on online customer experience.

**Omnichannel Retailing**

To make it more convenient for the customers' brick and mortar shifted to online retailing & lacking behind in “touch and feel” or trust ecommerce are now opening their physical stores. The recent trend in retail market now is not about shifting from one mode to other but to integrate all the channels (figure 1). Now instead of being substitutes they are complementary this is known as omnichannel retailing. This study aims at conceptualizing the omnichannel retailing and also identifying its impact on various industries. The term omnichannel is derived from the Latin word “Omni” that means “universal”, “all”. Initially this term was proposed by business practitioners, but lately a concern for academic's (Lazaris, 2014).

The author said that the retailers developed a combine channel which is consistent and standardized in terms of offering various products and services across multiple retail chains. This helps in emphasizing on customers choice, that impacts not only the customers experience and trust but also help in developing their purchase intention. In this study as our model is used which suggests that the only channel detailing improves customer control an in-result increase is their loyalty. The findings present positive reactions to channel integration.



Figure 1 Omnichannel retailing

**Personalization**

Every customer nowadays demands for customized products and services. This improves the customer’s loyalty towards the brands which is the ultimate objectives of the firms. Brands like Nykaa fashion and others provides their customers a personal touch by identifying their taste and preferences through previous purchases and suggesting the products accordingly gives the customer’s good feel of belongingness with the brand which in turn improves the customer experience, satisfaction and loyalty (Ieva & Ziliani, 2018; Luo et al., 2011; Pappas, 2018; Pappas et al., 2017; Prasarnphanich, 2007; Srinivasan et al., 2002; Studies et al., 2019; Wu et al., 2007).



Figure 2 Personalization benefits

**4. CONCLUSION**

The objective of this study was to identify the various trends propounded in the domain of online retailing and their influence on customer experience. The findings reveals that two trends in this domain have been identified by the author that are omnichannel retailing and personalization that directly influences the online customer experience.

Omni-Channel is an approach that enable marketers to synergies their strategies in a single solution and propagate it across multiple channels. It helps sell better, reduce costs and enhance customer base. Omni-Channel Marketing is the answer to several questions faced by the Indian retail industry today. Merging an organization’s virtual contact approach with the in-store retail execution strategy improves the overall brand health while driving incremental growth. It essentially integrates all marketing strategies and run them on a single platform. Creating and combining marketing programs such as first Welcome notification followed by complex multi-step initiatives.

Personalized products help the marketers to attract new customers and retain the existing ones.

Therefore, with the help of both the strategies above retailers can gain competitive advantage over others by better understanding the online customer experience.

Also this study can further be used by research scholars to empirically test these two factors influencing the online customer experience.

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**A STUDY ON CONSUMER BEHAVIOR TOWARDS FOOD APPS IN GHAZIABAD****<sup>1</sup>Dr. Meenakshi Tyagi, <sup>2</sup>Anushka Sharma and <sup>3</sup>Shubham Kumar**<sup>1</sup>Associate Professor and <sup>2,3</sup>Student – KIET School of Management, KIET Group of Institutions, Delhi-NCR, Ghaziabad-Meerut Road, NH 58, Ghaziabad, Uttar Pradesh 201206, India,<sup>1</sup>ORCID id: 0000000163777114**ABSTRACT**

*A single window for ordering from a wide range of restaurants, online food delivery mobile applications have become popular over these years. This trend has changed the mindset of customers of different age groups. Even now, consumers in India prefer to go to restaurants, but a major portion now opts for door-step delivery. There are wide varieties of restaurants now delivering online services at best offers and reasonable prices. India's youth now prefer to be in their comfort zones and buy their day-to-day necessities online. In this research paper, consumer perception towards online food apps in Ghaziabad is analyzed and the factors; like service quality, good hygiene, payment options, delivery charges which will help to devise marketing strategies are considered. Chi-square test and correlation have been used to know the significance of various factors on consumer behavior towards food apps in Ghaziabad. The results show that the people of Ghaziabad are very much fond of using food delivery apps twice or thrice a week, mostly preferred Zomato followed by Swiggy. People of 18-25 age group are the main consumers. Students, singles and working couples found these food apps very easy to use and convenient especially with payment options.*

*Keywords: Food apps, Service quality, Demographic factors, Payment options.*

**INTRODUCTION**

Now, days have gone when people had to wait in queue, weekend or favorable situations to taste outside food. In present days, information and communication technology have brought umpteen number of changes in every area and replaced traditional styles. Today everything is done at digital platforms and people are liking this trend. Online platforms are becoming more popular in India as these are easy to access and young generation feels more convenient to use it that is why e-platform users have taken lead in market.

Though, India is a developing country yet massive growth of online sales and the unique functions of internet have drawn a great deal of attention and many companies are stepping in to set up businesses over internet. In this scenario, it becomes very important to know the factors which actually affect consumers' behavior to buy online products or services. Many marketers agree that Digital Marketing will raise the bar of customer spending and loyalty towards online shopping if it is done correctly. People are more curious when they are going to buy on line products, with this mind set this was a big challenge before the food app initiators to win the trust of consumers regarding food hygiene and safety, as this is a matter of health and life. In the beginning, people were not ready to accept online food apps but as consumers found them as per expectations and different companies got success in this field.

**LITERATURE REVIEW**

Key Success Factors of Online Food Ordering Services is good relationship between Customer & Food delivery website. In the report, Kedah came across various customer experience factors while ordering food that consists of website trust, customer satisfaction, and loyalty. 353 data responses were collected and then research was done accordingly with the help of Structural Equation Modelling (SEM). The result of the report shows a positive relationship between customer satisfaction and website trust. And also there was a significant positive relationship between customer satisfaction and loyalty. The study also revealed an unforeseen direct connection between service quality and loyalty [1]. Another study identifies customer behavior and satisfaction for buying online food in Manipal by considering variants like Respondents' profile, perception, satisfaction level, Responsiveness, Reliability, and behavior. The report revealed that consumers preferred online food ordering due to high reliability, assurance, responsiveness, and safe online payment. The report also showed that most of the consumers ordered food at least twice or once a week and considered delivery fees to be appropriate [2]. The relationship between Food services app and Consumer depends on various factors; payment mode, delivery speed, service quality, and purchase behavior which came up to the result for the most preferred app for ordering food. [3]. A study shows that various factors determine customer perception, behavior, and satisfaction with online food apps, a remarkable relationship between delivery time and peak hours was shown. Study also concluded that with the help of online food apps, the profits of restaurants are increasing [4]. Jadhav researched apps and examined the advantages and difficulties faced by people and restaurants while using food apps. [5]. Various parameters influencing consumers' behavior for online food apps were studied and results showed

that most customers order food once a month and the preferred food item was pizza. Taste and restaurants were major factors for ordering food [6]. Also various factors that influence customer's behavior to pay online for Swiggy. The research focused on the hypothesis of e-payment of Swiggy customers and interpreted the convenience of the customer. Customer convenience was the most important factor. For data collection, primary data was used and for secondary data, the authors relied on internet sources, magazines, journals, etc. The results showed a close link between online payment behavior and gender, age, education, income, etc. [7]. Another various parameters which affect the decision of customers for ordering online food and their service providers, the purpose of this study was to examine those parameters. Some of the parameters which were discussed in this study were time of delivery, payment, accessibility, etc. Responses were collected with online surveys by making people filling questionnaires. The study concluded that customers mostly order on weekly basis during snacks and dinner time. The preferable app by customers is Zomato and Uber-Eats [8]. There are some other factors which influences customer's decisions for ordering food online. In this report, the author studied different factors like location, mode of payment, cost-effective, and doorstep delivery. The most important factor was doorstep delivery which influences customers to order food by apps as it is easily accessible and convenient. Rewards or cashback also plays a major role for online order and payments for the same. It was also found that Zomato was more preferred in terms of service than Swiggy [9]. Each person has own capacity to spend. This report aimed to find out the amount of money people spend on online food apps. The majority of people who use online food apps stand out to be students. Data was collected with the help of convenience sampling method with 150 responses. In this study, the author found out that mostly young people order food online in comparison to dine in [10]. In another report, authors analyzed what influences customers for online food order and studied about the parameters which customers seek while ordering food online. Some of the parameters were education, occupation, which app they prefer more, mostly ordered food, payment method, etc. They examined that these apps have captured the whole market and it was found that most of the consumers found easy to use food apps and happy by the services of these apps [11]. Dynamics are changing various factors like quality, payment options, hygiene, accessibility, etc. on youth who are more active on these food apps. In this report, author also studies why other customers don't want to use food apps. Data was collected with help of questionnaires from different age groups. Results showed that most people ordered food with help of food apps compared to dine-in or direct calling and this was due to convenience, fast delivery, and many offers. The reason for non-users was mainly health issues and hygiene problems [12]. Mobile food apps has shown large impact on people. Various offers that are provided while ordering online effect on customer experience, and difficulties faced while ordering food online influence customer purchase. Mainly youngsters order by food apps due to time efficiency and mostly cash on delivery was the payment method used [13]. Many people aren't aware of food apps. Mainly people don't use e-payment methods but various offers and rewards made people switch to use digital payment options. Customers prefer to use food apps due to delivery speed, easy payment options, variety of restaurants [14]. Different parameters & connection between online food service and facilities were affect the decision of customers while ordering from food apps. Due to increasing professions and urbanization food apps are in more demand. Social media also plays a major role in increasing the use of food apps. People are satisfied with food quality and services [15]. The impact of demographics and relationship between various factors and customer's usage also influenced of customers in ordering food online. Under this study, the data was collected from 100 respondents through a questionnaire. The results were evaluated using Pearson's Correlation method and it concluded that the decision of people to order food online is not affected by gender, age, and occupation but is positively affected by system, service, and information quality. The factors which influence the decision of customers the most are on-time delivery, packaging, wide product choices, ease in using apps, etc. [16]. Mostly youngsters prefer to order food only as compared to older people. In this study, the data was taken from 460 US-based consumers. The results of the study concluded that 60percent of the respondents were from the age category of 18-34 who were ordering food online while there were only 35percent of the respondents from the age category of 35 years and above. The study also indicated that there was an even split of respondents in terms of gender [17]. The market of online food delivery apps will rise four times as compared to the foodservice industry. The sale of restaurants is expected to rise at a rate of 5.9percent CAGR in the upcoming five years while delivery and takeaways will rise at a rate of 21.7percent CAGR. The sale of restaurants through online orders is expected to grow two times from 2.5percent in 2017 to 4.9percent in 2022 [18].

## **AIM OF STUDY**

### **The present study aims**

- To examine the effect of various demographical factors like age, income, gender, education, occupation, etc. on online food delivery applications.

- To explore the driving factors affecting customer’s preferences while ordering food online such as convenience, service quality, packaging, delivery charges, promotions, etc.
- To analyze customer’s review for the services offered by online food delivery apps.
- To understand the link between food delivery apps and the services offered by them.
- To find out the most preferred online food delivery app.

**LIMITATIONS OF STUDY**

Present study is based on data collected from the people living in Ghaziabad city. So, the findings of this study might vary from the research carried out in other parts of the country as India is country with diversity. This study is also limited in terms of geographical area.

One of the main limitation of the study is the effect of Covid-19 during April to June 2021, when second wave of Covid was at boom and lot of people had been suffering from Covid-19. Due to pandemic situation, keeping the safety measures in mind, government announced lockdown and restaurants were closed which had affected the usage of online apps for placing food orders.

**RESEARCH METHODOLOGY**

To collect data, both sources primary as well as secondary had been used. Primary data was collected with the help of questionnaire consisting of 26 multiple choice questions relevant for research. Secondary data was collected with the help of internet, journals, magazines etc. for getting information about food apps. The questionnaire was sent through online mode like mails and What-App.

Sample Size: Though sample size was decided 250 but only 238 responses were received. To analyze data and hypotheses testing pie charts and Chi-square test were applied.

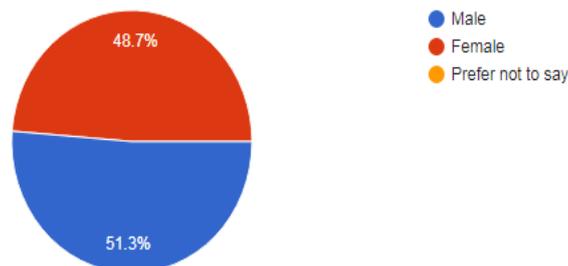
**HYPOTHESES**

1. H0-There is no significant relation between income of the consumer and frequency of placing order for food.  
H1-There is significant relation between income of the consumer and frequency of placing order for food.
2. H0-There is no significant relation between age of the consumer and frequency of placing order of food.  
H1-There is significant relation between age of the consumer and frequency of placing order of food.

**ANALYSIS & INTERPRETATION**

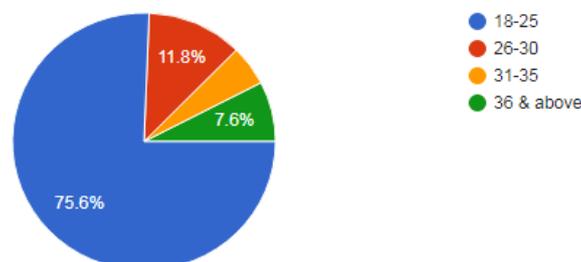
Based on relevant information which was captured through primary data collection process, data has been analyzed by using different statistical methods.

**Graph 1 – Gender**



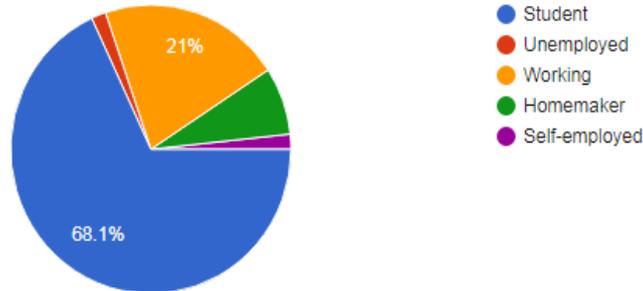
Graph 1 shows, the ratio of male and female are almost similar while ordering food through online apps. 48.7 percent were female and 51.3 percent were male.

**Graph 2 - Age**



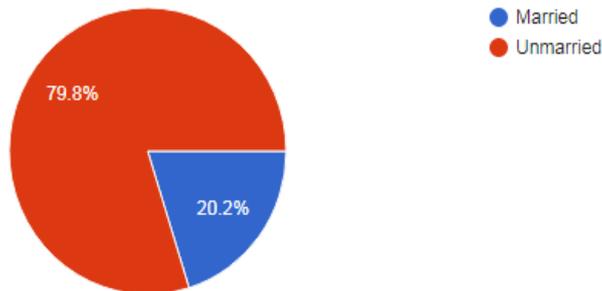
Graph 2 shows, there was vast difference between the age groups of consumers who order food online through apps. The majority ratio was of age 18-25 with 75.6percent. Then 11.8percent people of 26-30 age group order food online. 5percent people were from 31-35 age groups and lastly 36 and above age groups has ratio of 7.6percent for ordering food through online apps.

**Graph 3 - Occupation**



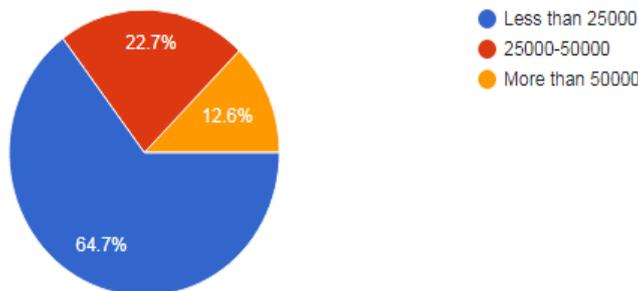
Graph 3 depicts that major portion was of students to order food through apps with 68.1percent. Then 21percent people are working who order through food apps. 7.6percent were homemaker, 1.7percent of each category were also of self-employed and unemployed who order food online.

**Graph 4 - Marital Status**



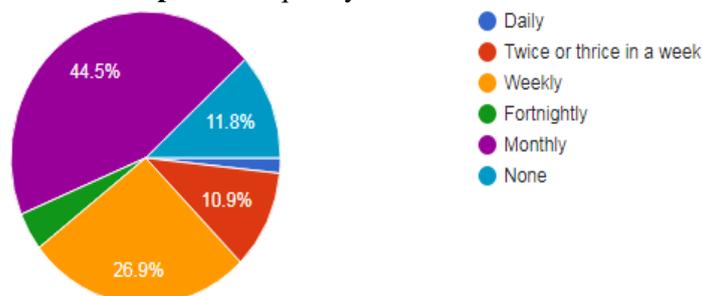
Graph 4 shows that 79.8percent high amount of proportion are non-married and order food online while 20.2percent were married who order food through online apps.

**Graph 5 - Income Level**



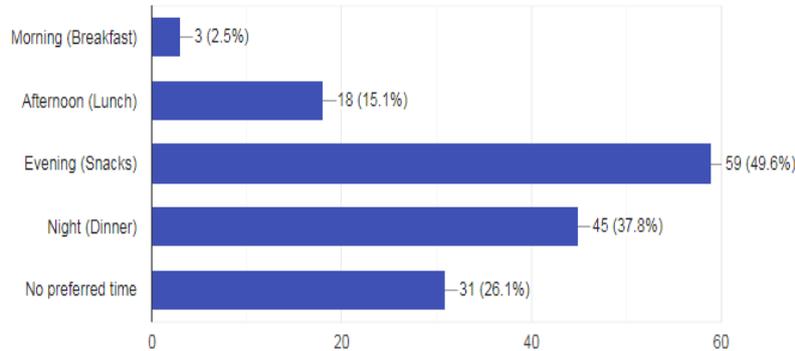
Graph 5 shows that maximum ratio with 64.7percent people are having less than rupee 25000 per month order food online. 22.7percent people with income between 25000-50000 per month order through apps. Then people having income more than 50000 rupees per month with 12.6percent

**Graph 6 –Frequency to order food online**



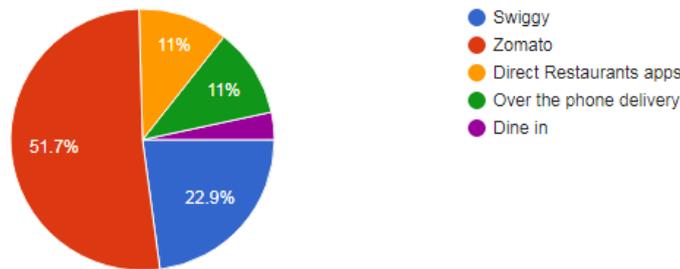
Graph 6 shows that 44.5 percent customers order food online once in a month. 26.9 percent of the people order food online weekly. 10.9 percent are those customers who order food twice or thrice a week. 11.8 percent people were also there who don't order food through apps. 4.2 percent people order food fortnightly which means once in fourteen or fifteen days. 1.7 percent customers are also present who order food daily.

**Graph 7 - Preferred time to order food online**



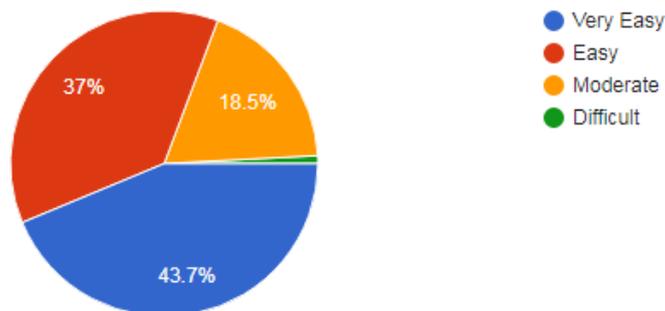
Graph 7 shows that Maximum customers order food online at evening time i.e. snacks with 49.6 percent. 45 percent of the people order food at night (dinner) time. 15.1 percent order during afternoon (lunch) time where 2.5 percent order during morning (breakfast) time. About 26.1 percent people were found to have no preferred time to order.

**Graph 8 - Most preferred mode or app to place order**



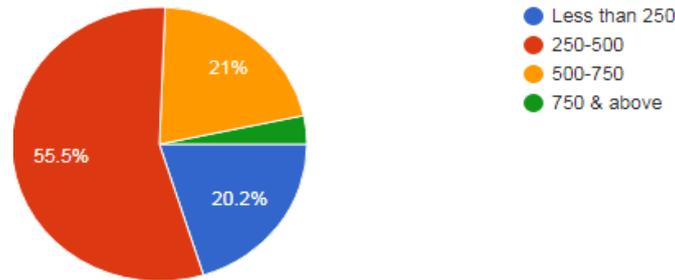
Graph 8 shows that large amount of customer with 51.7 percent prefer order food through Zomato app. 22.9 percent customers find Swiggy app more preferable. 11 percent each were there who prefer direct restaurants apps and over the phone delivery. 3.4 percent customers prefer to dine in rather than ordering food online.

**Graph 9 – Level of comfort while ordering food online**



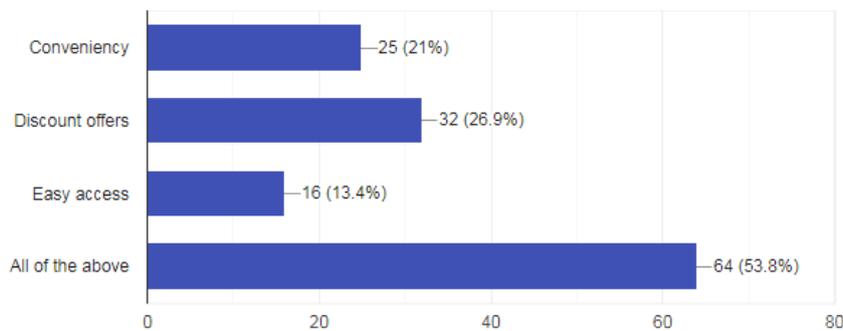
As per Graph 9, 43.7 percent customers find Very Easy to use the online apps and order food online. 37 percent find it easy to use where 18.5 percent were saying they found moderate to use and order food online. 0.8 percent find it difficult to use and order.

**Graph 10 - How much amount is spent on one-time delivery?**



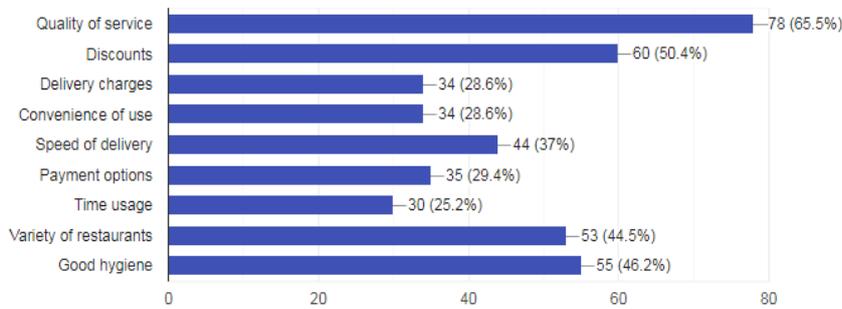
Graph 10 shows, 55.5percent customers spend 250-500 rupee on one-time delivery of food. 21percent spend between 500-750 at one-time delivery and 20.2percent people spend less than 250 rupees on one-time delivery. 750 and above rupee was spent by 3.4percentof the people on one-time delivery.

**Graph 11 - Why customers choose online food app?**



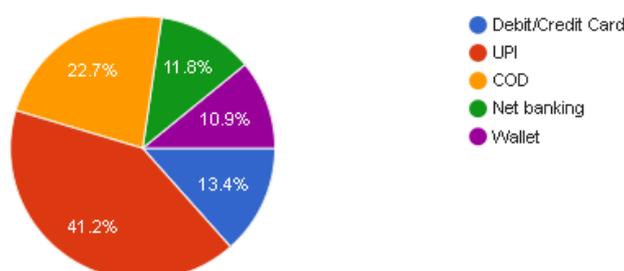
Graph 11 shows,53.8percent customers opt for food apps because of all three factors i.e. convenience, discount offers, easy access. 26.9percent opted for food delivery because of discount offers. 21percentcustomers opt because of convenience. 13.4percent opted for food app due to easy access.

**Graph 12 - What are various parameters that affect choice of food apps?**



Graph 12 shows that 65.5percentof the customer gets influenced by quality of service. 50.4percent of the customer order food online due to discounts. 46.2percentget influenced due to good hygiene. 44.5percentof the customer order food online due to variety of restaurants available.37percentcustomers order food online due to speed delivery. 29.4percentof the people order food due to various payment options available. 28.6percent ratio was seen that customers order food online due to less delivery charges and convenience of use respectively. 25.2percent customers get influenced due to less time usage.

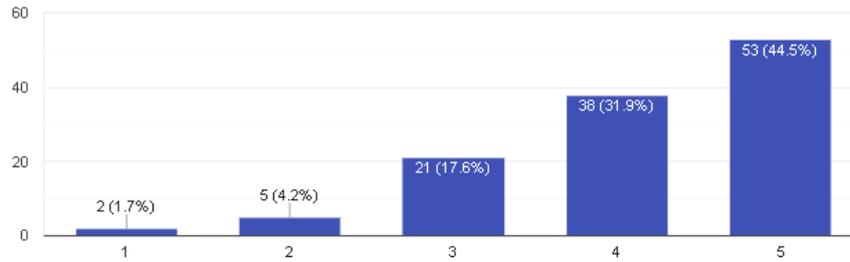
**Graph 13 - Which payment mode is most preferred?**



Graph 13 shows that maximum customers opt to pay through UPI with 41.2percent where many customers opt for COD which is Cash on Delivery with 22.7percent. 13.4percent customers prefer to pay by debit/credit card. 11.8percent customers opt for net banking while ordering food online. 10.9percent customers prefer to pay through wallet while ordering food through apps.

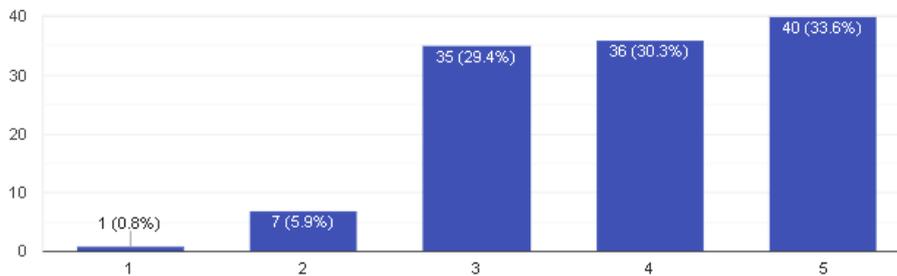
Following questions were designed on Likert scale where respondents gave the rating from 1-5 and, 1 stands for Strongly Disagree and 5 stands for Strongly Agree

**Graph 14 - Customers find food apps very flexible to use.**



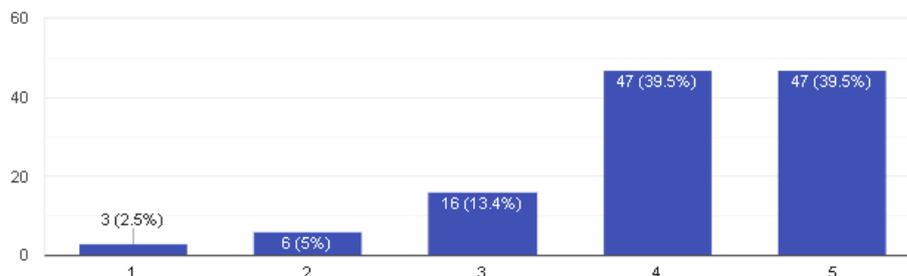
Graph 14 shows customers rated 5 i.e. strongly agree for flexibility to use food apps with 44.5percent ratio. 31.9percent customers rated 4 i.e. agree for flexibility while using food apps. 17.6percent customers were neutral i.e. 3 found to flexible to use food apps. 4.2percent customers rated 2 i.e. disagree that food apps are not flexible to use. 1.7percent customers strongly disagree as they rated 1 which means they don't find food apps flexible at all.

**Graph 15 - Food cost is affordable with apps.**



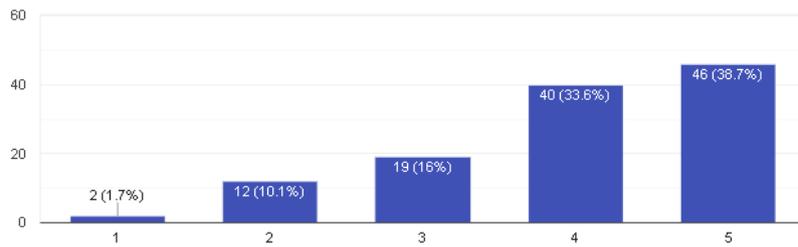
Graph 15 shows that 33.6percent customers strongly agree that food cost is affordable. 30.3percent customers agree, 29.4percent customers are neutral, 5.9percent disagree on the question they don't find food cost affordable, and 0.8percent customers strongly disagree as they don't find food cost affordable on food apps.

**Graph 16 - Customers find food apps time efficient.**



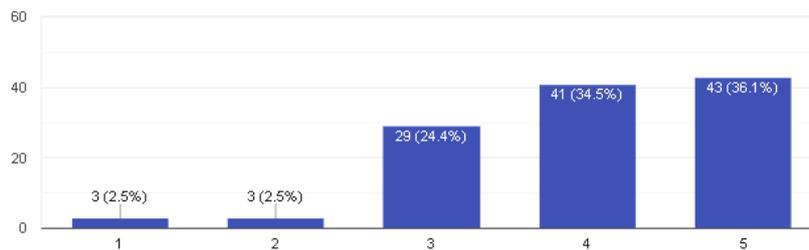
Graph 16 shows, 39.5percent of the customers rated 5 who found food apps are time efficient. 39.5percent rated 4 out of 5 for time efficient while using food apps. 13.4percent were neutral as they rated 3 out of 5 for time efficient factor. 5percent rated 2 which means they don't find food apps time efficient. 2.5percent customers rated 1 which means they strongly disagree that food apps are time efficient.

**Graph 17 - Customers get influenced by various offers available on food apps.**



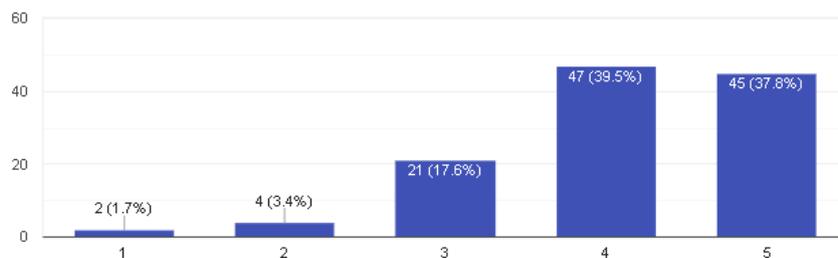
Graph 17 shows that customers strongly agree with 38.7percent that they get influenced due to various offers available on food apps. 33.6percent agree as they rated 4 out of 5 to get influence due to various offers available on food apps. 16percent customers are neutral to say that they get influence by various offers on food apps. 10.1percent customers disagree that they don't get influenced with various offers availability. 1.7percent customers strongly disagree that they don't get influenced with various offers available on food apps.

**Graph 18 - Customers feel safe using online payment mode.**



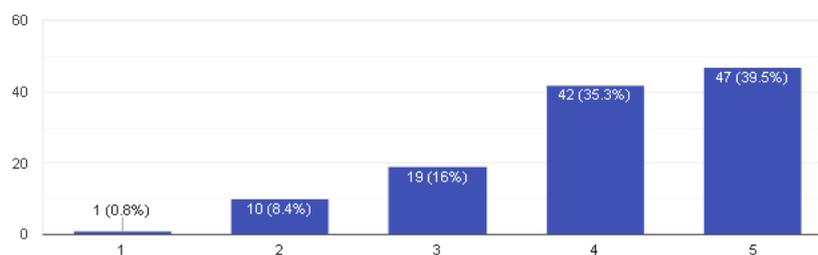
Graph 18shows that 36.1percent customers strongly agree that online payments modes are safe and secure. 34.5percent customers agree to the point that they feel safe and secure to use online payment mode. 24.4percent customers are neutral where they feel safe and secure to use online payment methods. 2.5percent customers disagree to the fact that they do not feel safe to use online payment mode. 2.5percent customers strongly disagree that they don't feel safe and secure to use online payment mode.

**Graph 19 - Service quality influences perception of food apps of customers.**



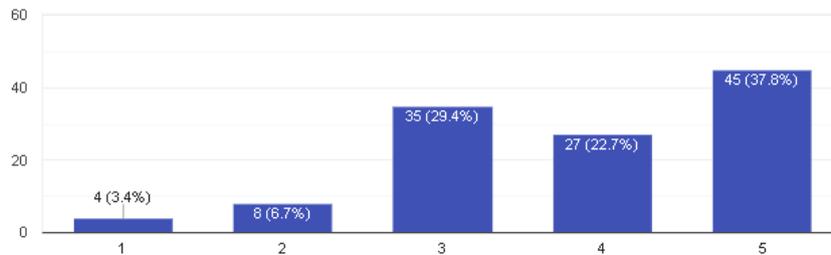
Graph 19 shows that37.8percent customers strongly agree that service quality influence perception of food apps where 39.5percent customers agree that service quality influence perception of food apps. 17.6percent customers were neutral about service quality influence perception of food apps. 3.4percent customers disagree that service quality do not influence perception of food apps. 1.7percent customers strongly disagree that service quality do not influence perception of food apps.

**Graph 20 - Customers' reviews influence on deciding particular restaurants.**



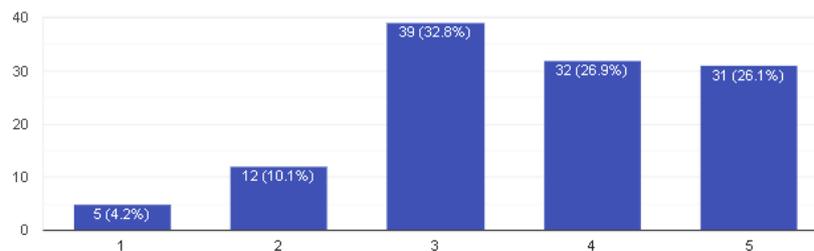
Graph 20 shows that 39.5percent customers strongly agree andgets influenced by customer reviews for deciding particular restaurants while ordering food through apps. 35.3percent customers agree that they get influenced by customer reviews for deciding restaurants to order food online. 16percent are neutral in customer reviews for deciding restaurants. 8.4percent customers disagree that customer reviews do not make them influence restaurants choice while ordering food online. Only 0.8 percent disagrees and do not get influenced from customer reviews.

**Graph 21 - Customers find special features useful.**



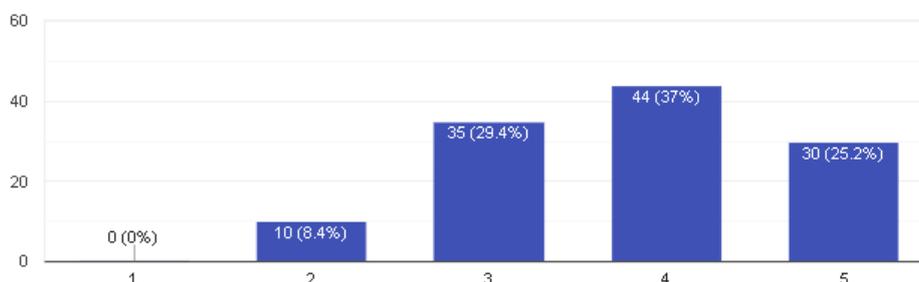
Graph 21 shows, customers strongly agree with 37.8percent ratio that special features like Zomato Gold are useful. 22.7percent customers agree that special features are useful. 29.4percent ratio of customers are neutral to say that special features are useful. 6.7percent customers disagree that they don’t feel special features useful.3.4percent customers strongly disagree that they don’t find special features useful.

**Graph 22 - Customers are influenced by social media posts to use food apps**



Graph 22 shows that 26.1percent customers strongly agree that they get influenced by social media posts to use food apps. 26.9percent customers agreed that social media posts had influenced them to use food apps. 32.8percent were neutral in getting influenced by social media posts to use food apps.10.1percent disagree that they are not influenced by social media posts to use food apps. 4.2percent strongly disagree to the fact that they are not influenced by social media posts to use food apps.

**Graph 23 - Food delivered through food apps hot and fresh.**



Graph 23 shows, 25.2 percent customers strongly agree that they find food hot and fresh when delivered from food apps. 37 percent customers agree that food delivered is hot and fresh by food apps. 29.4 percent were neutral in the fact that food delivered is hot and fresh. 8.4 percent customers disagree that food delivered is not hot and fresh through food apps. 0percent customers were there who strongly disagree in this matter.

**HYPOTHESES TESTING**

To validate **first** null hypothesis i.e. “There is no significant relation between income of theconsumer and frequencyofplacing order for food.”, Chi Square test has been used;

**Table 1:** Incomelevel\*Howfrequentlydoyouorderfoodonline?

Valid			Missing		Total	
	N	Percent	N	Percent	N	Percent
Incomelevel*How frequentlydoyouorderfoodonline?	119	100.0%	0	0.0%	119	100.0%

**Table 2 - Chi-SquareTest**

Value		df	Asymptotic Significance(2-sided)
PearsonChi-Square	18.153 <sup>a</sup>	10	.052
LikelihoodRatio	17.020	10	.074
NofValidCases	119		

Chi Square test shows

P=.052, means it is more than 0.05 (confidence level), so null hypothesis is rejected. It means that the alternate hypothesis is i.e. H1-“There is significant relation between income of the consumer and order placing of food” is not rejected.

To validate **second** null hypothesis i.e.

“There is no significant relation between age of the consumer and frequency of placing order of food.”, Chi Square test has been used;

**Table 3 - Age\*Howfrequentlydoyouorderfoodonline Cases**

Valid			Missing		Total	
	N	Percent	N	Percent	N	Percent
Age*How frequentlydoyouorder foodonline?	119	100.0%	0	0.0%	119	100.0%

**Table 4 - Chi-SquareTests**

Value		df	Asymptotic Significance(2-sided)
PearsonChi-Square	20.172 <sup>a</sup>	15	.165
LikelihoodRatio	21.116	15	.133
NofValidCases	119		

Chi Square test shows

P=.165, means it is more than 0.05 (confidence level), so null hypothesis is rejected. It means that the alternate hypothesis is i.e. H1-“There is significant relation between age of the consumer and frequency of placing order for food” is not rejected.

**FINDINGS**

- The consumers of Ghaziabad city are more likely to say that they would use or recommend online food.
- Zomato is the most preferred food app followed by Swiggy.
- It is inferred that both male and female, aged 18-25 and students are the main consumers of online food ordering apps that is why nearly 90 percent of the respondents found to be unmarried with income less than 25000 as most are students.
- Nearly 55 percent of the respondents spend between Rs 250 to 500 on one order.
- Most of the respondent order food monthly in the evening time and found ordering through food apps very easy and convenient.
- The research found that the consumers prefer to use UPI and cash on delivery as a suitable payment option.
- Parameters like quality of service, discounts, hygiene, variety of restaurants and speed of delivery mostly affects the consumer behavior while using online food ordering apps.
- Most of the respondent find food apps flexible to use.

**CONCLUSION**

It is concluded that online food ordering is reasonably popular among the residents of Ghaziabad city. The purpose of this online food ordering system is basically to enjoy delicious food at home. Now mind set of people is also changing, due to having busy life they avoid to go out for food, they want to enjoy food at home. Due to maintain goods quality dimensions in food deliveries like; convenience, discount offers, 24\*7 availability, easy to access, discount offers and rewards provided by these apps have made these apps quite popular among the consumers. Though these apps are being used by all age groups because of its rapid response yet youngsters are in huge numbers because of various advantages like cost saving, hassle-free deliveries. In youngsters specially students or who have started their career recently are the main users that is why study shows that major portion of app users belong to income; less than 25000. This research has helped to understand people's preferences, the efficacy in time management, affordability, food preferences, discounts available and door-to-door service without compromising on quality. The present study will also be germane to develop new business models for restaurants and devise marketing strategies of online food apps by keeping in mind different segments of market.

**FUTURESCOPE**

Food and restaurant industry is growing at fast rate. Indian food market is gigantic, as of 2019, the organized food market that includes restaurants was worth \$22 billion, it shows the huge growth potential of the food delivery sector in the country. In 2020, India's online food delivery market was valued at approximately \$5 billion. The COVID-19 pandemic helped grow the sector, and it's expected to reach about \$21 billion by 2026 at a CAGR (compound annual growth rate) of nearly 30%. Though as of now, growth is mainly concentrated in large cities such as Mumbai, Delhi, and Bangalore but in future it can be expanded in small cities too with the help of ICT. Rapid development in the area of ICT has made the things accessible and available in remote areas also. In this situation an enormous part of consumers can be targeted by developing new business models in food and restaurant industry and formulating new strategies in the field of online food apps which will be helpful to raise the growth of this sector and simultaneously generate employment opportunities in economy.

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**DIGITAL INNOVATIONS IN BUSINESS AND ECONOMY IN INDIA****<sup>1</sup>Rashi Chaudhary**<sup>1</sup>Research Scholar in Commerce, SVU, Gajraula (Amroha), UP**ABSTRACT**

*Digital innovation is vital to every business that wants to become successful in the 21st century. It is no surprise that research on digital innovation has raised vast interest among researchers in the recent years. Digitalization has reshaped competitive dynamics in the economy, creating new markets and transforming the existing ones. Information technology and data has become an important force in promoting the economic growth of various countries. Records from Statista show that the global digital population is more than 4 billion as on January 2021. The Indian Government launched a project “Digital India” on 1 July 2015 to improve online infrastructure. Indian Prime Minister Mr. Narendra Modi quoted on Digital India, “In this digital age, we have an opportunity to transform lives of people in ways that were hard to imagine a couple of decades ago”. In 2020, Indian Technology Sector accounted for 8 per cent (%) of India’s Gross Domestic Product (GDP). The government increased its focus to create a digitally empowered economy to benefit all sectors, wherein core digital sectors such as Information Technology & Business Process Management, Indian Digital Communication services and Electronics Manufacturing are likely to double their GDPs to US\$ 355-435 billion by 2025. In another report, Mckinsey highlighted that the ‘Digital India’ initiative is expected to boost the country’s digital economy to US\$ 1 trillion by 2025 up from US\$ 200 billion in 2018. Digital innovation has impacted value creation and captured almost every industry. Therefore, digital innovation becomes a critical aspect for a developing economy like India. This paper aims to analyze the need and impact of Digital Innovation of Indian Businesses and Economy. This study uses secondary data from the Ministries of Government of India, IBEF (India Brand Equity Foundation)—an initiative of the Ministry of Commerce and Industry, and various published sources.*

*Keywords: Digital Innovation, Digital India, Indian Economy, Business, Digitalization.*

**INTRODUCTION**

Digital innovation is currently playing vital role in transforming the business landscape at an incredible rate. It refers to the application of digital technology to existing business problems. Ideas such as digital transformation and digitalization are closely related to the concept of digital innovation. In other words, innovation usually refers to a sudden spark, creativity and the incipient actions that lead to implement that spark into a company’s strategy. Digital innovation is the use of digital technology and application to improve business processes, work force performance, improve customer experience, introduce new products and business models. In India “Digital India Programme” is a campaign which launched by the Government of India on July 1, 2015 with “Power to Empower” motto. The vision of this programme is the inclusive growth in the area of electronic services. It is an initiative of government to improve online infrastructure and increased internet accessibility among citizens (for example linking rural areas to high-speed internet networks); thereby, empowering the country to become digitally advanced. Establish a secure and stable digital infrastructure, deliver digital services and ensure that every citizen has access to the internet are the three key objectives of the Digital India initiative. In digitalization, innovations come not only from the digitalization from the phone, cars or books. It is a much broader change of organizing logic in multiple industries and marketplaces that become connected through a common digital infrastructure. The success of India is intrinsically linked to its ability to keep pace with technology. The world has seen an unprecedented change in the technology landscape over the last decade and innovation has become more important than ever before. Technology can help build a digital India—knowledge-based society and economy—by empowering, connecting and binding everyone. Innovation and technology will have to be the enabler for empowerment, equity and efficiency by joining people with governments, bringing them closer to knowledge and bridging the gap between demand and supply. Digitalization is the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business.

**REVIEW OF LITRATURE**

Gupta and Arora (2015) studied that impact of a digital India project on India’s rural sector. The study found that many schemes have been lunched in digital India to boost the agriculture sector and entrepreneurship development in rural areas. Digital India program has also set the stage for the empowerment of rural Indian women.

Rani Suman (2016) concluded that the digital India project provides a huge opportunity to use the latest technology to redefine India and the paradigms of the service industry. It also concluded that many projects may need some refinements to achieve the preferred service level objectives, transformational process and reengineering.

Maiti and Kayal (2017) studied the impact of digitalization on India’s services and MSME sectors’ development and growth. The performance of the services sector improved extensively since 2000. The study concluded that India’s service sector and MSME segment have the high potential for future growth with digitalization. The inclusive of both India’s services sector and MSME segment give boost to the volume of trade and India’s share with the help of digitalization.

Sheokand and Gupta (2017) introduced the Digital India campaign and Indian economy. The study also discussed pillars and various challenges faced in the implementation of the programme. Finding suggested that a digitally knowledgeable and empowered population can transform the economy. Digitalization will lead to cost savings, increased output, better employment, enhanced productivity and literacy.

**METHODOLOGY**

This study used secondary data from the Ministries of Government of India, IBEF (India Brand Equity Foundation)– an initiative of the Ministry of Commerce and Industry, website of Digital India (Power to Empower)– digitalindia.gov.in/content and various published sources. The available data has been processed and presented in the form of different suitable tables.

**OBJECTIVES OF THE STUDY**

- To analyze the impact of Digital Innovation on Indian business and Indian economy.
- To study the Digital India Programme.
- To study the importance of digitalization in India.
- To study the benefits or risk of digitalization.

**DIGITAL INNOVATION IN INDIA**

With more than half a billion internet subscribers, India is well on its way to become digitally advance country. Propelled by the falling cost and rising availability of smartphones and high-speed connectivity, India is already home to one of the world’s largest and fastest-growing markets for digital consumers and is digitizing faster than many mature and emerging economies.

**DIGITAL INDIA CAMPAIGN**

Digital India is a project, launched on 1 July 2015 by the Government of India to improve online infrastructure and provides easy online government services to citizen of India. The main objective of this project is to connect rural areas with high-speed Internet networks and improving digital literacy. This project is interconnected by the various government departments such as IT, Education, Agriculture etc., in order to achieve a promising bright return. A Digital India Advisory Group is arranged to monitor and control this program.

Digital India is an umbrella programme that covers multiple Government Ministries and Departments. It weaves together a large number of ideas and thoughts into a single, comprehensive vision so that each of them can be implemented as part of a larger goal. Each individual element stands on its own, but is also part of the larger picture. Digital India is to be implemented by the entire Government with overall coordination being done by the Department of Electronics and Information Technology (DeitY).

**VISION OF DIGITAL INDIA**

Digital India is a flagship programme of the Government of India with a vision to transform India into a digitally empowered society and knowledge economy

**VISION AREAS OF DIGITAL INDIA**

**Table – 1**The Digital India programme is centered on three key vision areas.

Digital Infrastructure as a Core Utility to Every Citizen	Governance & Services on Demand	Digital Empowerment of Citizens
○ Availability of high-speed internet as a core utility for delivery of services to	○ Seamlessly integrated services across departments or jurisdictions	○ Universal digital literacy ○ Universally accessible

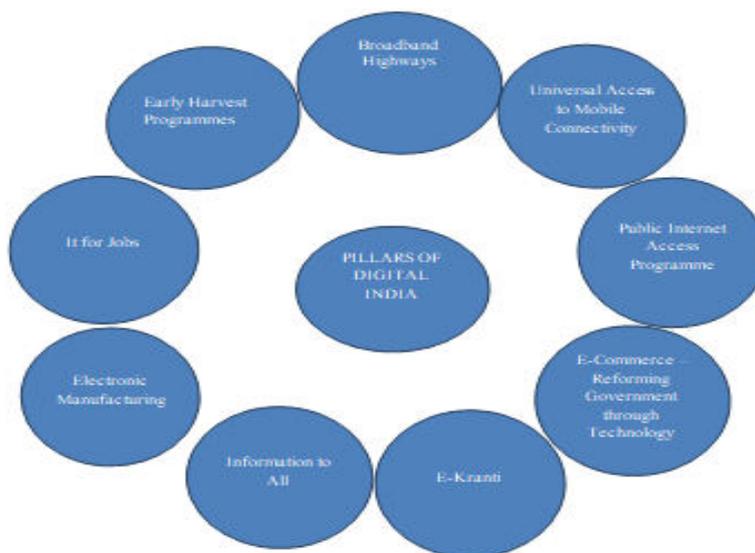
<p>citizen</p> <ul style="list-style-type: none"> <li>○ Cradle to grave digital identity that is unique, lifelong, online and authenticable to every citizen</li> <li>○ Mobile phones and bank account enabling citizen participation in digital &amp; financial space</li> <li>○ Easy access to a Common Service Centre</li> <li>○ Shareable private space on a public cloud</li> <li>○ Safe and secure cyber-space.</li> </ul>	<ul style="list-style-type: none"> <li>○ Availability of services in real time from online &amp; mobile platforms</li> <li>○ All citizen entitlements to be portable and available on the cloud</li> <li>○ Digitally transformed services for improving ease of doing business</li> <li>○ Making financial transactions electronic &amp; cashless</li> <li>○ Leveraging Geospatial Information Systems (GIS) for decision support systems &amp; development.</li> </ul>	<p>digital resources</p> <ul style="list-style-type: none"> <li>○ Availability of digital resources/services in Indian languages</li> <li>○ Collaborative digital platforms for participative governance</li> <li>○ Citizens not required to physically submitting Government documents/ certificates.</li> </ul>
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Source- digitalindia.gov.in/content

**PILLARS OF DIGITAL INDIA PROGRAMME**

Digital India aims to provide the much-needed thrust to the nine pillars of growth areas, are as follows:-

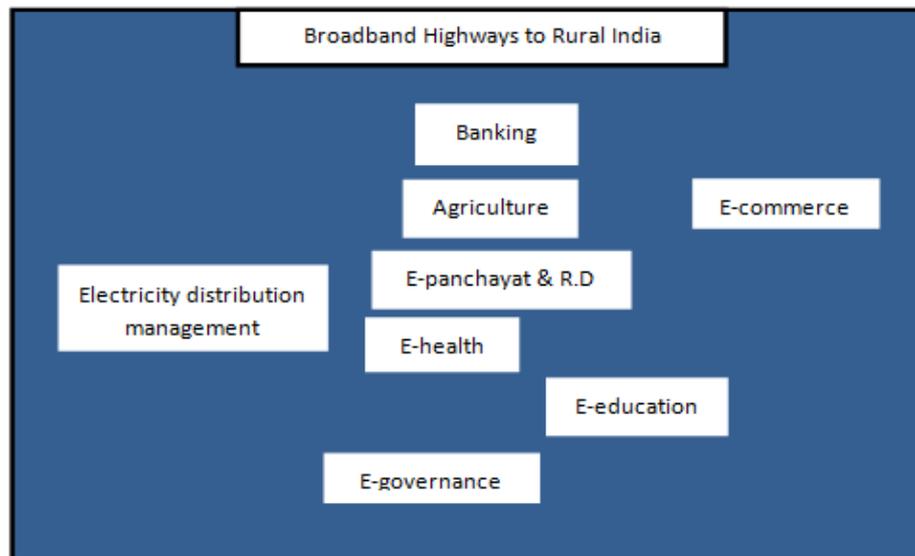
**Figure – 1**



**1. BROADBAND HIGHWAYS**

This covers three sub components, namely

- Broadband for All – Rural: 250000 village Panchayats would be covered under the National Optical Fibre Networks (NOFN) by December 2016. Department of Telecommunications (DoT) is the nodal Department for this project.
- Broadband for All – Urban: Virtual Networks Operators would be leveraged for service delivery and communication infrastructure in new urban developments and buildings would be mandated.
- National Information Infrastructure (NII): NII would integrate the network and cloud infrastructure in the country to provide high speed connectivity and cloud platform to various Government departments up to panchayat level. These infrastructure components include networks such as State Wide Area Network (SWAN), National Knowledge Network (NKN), National Optical Fibre Network (NOFN), Government User Network (GUN) and the MeghRaj Cloud. NII aims at integrating all ICT infrastructure components such as SWANs, NKN, NOFN, GUN and GI Cloud. It will have provision for horizontal connectivity to 100, 50, 20 and 5 government offices/ service outlets at state, district, block and panchayat levels respectively. Department of Electronics and Information Technology is the nodal Department for this project.

**Broadband Highways to Rural India****Figure-2**

Sources: digitalindia.gov.in

## 2. UNIVERSAL ACCESS TO MOBILE CONNECTIVITY

This initiative focuses on network penetration and filling the gaps in connectivity in the country.

There are around 55,619 villages in the country that do not have mobile coverage. As part of the comprehensive development plan for North East, providing mobile coverage to uncovered villages has been initiated. Mobile coverage to remaining uncovered villages would be provided in a phased manner.

The Department of Telecommunications is the nodal department and project cost will be around 16000 cr. during 2014-18.

## 3. PUBLIC INTERNET ACCESS PROGRAMME

The two sub components of Public Internet Access Programme are Common Service Centres (CSCs) and Post Offices as multi-service centres.

### • Common Services Centres (CSCs)

CSCs would be strengthened and its number would be increased to 250000 i.e. one CSC in each Gram Panchayat. CSCs would be made viable and multi-functional end-points for delivery of government and business services. Department of Electronics and Information Technology (Deity) is the nodal department to implement the scheme.

### • Post Offices as multi-services centers

A total of 150000 post offices are proposed to be converted into multi-service centres. Department of Posts is the nodal department to implement this scheme.

## 4. E-COMMERCE – REFORMING GOVERNMENT THROUGH TECHNOLOGY

Government Process Re-engineering using IT to simplify and make the government processes more efficient is critical for transformation to make the delivery of government services more effective across various government domains and therefore needs to be implemented by all Ministries/Departments.

## 5. E-KRANTI – ELECTRONIC DELIVERY OF SERVICES

Considering the critical need for transforming e-Governance, promote mobile Governance and good Governance in the country, the approach and key components of e-Kranti have been approached by the union cabinet on 25 March, 2015 with vision of “Transforming e-Governance for Transforming Governance”.

There are 44 Mission Mode Projects under e-Kranti programme. These mission mode projects are grouped into Central, State and Integrated projects.

## 6. INFORMATION TO ALL

Open data platform facilitates proactive release of datasets in an open format by the Ministries/Departments for use, reuse and redistribution.

Online hosting of information & documents would facilitate open and easy access to information for citizens.

Government shall pro-actively engage through social media and web-based platforms to inform and interact with citizens.

“mygov.in”, a platform has been launched by Prime Minister of India on 26 July, 2014 for citizens of India, as a medium to exchange ideas/suggestions with Government. It will facilitate 2-way communication between citizens and Government to bring in Good Governance.

**7. ELECTRONIC MANUFACTURING**

This pillar focuses on promoting electronics manufacturing in the country with the target of NET ZERO Imports by 2020 as a striking demonstration of intent. This ambitious goal requires coordinated action on many fronts, such as: Taxation, incentives Economies of scale, eliminating cost disadvantages.

Demand for electronic goods is increasing with a Compound Annual Growth Rate (CAGR) of 22% and was expected to touch 400 Billion USD by 2020. Indian Government is also taking several steps to promote manufacturing and investment in this sector, which puts India high on the list of potential places to invest.

**8. IT FOR JOBS**

This pillar focuses on providing training to the youth in the skill required for availing employment opportunities in the IT/ITES sector.

**9. EARLY HARVEST PROGRAMMES**

Early harvest programme basically consists of those projects which are to be implemented within short timeline.

**The projects under the Early Harvest Programme are as follows:**

- IT Platform for Messages
- Government Greetings to be e-Greetings
- Biometric attendance
- Wi-Fi in All Universities
- Secure Email within Government
- Standardize Government Email Design
- Public Wi-Fi hotspots
- School Books to be eBooks
- SMS based weather information, disaster alerts
- National Portal for Lost & Found children

**DIGITAL INDIA: KEY INITIATIVES LAUNCHED BY THE GOVERNMENT OF INDIA**

**Table – 2 Table- 2 shows the key services launched by the Government of India**

Digital India: Key Initiatives	
<ul style="list-style-type: none"> <li>• Aadhaar</li> <li>• DigiLocker</li> <li>• MyGov</li> <li>• BharatNet</li> <li>• Smart Cities</li> <li>• Common Service Centres (CSCs)</li> <li>• Digitization of Post offices</li> </ul>	<ul style="list-style-type: none"> <li>• Universal Access to Mobile</li> <li>• Public Wi-Fi Hotspots</li> <li>• India Stacks</li> <li>• Pradhan Mantri Gramin Digital Saksharta Abhiyaan (PMGDISHA)</li> <li>• E-Health</li> <li>• E-Education</li> </ul>

**Source:**www.digitalindia.gov.in

According to table no.2 the Government of India initiative programs there are three components like Infrastructure, Services and Empowerment. There are more than 50 programs successful contributed to society and citizens. Under this program the Indian Government launched so many services like AADHAAR, CSC, DBT, BBNL, DIGILOCKER, DIGISEVAK, MyGov, E-education, E-Health, E-Trade, E-District, ENAM, E-Office, E-Pathshala etc.

**NEED FOR DIGITAL INDIA**

Despite rising adoption of digital technologies and the IT industry, India's digital divide is deep and is creating economic disparities between those who can afford technology and those who cannot, thereby affecting the country's overall digital growth.

To bridge this divide, the government introduced the "Digital India" initiative, covering various programmes such as e-governance, mobile e-health services and digital finance for digital inclusiveness. Through schemes such as Aadhaar (a digital ID programme), BharatNet and public Wi-Fi hotspots, the 'Digital India' initiative is enabling the country (including small towns and rural areas) to develop its internet infrastructure.

Further, the country's low mobile data rates have allowed a vast population to access the internet. As per the Telecom Regulatory Authority of India, as of September 2020, the total internet subscribers (including wireless and wired internet subscribers) stood at 776.45 Million, up from 687.62 Million subscribers in September 2019.

**ADVANTAGES OF DIGITAL INDIA**

- High-speed connectivity and high-speed network
- Connect any areas of the world with new ideas
- Improving e-governance by giving digital services to the Indian citizens
- For increase opportunities on IT jobs
- It can help small business which is established in rural areas
- It can improve lifestyle
- People can connect through social media anywhere and expand various communities.

**Impact of Digital Innovations on Indian Businesses**

Indian businesses are traditionally seen as slower to adopt and less experimentation-friendly. But with more fortune 500 and Global 2000 companies setting up innovation and capability centres in the country, these attitudes are changing. "When comparing India with South East Asian markets, China would be faster. But we are definitely ahead of the others and the Middle East. Indian businesses are adopting tech earlier and faster", says Aneesh Reddy, co-founder and CEO of Capillary Technologies.

The biggest difference, according to Kiran Menon, CEO and Co-founder of Tydy, a Bengaluru-based platform, is that "Indian businesses are becoming much more methodical in their ways of development. They also want to take advantage of every capability and feature of a product.

Indian companies are surprising strategists too, "for a long time, it was convenient for many industries to just adopt what was happening in the world. The 'Make in India' sentiment is now driving people to create solutions here", says Eddie Chandhok, President, Global Delivery, Infogain – a Silicon Valley-headquartered, adding that we have the people, the expertise and "the best payments and security systems comparable with anyone in the world". To keep any company on top of the digital game, digital transformation will remain a mirage, he concludes.

The Covid-19 pandemic has accelerated digital transformation in India, according to a new study by customer service software firm Zendesk. More than half the companies surveyed said that their digital transformation has been fast-tracked by one to three years while 72% said customer experience (CX) had become more important to them now than a year ago.

India is one of the major economies, which exports services to other countries and services sector contributes roughly to 55% of the Indian GDP. It has also attracted the significant amount of foreign investments and contributed in the exports as well as one of the largest employment providing sectors.

- 31.45% of the India's utilized populace is working under services sector
- Services area is the biggest beneficiary of foreign investments in India with investments of USD 80.67 billion from 2000 to 2019.
- Government of India is keen of making the "Make in India" successful as a part of that introduced National Broadband Mission with a motto to give broadband access to all the towns by 2022.
- Health sector is expected to reach 132 Billion USD by 2023, with the advent of many new technologies in the field of medical sciences.

• India's Digital economy is expected to reach 1 trillion USD by 2025 and IT sector being the major contributor with the growth rate of 8% and expected to reach 14.3 billion USD by 2023.

Micro, Small & Medium enterprises contributes to about 8% in India's Gross Domestic Product (GDP); it also plays a key role in developing the economy by providing employment to 80 million people and contributing majorly for about 45% in manufacturing & 40% in the exports.

MSME are an industry till now have seen a significant growth because of the low-cost structure regimes and possess the various benefits of not paying provident fund, gratuity fund and excise duty (for the industries having turnover less than 1.5 crores) these helped them to cost their products accordingly and gain some competitive advantage over the other established companies by maintaining profit margins. In the process of digitalization Government of India has brought the major reform in the name of GST, which increased the compliance costs by making them to follow registration and returns for GST and has put the additional burden on MSME's and slowing their growth.

Considering the challenges, they are facing it is critical to build the digital literacy in MSME sector that they make the optimal use of the technology, knowing the potential of the MSME sector, digital transformation could be the best possible solution to help them. Digitalization through cloud computing for ICT domain sector, Machine learning, Data mining & IoT could definitely change the phase of the MSME sector and can give the competition to the big players in the industry.

### **Impact of Digital Innovation on Indian Economy**

The digital economy is the new productivity platform that some experts regard as the third industrial revolution. Digital revolution, also known as 'The Internet Economy' or Internet of Everything, is expected to generate new market growth opportunities, jobs and become the biggest business opportunity of mankind in the next 30 to 40 years. The digital economy is the worldwide network of economic activities enabled by information and communications technologies (ICT). It can also be defined more simply as an economy based on digital technologies. Multiple definitions for the term exist, with variations in what should be included in this new economic paradigm.

### **Components of Digital Economy**

The three main components of the 'Digital Economy' concept can be identified as:

- a) e-business infrastructure (hardware, software, telecoms, networks, human capital, etc.).
- b) e-business (how business is conducted, any process that an organization conducts over computer-mediated networks).
- c) e-commerce (transfer of goods, for example when a book is sold online).

However, the digital economy is not simply about moving business transactions from face to face to online. The digital economy is about transforming the many facets of business interactions and transactions and also enabling economic innovations. For example, the digital economy both is enabled by and has given rise to the advent of new digital currencies and payment processes (i.e., Bitcoin and the digital wallet).

According to analysts, the Digital India plan could boost GDP up to \$1 trillion by 2025. It can play a key role in macro-economic factors such as GDP growth, employment generation, labour productivity, growth in number of businesses and revenue leakages for the Government. As per the World Bank report, a 10% increase in mobile and broadband penetration increases the per capita GDP by 0.81% and 1.38% respectively in the developing countries. India is the 2nd largest telecom market in the world with almost 915 million wireless subscribers and world's 3rd largest Internet market with almost 259 million broadband users. There is still a huge economic opportunity in India as the Tele-density in rural India is 59.39% at the end of October 2021 and Urban Tele-density is 138.50% at the end of November 2021. The overall Tele-density in India increased from 86.86% at the end of October 2021 to 86.90% at the end of November 2021. Future growth of telecommunication industry in terms of number of subscribers is expected to come from rural areas as urban areas are saturated with a Tele-density of more than 160%.

### **RISKS OF DIGITAL INNOVATION**

Although digital innovation has a lot of benefits, there are risks associated with it.

**There are two main reasons why digital innovation could fail:**

- 1) Application of the wrong technology
- 2) Unwillingness to adapt the standard requirements of the new technology

The risk here is that digital innovation is costly, which could be fatal if the attempt fails. This is the reason there must be a digital transformation strategy in place to outline the change and steps that would strategically reposition the business in the digital economy.

#### **On the flip side, ignoring digital innovation is riskier.**

Even though executives know the importance of digital innovation, only half of them actually have a digital transformation strategy. In fact, research from Mckinsey suggests that the reason for that is fear of damaging the core business.

#### **DIGITAL PAYMENT INDEX: RBI**

The Reserve Bank of India (RBI) has constructed a composite Digital Payments Index (DPI) to capture the extent of digitalization of payments across the country.

The index series since inception is as under:

**Table-3**Digital Payments Index from March 2018 to September 2021

Period	RBI-DPI Index
March 2018 (Base)	100
March 2019	153.47
September 2019	173.49
March 2020	207.84
September 2020	217.74
March 2021	270.59
September 2021	304.06

**Sources:** Reserve Bank of India (rbi.org.in)

According to this table, the RBI-DPI Index continues to demonstrate significant growth in adoption and deepening of Digital Payments across the country. It has been constructed with March 2018 as the base period, i.e., Digital Payment Index score for March 2018 is set at 100. It will be published on RBI's website on a semi-annual basis.

#### **CONCLUSION**

Digital India is promoted by Government to use maximum things in a digital way. It also gives good contribution in growth of India. The aim of digital India is to reduce paperwork and connect every area of India with high-speed internet connectivity. Digital India Mission in union budget 2021-22: Proposed to develop a world-class fintech hub in Gandhinagar's Gujarat International Finance Tec-city (GIFT), Allocated funds worth Rs. 1.15 lakh crore (US\$15.32 Billion) to digitize the Indian Railways, Enabled funds Rs. 9000 crore (US\$ 1.20 billion) to compensate service providers for creating and augmenting their telecom infrastructure, allowed all voters to access their 'Digital voter ID card' by linking their mobile number with the election commission's website from February 01,2021. The rising use of Unified Payments Interface (UPIs) strongly indicates that more and more people in India are adopting a digital lifestyle. Moreover, the number of transactions being processed via UPIs reaching 2.73 billion (>2x) in March 2021, up from 1.25 billion in March 2020, highlights that the government's 'Digital India' initiative has helped the country achieve significant digital progress.

With the emergence of technologies such as artificial intelligence, the internet of things (IoT), cloud computing, blockchains and robotics, the government can use these new avenues to further enable digital and technology growth in India. As per a Mckinsey report, a digital economy is likely to create 60-65 million jobs by 2025. With the 'Digital India' mission, the government is well-aligned to tap this opportunity and create an economic value of US\$ 1 trillion by 2025 from the digital economy. There must be a digital transformation strategy in place to outline the change and steps that would strategically reposition the business in the digital economy. Proper implementation of Digitalization can change the phase of the Indian Economy.

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**THE ROLE OF SELF-HELP GROUPS IN WOMEN EMPOWERMENT****<sup>1</sup>Bani Anand and <sup>2</sup>Vinay K. Srivastava**<sup>1</sup>Head, Department of Psychology, Devendra PG College, Belthra Road, Balia<sup>2</sup>Associate Professor, I.T.S Ghaziabad**ABSTRACT**

*A Self-Help Group (SHG) is a village-based financial intermediary comprising ten to twenty local women. SHGs fall under the category of village banking. According to NABARD, the SHG program emerged in the early 1990s with the Reserve Bank of India guidelines encouraging the nationalised commercial banks to lend to informal SHG groups. The relationship between women's empowerment and social development has been a major theme in studies of any nation's overall development. The United Nation (UN) claims that improving women's status is not only beneficial to themselves but also for overall social economic development of the nation. The SHG movement in India has been working in the right direction in empowering women and eradicating poverty in the rural and urban areas. However, women are still not empowered as per the expectation. This paper explores the impact of participation in SHGs on the empowerment of women in the context of the great importance being given to the group approach while conceptualizing any programme for rural women.*

*Keywords: SHGs, Women Empowerment, Economic Development,*

**INTRODUCTION**

Women empowerment is one of the top priorities of all development policies across all countries, irrespective of their level of economic development. In fact, there has been a growing awareness among the nation states to take into account the gender perspective while implementing and appraising the performance of developmental programmes as for instance 'gender budgeting'. Furthermore, many conventions and agreements catering exclusively to the needs of women have been organized and implemented. They all aim at ending all forms of discrimination against the fairer sex.

This is surprising for women who continue to constitute the largest segment of socially and economically vulnerable population in all countries. Women are the worst sufferers of any socio, economic, political and natural disaster. The present economic crisis has hit them severely. The reason being that most of the women in developing nations find their employment in the informal sector and this sector has not remained decoupled from the upheavals in the organized sector. Similarly, environmental degradation makes life tougher than before because it has resulted in acute fuel, fodder and water shortages management of which lies traditionally with the women. Likewise, communal violence degrades their well-being in various respects.

In India, at the end of the Ninth Five Year Plan, 26.1 per cent of the population was living below the poverty line. In the rural areas, 27.1 percent of the population was living under poverty. The overall unemployment rate was estimated to be 7.32 per cent while the female unemployment rate was 8.5 per cent. Unemployment amongst women in the rural areas was 9.8 per cent. This was because of the low growth of new and productive employment. At the end of the Ninth Five Year Plan, the Government implemented various schemes to reduce poverty and to promote gainful employment. But the most effective scheme with less stress on financial expenditure was the concept of "Self-Help Group".

**The concept of Women empowerment**

Women's empowerment comprises women's education and knowledge to enhance her understanding about her surroundings, her ability to control her life, freedom from domination by not depending on anyone else's income, her ability to participate in decision making process, her capability to make independent decisions and finally her independence in terms of mobility.

The concept of women empowerment has evolved over time from a narrow focus on ameliorating the economic status of women to provide them at par status with their male counterparts in all walks of life – personal as well as public. The empirical results are spatially as well as sectorally differentiated for the various countries as well as for the same country.

In this context, the works of Nobel Laureate economist Prof. Amartya Sen needs special mention. He has researched extensively on the factors and processes influencing and determining the well being of an individual – and they apply to individuals not genders. He has given a holistic view to the concept of women

empowerment. This is the reason why there has been a transition from the welfare approach to women empowerment to put it in terms of Sen's word the "agency approach".

In the former framework women empowerment is conceptualized as the process which aims at increasing and enlarging the availability of the commodity basket over time. This approach rest upon the utilitarian approach to development which enunciates that utility derived from the commodity bundle and the welfare are strongly positively correlated. So, any measure which increased women's command over resources, was ought to increase their welfare. Since women in the poor countries are devoid of even basic needs such as, a balanced diet, the expansion of the resources (for the time being, consider it in terms of money for, it is supposed to give its possessor command over other goods and services) was thought to greatly increase their welfare and in this framework, empower them. So, we find that earlier measures ranging from direct transfer of money incomes to the women to creating employment opportunities for them were designed in commensurate with this approach.

Sen's work has led to a marked departure from the traditional conceptualization of development. His approach does recognize the importance of material resources in augmenting the welfare of an individual but is neither restricted to it nor is decisively tilted towards it. Instead, it takes under it all those phenomena by which an individual feels better, happier and content. Thus, in this approach development is an ongoing phenomenon and involves an expansion of the opportunity set of the individual which he / she values.

None will deny the fact that this illuminating analysis by Prof. Sen has provided a deep insight to look at the problem of disadvantaged women. It aids and abets us to gain a better understanding of the various institutions prevalent in the society that tend to limit the choice available to the neglected half and thus disempower them. It also has significant policy prescriptions for the concerned authorities to design and implement measures which bring a sea change in the status of women, particularly in developing countries. It envisages a holistic look at the concept of women empowerment.

Nevertheless, it offers an advice for the governments and societies in the western and richer world that women in their society may be economically better as compared to their counterparts in developing countries but this is just one angle of looking at the photograph not the panoramic view. In the western countries, the problems faced by the women are covert rather than overt and also is no less damaging. Some examples include glass ceiling, sexual harassment at work place, inequalities in pay for the same job, less access to higher education, constrained choice regarding career and so on.

The current approach is that women are no longer viewed as a passive receiver of the welfare measures but are increasingly viewed as an active agent of their development process and of mankind in general. Improvement in the conditions of women has positive outcomes for the well being of children and men as well. There are ample empirical evidence from various sectors viz entrepreneurship, business, politics and academics that women are no less than males in performance and generating output, though both may differ in their approach and way of performing the task.

In this backdrop, the Self-Help Group (SHG) model was introduced as a core strategy for the empowerment of women, in the Government of India's Ninth Five Year Plan (1997–2002) and is one of the largest and fastest-growing microfinance programs in the developing world (Planning Commission 2002). Empirical evidence from earlier research substantiates that the economic and social impact of microfinance empowers women.

### **SHGs - A Brief Introduction**

A SHG is a village based financial intermediary committee usually composed of 10-20 local women. The members make small regular saving contributions for a few months until there is enough capital in the group for lending. Funds may then be lent back to the members or other villagers. These SHGs are then further 'linked' to banks for delivery of micro credit. It lays emphasis on capacity building, planning of activity clusters, infrastructure build up, technology, credit and marketing (Sewa International).

The SHG movement in India began in the 1980s, when several non-government organizations mobilized and organized poor communities in rural areas and offered them formal channels for social and financial support. This programme gained momentum with the National Bank for Agriculture and Rural Development linking a small number of such groups with banks. Called the Self-Help Group Bank Linkage Programme, this revolutionary initiative connected group members, many of whom had never had a bank account before, to formal financial services in a sustainable and scalable manner.

SHGs enhance the equality of status of women as participants, decision-makers and beneficiaries in the democratic, economic, social and cultural spheres of life. Self Help Groups approach to women empowerment is an amalgamation of the concept of 'group approach' of accomplishing a task and 'agency approach' to

development. We have discussed the gist of the latter approach in the previous section, let us summaries the same for the former one.

Most of the great works accomplished in the human civilization can be attributed to the groups rather than a single individual. Group approach to decision making and programme implementation has long been employed in various areas including politics – almost all the difficult matters are referred to committees. Most of the successful functioning organisations be it at micro level ( a single firm ) or at macro level ( parliament, as for instance ) reinforce the significance of group approach to problem solving.

The most vibrant argument for the group approach is in the form of ‘synergy effect’. Simply stated, it refers to the phenomenon in which the whole is greater than the sum of individual parts. Mathematically it is represented as  $2 + 2 = 5$  or  $2 + 2 > 4$ . Thus, the output always exceeds the input. It has one important implication – indicating thereby, a great leverage of the team effort. The performance of the SHGs in any arena as for example, income generation, environmental protection, community participation is better as compared to the combined individual performances only due to this leveraging effect. It is this leveraging effect which can be further strengthened and employed as for instance, social commitment to produce an apparent change in the status of women in the society.

This synergy effect is of utmost importance and lies at the heart of SHGs theory. This is the reason why; it has the capability to alter the lives of women and it has greatly altered the lives of millions of women in various countries of the world and even in our country.

The tool of SHGs is not only instrumental in improving the economic status of the women, for if it would have been the fact then its role in bringing women empowerment would have been severely limited, instead it bestows other benefits which in no sense are less significant than its direct benefits.

## CONCLUSION

The SHG is based on the concept of women empowerment through increasing employability, self-sufficiency and developing a habit of saving among the rural women. Empowerment is not an essential economic one alone; it is a process having personal, economic, social and political dimensions with personal empowerment being the core of the empowerment process. Women’s participation in SHGS has altered the lives of many of them, and these women can be prospective leaders in the local political field. The basics of this change are empowerment, self-assurance, political consciousness and assertion of identity. With respect to the control of resources, changes in behaviour and the decision-making reveals that many strides have been made in the right direction and women are in the process of empowering themselves. Thus, according to outcomes of major research, SHGs are successful in rural areas, especially among women. It is a tool to remove poverty and improve rural development.

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**INNOVATIVE MARKETING FOR INDIAN SMES: A THEORETICAL FRAMEWORK****<sup>1</sup>Mr. Vishesh Arora, <sup>2</sup>Dr. Trilok Pratap Singh and <sup>3</sup>Dr. Namrata Gupta**<sup>1</sup>Madhav Institute of Technology & Science, Gwalior, M.P<sup>2,3</sup>Assistant Professor, Department of Management, Madhav Institute of Technology & Science, Gwalior, M.P**ABSTRACT**

*SMEs are the backbone & driving engine of Indian economic growth. As this sector employs 40% of the total Indian workforce. This sector has the power to reduce unemployment in any developing country like India. But in reality SMEs come under the most neglected and unorganized sector. Also In the modern era , there is a drastic shift seen in consumer behavior due to the technology advancements. As the majority of SMEs lack in their resources like big brands .So, they face a lot of difficulty in competing with big businesses which are technologically advanced. As increasing competition has made old SMEs marketing blueprints monotonous. So, there is a need for a new innovative marketing framework to percolate , which helps the SMEs to thrive in competitive markets and help them to grow their businesses. The purpose of this research is to provide an innovative SMEs marketing framework which help SMEs to overcome competition and drive this sector toward growth. The result of this research is created by analyzing innovativeness in product, price, place & promotion based strategies and how it helps to change the entrepreneurial orientation (EO). Indian SMEs can Improve performance & reduce their competition by implementing this innovative framework into their business.*

*Keywords: SMEs, Innovative framework, marketing strategy, Indian SMEs growth, price strategy, place strategy, product strategy, promotion strategy.*

**INTRODUCTION**

SMEs are the most vital part of the Indian business sector. Now a days , Indian markets are growing speedily and daily new small and medium scale industries are emerging in various sectors like Food processing, pharmaceuticals , garments , textiles etc (Shastri et al., 2011). The Indian SMEs consumes less capital investments with a benefit of high labor absorption, which make this sector crucial for Indian economic growth (Sheetal and Kumar, 2012). As per the employment report the SMEs sector has account for second highest sector (after agriculture) for employment in India. It employs about 106 million or 40% of the Indian workforce Currently Small enterprises produce 6.11 percent of manufacturing output, while the service sector produces 24.63 percent (Sharma, 2011). In India, there are 42.50 million small companies registered and unregistered (Shastri et al., 2011). They run roughly 95% of the country's enterprises. India's SME exports account for almost 40% of total exports. But still the growth rate of Indian SMEs is around 10%. As Indian SMEs lack in competitiveness with the larger organization which have all kind of resources, facility , labor hiring power etc. The large organizations possess their own media campaign , formal marketing network and sales force whereas the small units are totally dependent on their personal efforts and simple marketing strategies (Gajanayake, 2010). As Marketing plays a major role in satisfying the organizations investors by creating revenue for them. Marketing is the rudimentary thread that ties all the investors together (Srinivasan and Lohith, 2017). Marketing is not just about selling; ideally it comprises business philosophy which enhances the business structure, process, mindset and a new view point to a business. In short marketing encircle the entire business. In today's time companies are aware that they need strong and innovative marketing strategies (Anderson, 2016). If Indian small and medium-sized enterprises and their executives are to survive in the long run, they must constantly adapt to new marketing tactics. Researchers in entrepreneurship are confused as to why certain small businesses with innovative marketing may expand into medium and large corporations while others cannot, and no scholarly article specifically addresses this problem in the context of Indian SME firms. So, from here this research emerges which will provide a theoretical structure regarding innovative marketing strategy. Which help these SMEs to identify that to which marketing strategy plays a major role and which doesn't affect their businesses at all.

**LITERATURE REVIEW**

According to Philip Kotler, “marketing is a human activity directed at satisfying needs and wants through the exchange process”. A marketer's marketing mix is a tool that they utilize to create a product or service by using 4P's. Neil Borden, a marketing professor, coined the term "marketing mix" in the 1950s (Reijonen, 2009). Organizations experiment with new ideas and changes to the marketing mix in order to achieve their objectives (place, product, promotion, and price). Adopting new marketing strategies can help small businesses gain an advantage over larger corporations (Stokes & Wilson, 2010). Beverland and Lockshin (2005), state that, during a recession, traditional marketing tactics and the marketing mix should be used to increase benefits, income, and

sales. It is also suggested that businesses focus on their strengths in order to attract customers. Product, pricing, place, and promotion activities in the marketing mix have an impact on business processes and operations. Marketing and entrepreneurial orientation, according to Romanon and Ratnatunga (1995) have a favorable impact on a firm's innovativeness via learning orientation. The study's final conclusion is that innovation determines business performance (Romijn, 2001). According to one study (Yan Chew, 2011) a company's overall performance can directly impact creative business operations. Entrepreneurial orientation, according to researchers, is a combination of three characteristics: innovation, proactiveness, (Hult et al., 2004). Organizations that have a strong entrepreneurial orientation are more inclined to pursue new prospects. Entrepreneurial orientation appears to have a positive impact on business performance. Innovative enterprises that bring innovative products and technology to market can reap significant financial rewards as well as benefits reserved for market pioneers.

Neil Borden is credited with creating the notion of the marketing mix in a speech to the American Marketing Association in 1953. The concept was first introduced in a speech by Ogechukwu, (2010) who described a corporate leader as "someone who puts disparate things together." As a result, the term "marketing mix" developed to refer to a set of characteristics that work together to elicit a specific market response (Horan et al., 2011). As a result, many of those who wrote about the marketing mix were aiming to identify how many variables influence market response so that marketers might apply the notion to specific problems they were facing at the time (Oxenfeldt 1962). Morris and Basant, (2005) devised a checklist method to help people understand how complex and interrelated marketing duties are. To be more explicit, Frey went a step further and linked it to the creation of marketing strategy. Others came up with more simple and helpful techniques to categorising marketing activities that could be easily memorised and diagrammed in a logical manner (O'dwyer, 2009). Among the others presented, McCarthy's schema is the only one that has stood the test of time. It has grown into the "mainstream design" or "acceptable perspective," depending on the context. He evaluated the following four criteria when formulating his 4P formula: the product, the price, the placement, and the promotion. Advertising, personal selling, reputation (free advertising), and sales promotion are all efficient ways to get your company's name in front of potential customers and clients (Madill et al., 2002). It has evolved into the most generally used approach of categorising marketing blunders, both in marketing literature and in real-world marketing. This is because it is easy and simple to remember. As a result, in certain areas, the 4P strategy is referred to as the "conventional" marketing mix.

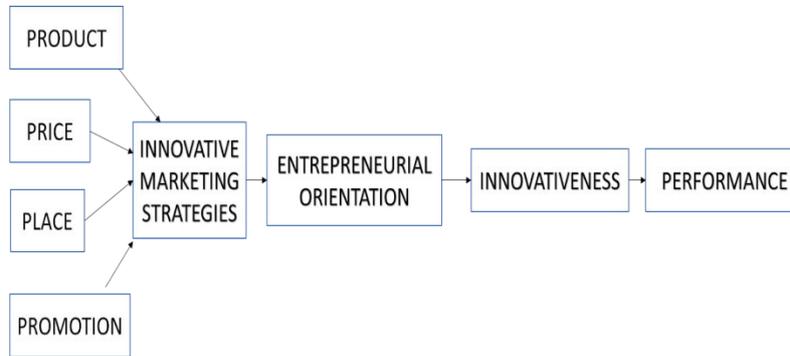
The rest of this part goes through how marketing authors think the 4P classification system works, as well as how they use and remark on it in their writing. However, due to space limitations, the review only contains a few basic marketing textbooks as well as a few books on communication and/or promotion, and it does not cover them completely. We narrow the scope even further by focusing solely on English-language publications from the late 1970s and early 1980s, making it easier to find what you're looking for in the first place. The 4P categorization system and its sub division of the fourth promotional P were widely used by several authors at the same time, and it was generally adopted (March-Chorda et al., 2002), among others, used the 4P classification scheme. When making your decision, keep the following factors in mind:

Some people argue that the fourth P is a hybrid because it has two vital components "Marketing and communication techniques aimed at convincing people to do what you want them to do. According to many experts, the broad term "promotional" is frequently cited as a smart technique to attracting consumers to buy things, such as sales promotions. They use the term communication rather than P for the fourth P to emphasise how communicative the variable is. Many people are unhappy with the way the 4P scheme's sales promotion category is used as a catch-all. Lamprinopoulou and Tregear, (2011) states the core notion in the following simple and succinct manner: The term "sales promotion" is one of the most difficult marketing terms to learn, use appropriately, and avoid using incorrectly. Given the context, it's not surprising that some authors use terms like "promotion," "sales promotion," and "communication" to refer to the same thing. The lines between these three items are becoming increasingly hazy. When it comes to categorizing their work, some authors opt for a system similar to the 4P approach. It is not appropriate to declare that it is the same as or better than what they already have (Egbetokun, 2008).

During the 1980s, there was a substantial transition. Mc Carthy's 4P-classification is extensively used by authors to characterise sales promotion, and it is widely acknowledged. Many authors tried to explain sales promotion in a good light while still using their catch-all term, but they all failed spectacularly (Hakimpoor, 2011). Sales promotion efforts work well together, but in the long run, they do not benefit and may even harm the organization. Salespeople at the corporation are also separated into three main target groups: final clients, trade institutions, and other business partners. These are all components that are frequently included in

definitions of sales promotion as well as comments about it (though both are sometimes rather partial) (Lamprinopoulou and Tregear, 2011). According to the study's findings, the AP categorization appears to be widely used in marketing. The four Ps are further subdivided into personal selling, advertising, public relations, and sales promotion. The fourth P's residual category is sales promotion. The fourth P follows in the footsteps of the preceding three.

According to the mentioned notions, entrepreneurial orientation can have an impact on business performance through innovativeness. As a result of the literature review, Figure 1 depicts the research conceptual model.



**Figure1:** Theoretical Framework for research

**RESEARCH HYPOTHESIS**

- H1:** Product strategies have a significant linear impact on innovative marketing strategies.
- H2:** Price strategies have a significant linear impact on innovative marketing strategies.
- H3:** Place strategies have a significant linear impact on innovative marketing strategies.
- H4:** Promotion strategies have a significant linear impact on innovative marketing strategies.
- H5:** Innovative marketing strategies have a significant linear impact on entrepreneurial orientation.
- H6:** Entrepreneurial orientation has a significant linear impact on innovativeness.
- H7:** Innovativeness has a significant linear impact on Indian SMEs performance.

**METHODOLOGY**

The sample data of 550 Indian food SMEs have been collected, out of which 115 firms have been studied by using cronbach alpha formula. As shown in fig 1, majority of firms activities participating in study, are in the group of five to ten years working experience. These smes firms comprises of 36 companies (31.30% of the total SMEs firms), whereas firms have more than twenty five years work experience have much lower occurrence (4 companies or 3.6%). Also in terms of organizational status of respondents, among 115 total smes, 57 persons have a profile of sales manager (approx 50%) which have higher frequency as compared to other organizational status. Whereas on other side, the lowest participants are experts (20.7%), all these details are presented in table 1. Also the education background is also taken into consideration. So, the maximum participants possess bachelor's degree (66 cases or nearly 57%) and the minimum participants are there which possess a PhD degree and above (3 people in other words or 2.6%). Also individuals working in these SMEs firms who have around ten to fifteen years of experience are a larger number of participants (36 people or 31% approx in groups (5-10 years) and 37 people (10-15 years and 32% approx). Whereas lower no of people who have twenty to twenty five year of experience. Although the manager's who have worked for more than twenty five years

**Table.1** Sample characteristics

	Characteristic	Frequency	Percentage
<b>Firms' Activities</b>	Less than 6 years	32	27.8
	6-11 years	36	31.3
	11-16 years	23	20.1
	16-21 years	14	12.1
	21-26 years	6	5.2
	More than 26 years	4	3.4

<b>Job category</b>	Director	34	29.5
	Manager	57	49.5
	Expert	24	20
<b>Education</b>	Diploma and Lower	6	5
	Associate degree	7	6.8
	Bachelor	65	57.2
	Master	32	26.8
	PhD and higher	4	2.5
<b>Work experience</b>	Less than 6 years	17	15.5
	6-10 years	35	31.2
	11-20 years	36	32.2
	21-30 years	14	14
	31-35 years	8	7.7

possess a zero frequency (McQuitty, 2004).

**RESEARCH DESIGN**

In this study, the essential data for analyzing the outcomes for both stages is obtained using an exploratory and descriptive method (qualitative-quantitative) approach. The semi interview method was used in a qualitative method, according to the available studies. Then, using an open method, the conclusions of a discussion with eight food industry SMEs specialists. Following that, the retrieved concepts were used to create several questionnaire items. As a result, the questionnaires were provided to participants in the second step (quantitative approach). The following table lists the technical properties of measuring equipment (questionnaire):

**Table 2** Technical characteristics of measuring instrument

<b>Constructs</b>	<b>AVE</b>	<b>Composite Reliability</b>	<b>Cronbach’s Alpha</b>
<b>Product</b>	0.66	0.88	0.87
<b>Price</b>	0.68	0.86	0.78
<b>Place</b>	0.72	0.84	0.62
<b>Promotion</b>	0.74	0.91	0.87
<b>Innovative Marketing strategies</b>	0.62	0.91	0.86
<b>Entrepreneurial orientation</b>	0.55	0.82	0.85
<b>innovativeness</b>	0.65	0.92	0.89
<b>Performance</b>	0.68	0.91	0.91

They are all valid because their average variance extracted (AVE) is greater than 0.5. In contrast, the Composite Reliability of the constructs is greater than 0.7, and Cronbach's alpha is greater than 0.6 for all of them, indicating that all of the constructs are reliable. Kolmogorov-Smirnov tests are used to determine whether the study variables have a normal or non-normal distribution, while Friedman ANOVA tests are used to determine whether there are differences between the variables. The PLS Technique, also known as structural equations modelling, is used to examine conceptual model relationships.

**FINDINGS**

For variables, such as business performance promotions, and innovation, a large number of Kolmogorov Smirnov tests are less than 0.05 , which shows the non-normal distribution, whereas others variables, such as promotions, innovation, and business performance, are greater than 0.05. which shows the normal distribution. As a result, the overall distribution of the research variables cannot be regarded as normal and the research

variables must be prioritized using a nonparametric statistics approach (Friedman test). Table 3 shows the results of the Friedman test:

**Table.3** Friedman test results

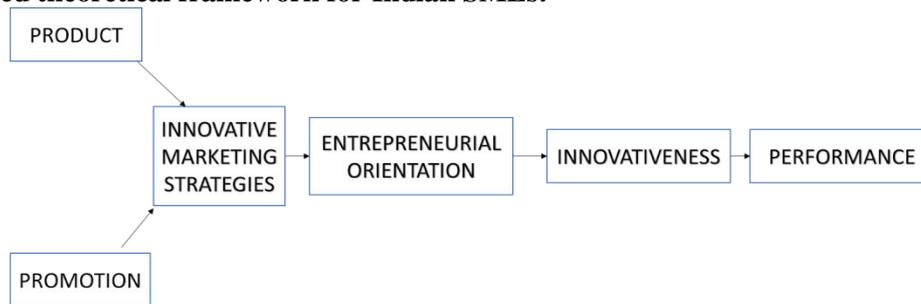
<b>Frequency</b>	114
<b>Chi-square</b>	7.092
<b>df (degree of freedom)</b>	6
<b>Sig.</b>	0.418

Since there is no discernible difference between variables as a result of the Friedman test, they cannot be prioritized. Table 4 shows a summary of the outcomes for the design concept relation test. In the conceptual assumed model of this study, the impact of price strategy and place on innovative marketing strategies is rejected; nevertheless, the impact of product and promotion strategies on innovative marketing strategies is acknowledged. The presence of a significant coefficient for the model relations further suggests that innovative marketing tactics have a positive and statistically significant impact on entrepreneurial inclination. On the other hand, it may be possible to determine the impact of entrepreneurial spirit on innovation, as well as the impact of innovation on corporate performance. In general, innovative marketing techniques benefit from creative business strategies, particularly those incorporating new items ( $T = 2.98 > 1.96, = 0.396$ ), proving the premise. Because the findings of the research on innovative marketing techniques do not support the influence of new business strategies on product price, this hypothesis will be rejected ( $T=1.831.96, = 0.201$ ). This hypothesis was rejected because the results from the study on new marketing strategies did not support the impact of innovative ways in the organisation when considering location ( $T= -0.921.96, = -0. 055$ ). The influence of innovative marketing strategies in companies is proved favorably ( $T = 3.46 > 1.96, \beta= 0.416$ ) when sales promotion is undertaken out of novel marketing tactics. Innovative marketing tactics have a positive impact on entrepreneurial inclination ( $T = 15.17 > 1.96, =0.755$ ). Entrepreneurial orientation has a favorable influence on innovation ( $T = 5.85 > 1.96, = 0.463$ ). The favorable impact of innovation on corporate competitive advantage has been proven ( $T = 5.85 > 1.96, 0.463$ ). Table.4 shows the regression coefficients and level of significance of the model's postulated linkages.

**Table:4** Summary of Test Results Between Model Relation

<b>Independent Variable</b>	<b>Dependent Variable</b>	$\beta$	T	Hypothesis
<b>Product.</b>	<b>IMS</b>	0.395	2.9874	Accepted
<b>Price.</b>	<b>IMS</b>	0.202	1.8317	Rejected
<b>Place.</b>	<b>IMS</b>	-0.054	-0.9266	Rejected
<b>Promotion.</b>	<b>IMS</b>	0.415	3.4662	Accepted
<b>Innovative marketing strategies.</b>	<b>Entrepreneurial orientation</b>	0.754	15.176	Accepted
<b>Entrepreneurial orientation.</b>	<b>Innovation</b>	0.464	5.8555	Accepted
<b>Innovation.</b>	<b>Performance</b>	0.839	24.462	Accepted

\*IMS: Innovative Marketing Strategies

**Final result based theoretical framework for Indian SMEs:****CONCLUSION & SUGGESTION**

It is concluded in this study that the impact of pricing and place marketing tactics on innovative marketing strategies is negligible. As a result, the findings of the study confirm the research hypothesis because no single function for the influence of these two variables on corporate competitive advantages or factors influencing competitive advantage has been identified previously. Although these findings have been confirmed, it has been demonstrated that product and promotion methods have an impact on innovative marketing approaches, and the model's market-oriented perspective incorporates both of these factors (Rhee, 2010).

Marketing approaches that are innovative, according to the findings of the study, are effective in fostering entrepreneurial orientation. As a result of this research, it has been established that innovative marketing strategies have a significant and positive impact on SME businesses' entrepreneurial orientation. This can be interpreted as the introduction of innovative marketing strategies having an impact on business performance through entrepreneurial orientation and innovative business.

According to the results of the poll, having an entrepreneurial attitude has a positive impact on SME innovation, which is recognized as the most important element determining overall success. Aside from the favorable influence of innovation on business success, the entire performance of a company has a considerable impact on the efficiency with which it conducts innovative business activities. Because of this, a company's new business tactics develop in unison with the company's expansion.

To summaries, innovative marketing strategies in SMEs, particularly those that are based on the products or activities of the companies, such as sales promotions and advancements, can result in innovative goals in SMEs business products or services, as well as competitive advantages based on differentiation, cost, innovation, growth, and the formation of strategic alliances.

In conclusion, the model clearly demonstrates the significant impact of innovative marketing and entrepreneurial orientation on the success of innovation companies, and it can be concluded that entrepreneurial orientation serves as a critical mediator in the connection between inventiveness and innovative marketing strategies. Business owners and entrepreneurs in small and midsize companies can compete with large firms by employing innovation and innovative techniques, questioning their objectives in order to obtain a durable competitive advantage, and attaining international success.

This model's axial key structure is entrepreneurial orientation, and it's a standard framework for Indian SMEs that may be employed extensively in competitive markets. This concept can be used by entrepreneurs to run a SMEs business in innovative ways.

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**POSSIBILITIES AND SCOPES OF ICT IN THE BETTERMENT OF ELDERLY POPULATION:  
ASOCIOLOGICAL REVIEW****<sup>1</sup>Shubham Tiwari**<sup>1</sup>Research Scholar, Department of Sociological Studies, Central University of South Bihar, Gaya (Bihar)**ABSTRACT**

*The very research-based approach to population ageing has no epidemiological limits; in fact, ageing studies have transcended borders and continents in recent years in the field of geriatrics and gerontological studies in different academic and policy-related topics. 'Ageing' has long been associated with socio-cultural duties, myths surrounding late-life experiences, and a society's culture. Concerning the definition and internationally recognised parameter to declare: 'a certain age is an age to be designated as Old aged.' Even when there is a large sequence of variations, there is always an attraction of the old age boundaries; in Africa, due to the lower rate of life expectancy, old age declaration occurs sooner than in Asia and Europe. The purpose of the drawn article is to achieve the paper's intrinsic goal, which is to provide a sense of the proposed QoL outlining by framing a systematic procedure of the relevant literature review to highlight the importance of ICT in the field of the betterment of the elderly and providing open access to various stakeholders in this domain for further research consideration. This study also appears to follow the basic ethical and scientific review literature selection strategy, which involves [a] selection of just those publications that were relevant to the subject. [b] addresses the requirements of the elderly in terms of quality of life in a comprehensive manner. [c] pieces in which the author takes a favourable or negative stance on the subject. In addition to the inclusion requirements, some exclusion criteria for relevant review pieces of literature have been created, such as [a] articles not published in the chosen language of English. [b] articles that don't give enough information about the objects being examined.*

This paper has attempted to summarise and explain the uses and scopes of information and communication technology (ICT) in the domain of ageing betterment. As a result, for further discussion, this paper has drawn a line between the approachable possibilities and the possibilities of ICT in providing late-life satisfaction and quality of life.

**INTRODUCTION**

The very research-based approach to population ageing has no epidemiological limits; in fact, ageing studies have transcended borders and continents in recent years in the field of geriatrics and gerontological studies in different academic and policy-related topics. 'Ageing' has long been associated with socio-cultural duties, myths surrounding late-life experiences, and a society's culture. Concerning the definition and internationally recognised parameter to declare: 'a certain age is an age to be designated as Old aged.' Even when there is a large sequence of variations, there is always an attraction of the old age boundaries; in Africa, due to the lower rate of life expectancy, old age declaration occurs sooner than in Asia and Europe. The latest topic in scientific study is a study based on socio-psychological and economic factors, as well as sickness patterns and economic necessities of late-life issues. According to the 2019 Globe Population Ageing Report, there were 703 million people aged 65 and more in the world in 2019. The number of elderly people is expected to quadruple to 1.5 billion by 2050. The proportion of the world population aged 65 and up is steadily growing. And, according to the prediction, the old-age population, which was 6% in 1990, has risen to 9% in this report. By the conclusion of the half-decade, the prediction is for a 16 per cent increase (Bank, 2019). According to the Lund Declaration (2015), ageing is a severe problem that impacts the general community as a result of decreased fertility and increased longevity, as well as the scopes and provisions in the global health sector. Nowadays, people in their 60s and beyond are having a wonderful time (Base, 2015). Although there have been numerous advancements in the field, the uncertain and flexibly changing world social order, the old age population strength in the modern world obtains a variety of beneficial and progressive policy and state-based priorities. However, ignoring the demographic and economic weaknesses has irreversible consequences for the socio-economic conditions of the elderly. The overemphasis on infrastructural development and economic growth in the domain of creating an environment that leads people to a healthy lifestyle and a standard of living along with the progressive infrastructure, but such infrastructural development still facing and shows awful attitudes toward the uses and inclusion of ICT and scientific types of equipment and platforms for gaining more and more success in the field of economic and structural growth for assuring a better lifestyle to the population, particularly those who are in their sixties and beyond. The prevailing attitudes toward late-life care and late-life security, as well as emotional and sympathetic understandings of old age requirements and demands, have practically overtaken recent advancements in the domain of geriatric studies. The application of information and

communication technology in the fields of health, economics, and ensuring the political rights of the elderly is a relatively new and well-studied topic, particularly in the field of gerontological studies. The purpose of this paper is to encourage the listener and reader to reconsider the utility and potential of ICT in geriatric research. The article narrows the scope even further in the narrowed topic of elderly people's '*Quality of Life*' and the utility and potential of ICT in this field. For the review technique, this study used review pieces from relevant pieces of literature that followed standardised review patterns, such as pieces written in English and published in at least a few brief peer-reviewed and Scopus publications. The paper followed the fundamental ethical and scientific selection approach, which included [a] selection of just those publications that were relevant to the issue. [b] takes a holistic approach to meeting the needs of the aged in terms of quality of life. [c] articles in which the author expresses either a positive or pessimistic viewpoint on the subject. Along with the inclusion, certain exclusion criteria have been established for relevant review pieces of literature, such as [a] publications that have not been written in the selected language of English. [b] articles that do not provide a comprehensive amount of information about the evaluated items. The above review procedure was drawn to achieve the intrinsic goal of the paper, which is to provide a sense of the proposed outlining of the QoL by framing a systematic procedure of the relevant literature review to highlight the importance of ICT in the field of the betterment of the elderly and to provide open access to various stakeholders in this domain for further research consideration.

### **Quality of Life**

Quality of life is a broad concept with several definitions and descriptive as well as elaborative implications depending on the situation in which the evaluation is made. Some of the references could be about an individual's situation in life concerning the culture and value system in which they live, as well as their goal expectations, standards, and worries (Hoof et al., 2020). The Quality of Life (QoL) is a culturally constructed phenomenon in which an individual's purpose is to satisfy three basic needs: safety and security, a goal for the integrity and meaning of life, and a sense of attachment and belongingness to a social network. In other pieces of literature based on or related to the QoL, the reference was made in the context of people's well-being as a composite of two inseparably constituted bodies; related physical activities that show the potential of physical fitness in their late-life bodies and physical degradations, followed by patients' satisfaction and levels of disease control, and the related treatment system. Other literature describes it as a process of personal fulfilment. It is associated with a distinct location, as well as emotional associations, physical strength motivations, and unconditional bonds (Hoof et al., 2020).

### **Utility & Possibility of ICT**

This section focuses on specific areas of investigation to identify and explain the promising potential of ICT in various fields related to the QoL domain, as well as how they all contribute to bettering the ageing process in our society.

### **Medical Science**

The importance of quality of life is being emphasised in the fields of medicine and health care, as well as its use in broader political settings and domains. The idea of QoL in the medical world is organically linked to the patient's subjective or narrow articulation as well as the multidimensional or wide articulation of the components associated with the patient's health. The larger relationship between the patient's quality of life requirements, such as pain, wounds, and access to health care, as well as the patient's health-seeking behaviour, the quality of life is measured in the sense of the psychometric tradition of health status assessment, which is followed by a larger element of health-related medical and beyond medical therapies. It encompasses the multifaceted aspects of physical, emotional, functional, and social well-being (David F. Cella, 1992).

### **Commerce and Market**

Recent developments in commerce and market orientations have resulted in a significant improvement in the field of ageing. The elderly in their latter stages are the most vulnerable to the market. In addition, the market caters to the elderly when it comes to selling their products to them. In a market-oriented or changing society, where the market is nearly seizing the entire field and targeting every targeted audience, commerce and the market play a specific function. In the field of geriatric ageing, ICT has a lot of potentials. Nowadays, the elderly are surfing the internet, making online acquaintances, and even marketplaces and international corporations are conducting research and other activities in which many older people are participating.

### **CONCLUSIONS**

As we examine a paradigm for analysing uncertainty in ageing and technology decision-making, we will be joined by researchers, policymakers, and the general public. This paper has attempted to summarise and explain the uses and scopes of information and communication technology (ICT) in the domain of ageing betterment.

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As a result, for further discussion, this paper has drawn a line between the approachable possibilities and the possibilities of ICT in providing late-life satisfaction and quality of life. This work has attempted to summarise the pertinent information in a short period, as well as to pave the way for future research in this field.

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**DETERMINANTS OF FINANCIAL PERFORMANCE REQUIREMENTS OF DAIRY COOPERATIVE UNIONS IN GUJARAT STATE: A CONCEPTUAL ANALYSIS OF RAJKOT DAIRY****<sup>1</sup>Thakor Hemangini Nanubhai and <sup>2</sup>Dr. Vashishthadhar J. Dwivedi**<sup>1</sup>Research Scholar, Sardar Patel University, V.V Nagar, Anand (Gujarat)<sup>2</sup>Principal, ACS College, Khambhat, Sardar Patel University, V.V Nagar, Anand (Gujarat)**ABSTRACT**

*The present study of the research entitled Determinants of financial Performance Requirements of Dairy cooperative unions in Gujarat State: A conceptual Analysis of Rajkot Dairy. This paper aims to discuss the current position (financial) of Rajkot Dairy, Which was established at long past time and such a developed time by time. Therefore, the usefulness of Ratio Analysis of value accounting is a key issue for standard setting purpose. The Milk Cooperative Union plays a vital role in economic development of the country. The present study explores the obstacles faced by the Dairy Industry in exploiting. Today the service sector contributes more than 56 percent to India's GDP and rapidly increasing. This paper offers-*

- (1) Conceptual frame work of unique characteristics of services, the challenges from these characteristics and strategies suggested as appropriate to overcome the issues.*
- (2) To compare the financial performance and strategies cited in last 10 years with different Ratios.*
- (3) To offer suggestions for further development of Dairy Union.*

*In this paper Researcher takes long time period of study. 10 years is a large period of thinking and going to check growth and development of Dairy industry.*

*The present paper seeks to explain the financial performance of co-operative milk producers union of Rajkot district. A sample of Annual reports of Rajkot Dairy at Rajkot for the period 2004-05 to 2013-14 was selected. Rajkot Dairy is also known as "Gopal Dairy". The study was based on secondary data from financial Report and profile of the Rajkot Dairy. The paper investigates the development of cooperative milk. Producers unions in Gujarat state in the early twentieth century. We focus on the role of so called "Gopal Dairy" that kept financial and personal development in Dairy Industry. The importance of any research is based on the systematic method of Data collection and its analysis. The Ratio analysis is the process of identifying the financial soundness and cost effectiveness of the firm by establishing relationship between the items of Balance sheet and Profit and loss a/c. The present study has depended on ratio analysis, from the last 10 years' Balance sheet and .The relation of tangibility profitability, debt. Loan with different year has been found to be positive and statistically significant. All these relations are consistent with the predictions of pecking order theory. An objective of the study includes the Profitability, Liquidity, and Performance. Financial and other experience Dairy. Overall Financial Performance of the Dairy. Based on the Ten years Balance Sheet and Profit and Loss A/C. Suitable suggestion is given by the researcher for a better soundness, cost effectiveness and Development of the Dairy. This paper will be useful for the Dairy to have positive impact on Profitability of Rajkot Dairy in the coming years. This paper is unique to provide direction for future research on the decision of development in Dairy Cooperative milk producer union in long time.*

*Keywords: Cooperative milk producers union, Dairy, Profitability, Comparison, Accounting Research, Net assets, Ratio analysis, Financial performance, Gopal Dairy.*

**INTRODUCTION**

A Greeke Philosopher, Hireclits says, "There is nothing permanent except change". Uncertainty is the only certainty in life. Birth and death are the only definite. Indian economic is based on rural. So Agriculture and Animal husbandry are the main activities of Indian farmers. Here Researcher collected data of Rajkot Dairy at Rajkot city from financial year 2004-2005 to 2013-2014 and study on that. She compares the data of every end of three years. So investigator has classified the data in various ways with the statically methods here in this Research Paper. She wants to classified and find out the major different in Financial Performance after finished every three financial years. With help of this research we can easily show that the growth and development of the Rajkot Dairy over last ten years in Gujarat State.

**HISTORICAL BACKGROUND OF RAJKOT DAIRY**

In Gujarat Region, many Districts Cooperative Unions have together and established GUJARAT COOPERATIVE MILK MARKETING FEDERATION (GCMMF) LTD., in November 1973 better known as AMUL. Rajkot Milk Union (RMU) is a member of the GCMMF with 6 Milk Chilling Centers, 35 Bulk Milk

Cooling Units besides one Dairy plant at Rajkot District. It is a vibrant organization that serves consumers not only of Rajkot but also rural areas of Rajkot District. The organization continuously focuses its efforts to better understand the changing lifestyle of India and anticipate consumer needs in order to provide convenience, nutrition and wellness through its product offerings. In addition to the market view RMU is committed to long term sustainable growth and shareholders satisfaction. Future plans are proposed for the expansion of the existing units and setting up new world class plant thereby increasing the milk procurement, processing capacity and to give a consistent supply of liquid milk to consumers. RMU manufactures products of truly international quality under brand names- AMUL and GOPAL comprising of milk and various other milk products like Ghee, Butter, Butter milk, and Peda. It is also planning to add to its product portfolio by extending its infrastructure to manufacture Probiotic Dahi, Probiotic Lassi, Probiotic Butter milk, Ice cream and Panner. Rajkot Dairy is also known as **GOPAL DAIRY** in Gujarat state.

Rajkot District Cooperative milk Producers' Union Ltd., rooted its existence 58 years before in the year 1956. The Dairy was first established in Rajkot by the Animal husbandry department of the Gujarat State under a pilot project of UNICEF a sister concern of the UNO. Subsequently the Rajkot District Maldhari cooperative union Ltd., was formed in 1961 with the objective to bring "socio-economic development" in Maldhari community followed by the Rajkot Dairy undertaking by the Rajkot District Maldhari cooperative union under the leadership of Shri Devendrakumar R. Desai. The Union was registered during 1961 and was managed by AH Dept. of Government of Gujarat under milk conservation project, Rajkot. During 1970 the department of AH handed over the management of Rajkot Dairy to Gopalak Sangh on Rs. 1 token charge. Rajkot milk union's effort to manage the activities from 1972 to 1977 was unsatisfactory and so a joint management with Gujarat Dairy Development Corporation Ltd. (GDCC) was established from 1977 to 1981.

After a series of interchanges between hands, finally in the year 1988, the Rajkot District cooperative Milk Producers' Union Limited got the membership of the state federation which is called GCMMF and since then the Dairy is being independently managed by the Milk Producers' representatives. The GDCC handed over the management of RMU to Rajkot District Cooperative Milk Producers' Union Ltd November 2, 1988. After 1988 the Union's activities started to stabilize. During 1990 the union became the ordinary member from Associate Members of GCMMF.

Besides many teething Problems, the Dairy had grown today to join the white revolution of Gujarat, India. The dedication, sincerity, persistence and neat policies led by the Chairman and effectiveness of the employees and gained the celebrating success of a long 58 years till today with hands of experience to move the Cooperative Dairy to many long years to come.

<b>1. Registration Details</b>	:	<b>KHEY-60 05/09/1961</b>
<b>2. Area of Operation</b>	:	<b>Mainly Rajkot District</b>
<b>3. No. of Revenue villages of Rajkot</b>	:	<b>856</b>

## REVIEW LITERATURE

**1. R.W.Nightingale (1963)**, "The modernization Decision in Indian Urban Fluid Milk Markets", New -York State college, Cornell International Agriculture Development Bulletin No. 15, Cornell University, USA, 1969 has compared two methods of milk marketing. And the result show that operation Fluid system of milk marketing is higher than the Urban Fluid milk market system So suggested that except the best method for Dairy Development.

**2. J.Gopu (1999)**, "Special Feature of Danish Dairy cooperatives" has studied on that subject. In this research he founded that the farmers were sold butter and earned money in compare last recorded time. In 19 century the Milk cooperative industry has developed in Denmark. Dairy societies submitted milk to Dairy and going to sell. Less expenses of transportation the cost was down. And get high level benefit. So Dairy cooperative has provided employment and high rate of milk procurement.

**3. A.S.Kahlon(1975)**, has done the research on "Relative profitability of Dairy Enterprise vis-à-vis cultivation in Punjab" this research show the result that different point of view and technically change can improve the profitability of any Dairy.

**4. Chattaraj (1999)**, researched that, In Hugli District Researcher founded that in this District during the research registered No of Cooperative Dairies were going to 30% reducing in year 1987 to 1998. Because of this reducing reasons were to delay of payment, unfair purchase price, and also expenses of Animals were high and productivity was low.

**OBJECTIVES OF THE RESEARCH**

1. To analyze the Ratio analysis of the Rajkot Dairy for long time.
2. To examine the Profitability Ratio, Performance Ratio, and Financial Ratio of Rajkot Dairy for last 10 years.
3. To Compare Profitability, Performance and Liquidity with different years.
4. To find out the growth and development since 10 years in Gujarat State.
5. Suggest some Policy measures to improve such associations if required.
6. Explore the relationship of Current Ratio with Gross Profit Ratio of the selected Dairy.

**RESEARCH METHODOLOGY**

Rajkot District Milk Producers’ Union Limited Rajkot Dairy’s Annual reports, Books and Dairy’s Profile are the main source of information which were collected by the Researcher. The other data has been collected from various magazines and website form GCMMF. The data have been collected over the period of last 10 years.

The Ratios mainly used are Gross Profit Ratio, Current Ratio, Debt-Equity Ratio, Loan to Capital Employed and Fixed Assets Turnover Ratio.

**EMPIRICAL FINDING & ANALYSIS**

**(1) Gross Profit Ratio**

Gross Profit Ratio=  $\frac{\text{Gross Profit} * 100}{\text{Total Annual Sales}}$

Amount: In Lakhs (Rs.)

**Table-1** Showing Gross Profit Ratio

Year	Gross Profit	Annual Sales	Ratio	Unit
2004-05	1298.22	8718	14.89	%
2007-08	2142.47	16879.02	12.69	%
2010-11	3597.75	30395.51	11.84	%
2013-14	6242.33	57744.02	10.81	%

**Source:** Annual Reports of Rajkot Dairy

**(2) Current Ratio**

Current Ratio= $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

Amount: In Lakhs (Rs.)

**Table-2** Showing Current Ratio

Year	Current Assets	Current Liabilities	Ratio	Unit
2004-05	744.41	570.87	1.30	Times
2007-08	1406.83	1043.31	1.35	Times
2010-11	1701.82	2104.20	0.81	Times
2013-14	8673.77	10921.42	0.79	Times

**Source:** Annual Reports of Rajkot Dairy

**(3) Debt-Equity Ratio**

Debt-Equity Ratio=  $\frac{\text{Total Debt} * 100}{\text{Capital Employed}}$

Amount: In Lakhs (Rs.)

**Table-3** Showing Debt-Equity Ratio

Year	Total Debt	Capital Employed	Ratio	Unit
2004-05	918.44	443.89	2.07	%
2007-08	1838.54	793.6	2.32	%
2010-11	3729.27	924.76	4.03	%
2013-14	15079.27	5340.85	2.82	%

**Source:** Annual Reports of Rajkot Dairy

**(4) Loan to Capital Employed**

Loan to Capital Employed=  $\frac{\text{Total loan(incl.cc)} * 100}{\text{Capital Employed}}$

Amount: In Lakhs (Rs.)

**Table-4** Showing Loan to Capital Employed

Year	Total loan(incl.cc)	Capital Employed	Ratio	Unit
2004-05	347.58	443.89	78.30	%
2007-08	795.23	793.6	100.21	%
2010-11	1625.07	924.76	175.73	%
2013-14	4157.85	5340.85	77.85	%

Source: Annual Reports of Rajkot Dairy

#### (5) Fixed Assets Turnover Ratio

Fixed Assets Turnover Ratio= Total Sales \ Net Block Fixed Assets

Amount: In Lakhs (Rs.)

**Table-5** Showing Fixed Assets Turnover Ratio

Year	Total Sales	N.B. Fixed Assets	Ratio	Unit
2004-05	8718	482.69	18.06	Times
2007-08	16879.02	721.16	23.41	Times
2010-11	30395.51	1789.14	16.99	Times
2013-14	57744.02	8148.20	7.09	Times

Source: Annual Reports of Rajkot Dairy

### ANALITICAL DISCUSSION

Show the comparison of last Ten years Financial Performance of Profit & Loss A/c and Balance Sheet.

1. India is basically agriculture country. And animal husbandry and agriculture activities are major Part of income for country.

2. **Table No-1** indicates Gross Profit Ratio of the Dairy since last 10 years. He Ratio is very much higher (14.89%) in year 2004-2005 and it is lower (10.815%) in year 2013-2014. Because of this reducing Many factors are effecting. Here we can see the different between Sales of last 10 years and Gross Profit of last 10 years.

3. **Table No-2** indicates Current Ratio of Dairy. Day by day we can see that the current assets are going to High and also current liabilities are going to high. So Current Ratio is after every three years going to Low. Ratio of the Dairy is higher (1.35:1) in 2007-2008 and it is lower (0.79:1) in 2013-2014. In short Value of current assets are higher than current liabilities.

4. **Table No-3** indicates Debt Equity Ratio of Rajkot Dairy. The Ratio is higher (4.03 times) in 2010-2011 And it is lower (2.07 times) in 2004-2005. Because of this situation an improvement in Debt is very high and value of Equity is not so change.

5. **Table No-4** indicates Loan to Capital employed Ratio of Rajkot Dairy. It is higher (175.73%) in 2010-2011 and it is lower (77.85%) in 2013-2014. It means compare to total loan (Incl.cc) are lower than total Capital employed. It is also show that total loan (Incl.cc) is going to paid by Dairy as soon as possible from the last 10 years.

6. **Table No-5** shown Fixed Assets turnover Ratio is higher (23.41 Times) in the year 2007-2008 and It is lower (7.09 Times) in 2013-2014. For that the total sales are improve from the last 10 years And also the value of Net Assets going to high.

7. **After and all** in this research we see that the Rajkot Dairy is going to get highly growth and Development from the last 10 years.

8. **We founded** that at the level of sales, loan , debt, equity, Net assets, all point of view are day by day Improved and going to get good profitability for Rajkot Dairy.

9. **And most important** the Rajkot Dairy fulfill its loan (Incl.cc) liability at timely and saved interest. Because of that market value and goodwill of the dairy is very high.

### SUGGESTIONS

After making Analysis focus should be given on the following areas to improve the existing situation in order to have positive impact on Profitability of Rajkot Dairy in the coming years.

1. The Dairy should concentrate more on the sales turnover.

2. The Dairy should concentrate more on Share Capital.
3. The Dairy have to more improve in Capital structure regarding Capital employed.
4. The Dairy should balance between Current Assets and Current Liabilities.
5. The Dairy have maintains in loan (Incl.cc) section carefully to improve more profit.
6. Internal Factors such as Policy in the Dairy, regarding support price, tax can be worked upon, so as to enhance sales and profitability. This would encourage building entrepreneurs in Dairy industry.
7. Bank and financial institution may be encouraged to provide low cost term finance (loan) to the cooperative milk industry so that an appropriate mix of capital structure can be adopted in order to increase the overall profitability.

### CONCLUSION

The paper finds out that Rajkot Dairy plays an important Role for earning in cooperative sector. It is very important part of GCMMF. It is helpful and good for economy as credit and the resources are freed up for Dairies that do have a future. As the sales performance has a direct relationship with increase in sales (the revenue drivers) there will be an increase in cash. **1.** Many improvement showed good timing ability in initial years like from 2004-2014. **2.** Some of which are like a major portion of the Dairy's net worth is represented by reserves and surplus, current assets include good amount of closing stock, long term debt capital assumes a very small portion of total capital etchant most importantly the existing sales, and Net profit are not significant enough to put positive impact on profitability of the concerned Dairy. **3.** The study conducted ratio analysis at Rajkot District milk Producers' Union Limited gives a view of analysis evolution of Profitability, Performance, Liquidity, efficiency, and financial position of the Dairy. Based on the tools used Analysis and Interpretation have been made giving way for useful and constructive suggestion. **4.** Cooperative Industry does conduct business in highly complex and competitive business environment today. Thus the Ratio analysis of the Dairy is Satisfactory. **5.** Financial problems persisted before and will always be there and if an cooperative milk producers union. Has to move on, it should prepare itself to tackle such challenges and maintain its sustainability. **6.** The Rajkot Dairy takes some step to decrease the interest and other expenses. The project will guide to the management to interpret its weakness and problems. This will certainly help the management to taking financial decision. **7.** However more efforts need to be taken to improve the financial position for the growth of the Rajkot Dairy.

**SMART SENSORS IN IOT AND ITS APPLICATIONS IN VARIOUS FIELDS****<sup>1</sup>Dr. Saroj Shankar and <sup>2</sup>Digijay**<sup>1</sup>Hole Assistant Professor, Modern College Ganeshkhind, Pune<sup>2</sup>Jr. Engeneer in Pune Smart City**ABSTRACT**

*Sensing the physical phenomena is a key aspect in any Internet of Things application and sensors help exactly to do the same. Both sensors and actuators are collectively called 'Transducers'. Transducers are the devices that convert the energy of one kind into the energy of another kind. A sensor producing an electrical output when combined with interfacing electronic circuits is known as "Smart Sensor", it is a combination of both sensor and actuator.*

**The Smart Sensor Will Have Intelligent Features and Some Electronics That Can Perform**

- Data conversion
- Bi-directional Communication
- Take a decision
- Perform Logical operations

**Sensor + interfacing circuit = smart sensor**

A Smart sensor senses measurand - physical quantity, property or Condition to be measured and Signal condition and storage unit has Analog to Digital converters which converts the signal into a digitally readable form and stores in its memory and further processes it like aggregating, error checking, etc., before sending to microprocessor or microcontroller.

**INTRODUCTION**

**The key features of smart sensors as part of the IoT that differentiate them from traditional sensors are:**

- Small size
- Self-validation and self-identification
- Low power requirements
- Self-diagnosis
- Self-calibration
- Connection to the Internet and other devices

The traditional sensor collects information about an object or a situation and translates it into an electrical signal. It gives feedback of the physical environment, process or substance in a measurable way and signals or indicates when change in this environment occurs. Traditional sensors in a network of sensors can be divided in three parts; (1) the sensors, (2) a centralized interface where the data is collected and processed, and (3) an infrastructure that connects the network, like plugs, sockets and wires.

A network of smart sensors can be divided in two parts; (1) the sensors, and (2) a centralized interface. The fundamental difference with traditional sensors, is that the microprocessors embedded in the smart sensors already process the data. Therefore, less data has to be transmitted and the data can immediately be used and accessed on different devices. The switch to smart sensors entails that the tight coupling between transmission and processing technologies is removed.

These on-board technologies in smart sensors are used for digital processing, either frequency-to-code or analog-to-digital conversions, interfacing functions and calculations. Interfacing functions include decision-making tools like self-adaption, self-diagnostics and self-identification functions, but also to control how long and when the sensor will be fully awake, to minimize power consumption and to decide when to dump and store data.

They are often made using CMOS, VLSI technology and may contain MEMS<sup>[2]</sup> devices leading to lower cost. They may provide full digital outputs for easier interface or they may provide quasi-digital outputs like pulse-width modulation. In the machine vision field, a single compact unit that combines the imaging functions and the complete image processing functions is often called a smart sensor.

Smart sensors are a crucial element in the phenomenon Internet of Things (IoT). Within such a network, multiple physical vehicles and devices are embedded with sensors, software and electronics. Data will be collected and shared for better integration between digital environments and the physical world. The connectivity between sensors is an important requirement for an IoT innovation to perform well. Interoperability can therefore be seen as an consequence of connectivity. The sensors work and complement each other.

### **Smart Sensors Networks Applications**

Here we are discussing eight different applications of smart sensors network

#### **1. Industrial**

In industries machines and equipment are monitored and controlled for pressure, temperature, humidity level, and also for vibrations. A Smart Sensor can monitor all these parameters at one go and also connects to the network without any other hardware assistance. This helps to maintain machinery and also ensure safety for employees handling the machinery.

#### **2. Finger Recognition:**

A fingerprint sensor scans and captures a digital image of the fingerprint pattern. The image captured is called livescan. Using that live scan a biometric template will be created and stored for matching.

#### **3. Pattern Recognition:**

When the sensor detects the contours of an object, it compares with them and also with models in a reference image.

#### **4. Telecommunication:**

A smart card similar to SIM card, called a Wireless Identity Module (WIM), Using this card e-commerce transaction can be done with 100 percent security using encryption and digital signature.

#### **5. Smart Dust:**

Smart dust is a hypothetical wireless network of tiny microelectromechanical (MEMS) sensors, robots, or devices, which can detect (for example) light, temperature, or vibration. The devices will eventually be the size of a grain of sand, or even a dust particle, with each mote having self-contained sensing, computation, communication, and power.

#### **6. Biomedical Applications:**

Many smart sensors for biomedical applications have also been developed by using chip technology .e.g. biochips Cyto-sensor micro-physio-meter: biological applications of silicon technology.

#### **7. MEMS and Process Control:**

MEMS(Micro-Electro-Mechanical Systems) are very small physical systems. MEMS sensors are a combination of electrical and mechanical components. MEMS uses a modified integrated circuit (computer chip) fabrication techniques and materials to create these very small mechanical devices.

#### **8. Defence Applications:**

Smart cameras can detect objects, perform crowd pattern analysis, secure zone intrusion detection and so on by using advanced software analytics and report alarms using IP network facilities in them. Smart Sensors are also used in monitoring EMI fatigue loading, thermal cycling vibration and shock levels, corrosive environments.

Within a digital environment, actions or activities leave a digital trace. Smart sensors measure these activities in the physical environment and translate this into a digital environment. Therefore, every step within the process becomes digitally traceable. Whenever a mistake is made somewhere in a production process, this can be tracked down using these digital traces. As a result, it will be easier to track down inefficiencies within a production process and simplify process innovations, because one can easier analyze what part of the production process is inefficient. It is clear that the use of smart sensors can be very beneficial. On the other hand, it is important to understand the risks. Due to the fact that all the information is digitized, the company is exposed to cyber attacks. To protect itself from these information breaches, ensuring a secure platform is crucial.

### **Smart sensors used in Industries:**

**Insurance:** Traditionally, insurance companies tried to assess the risk of their clients by looking over their application form, trust their answers and then simply cover it with a monthly premium. However, due to asymmetric information, it was difficult to accurately determine risk of a certain client. The introduction of

smart sensors in the insurance industry is disrupting the traditional practice in multiple ways. Smart sensors generate a large amount of (big) data and affects the business models of insurance companies as follows.

Smart sensors in client's homes or in wearables help insurance companies to get much more detailed information. Wearables can for example monitor heart-related metrics, location-based systems like security technologies, or smart thermostats can generate important data of your house. They can use this information to improve risk assessment and risk management, reduce asymmetric information, and ultimately reduce costs.

Additionally, if clients agree upon providing this data of sensors in their homes, they can even get a discount on their premium. This approach of trading information in return for special deals is called bartering and it is one form of data monetization. Data monetization is the act of exchanging information-based products and services for legal tender or something of perceived equivalent value.<sup>[11]</sup> In other words, data monetization is exploiting opportunities to generate new revenues. Another form of data monetization, which insurers regularly use nowadays, is selling data to third parties.

### **Manufacturing:**

One of the recent trends in manufacturing is the revolution of Industry 4.0, in which data exchanging and automation play a crucial role. Traditionally, machines were already able to automate certain small tasks (e.g. open/close valves). Automation in smart factories go beyond these easy tasks. It increasingly includes complex optimization decisions that humans typically make. For machines to be able to make human decisions, it is imperative to get detailed information, and that's where smart sensors come in.

For manufacturing, efficiency is one of the most important aspects. Smart sensors pull data from assets to which they are connected and process the data continuously. They can provide detailed real-time information about the plant and process and reveal performance issues. If this is just a small performance issue, the smart factory can even solve the problem itself. Smart sensors can predict defects as well, so rather than fixing a problem afterwards, maintenance workers can prevent it. This all leads to outstanding asset efficiency and reduces downtime, which is the enemy of every production process.

Smart sensors can also be applied beyond the factory. For example sensors on objects like vehicles or shipping containers can give detailed information about delivery status. This affects manufacturing, but also the supply chain as a whole.

### **Automotive:**

The last couple of years, the automotive industry has been challenging their 'old' ecosystems. Several new technologies like smart sensors play a crucial role in this process. Nowadays, these sensors only enable some small autonomous features like automatic parking services, obstacle detection and emergency braking, which improves security. Although a lot of companies are focused on technologies that improve cars and work towards automation, complete disruption of the industry has not yet been reached. Yet, experts expect that autonomous cars without any human interference will dominate the roads in 10 years.

Smart sensors generate data of the car and their surroundings, connect them into a car network, and translate this into valuable information which allows the car to see and interpret the world. Basically, the sensor works as follows. It has to pull physical and environmental data, use that information for calculations, analyze the outcomes and translate it into action. Sensors in other cars have to be connected into the car network and communicate with each other.

However, smart sensors in the automotive industry can also be used in a more sustaining way. Car manufacturers place smart sensors in different parts of the car, which collects and shares information. Drivers and manufacturers can use this information to transform from scheduled to predictive maintenance. Established firms have a strong focus on these sustaining innovations, but the risk is that they do not see new entrants coming and have difficulties to adapt. Therefore, making a distinction between a disruptive and sustaining innovation is important and brings different implications to managers.

### **Internet of Things**

The **Internet of things (IoT)** describes physical objects (or groups of such objects) with sensors, processing ability, software, and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks. Internet of things has been considered a misnomer because devices do not need to be connected to the public internet, they only need to be connected to a network and be individually addressable.

The field has evolved due to the convergence of multiple technologies, including ubiquitous computing, commodity sensors, increasingly powerful embedded systems, and machine learning. Traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), independently and collectively enable the Internet of things.<sup>[8]</sup> In the consumer market, IoT technology is most synonymous with products pertaining to the concept of the "smart home", including devices and appliances (such as lighting fixtures, thermostats, home security systems, cameras, and other home appliances) that support one or more common ecosystems, and can be controlled via devices associated with that ecosystem, such as smartphones and smart speakers. IoT is also used in healthcare systems.

There are a number of concerns about the risks in the growth of IoT technologies and products, especially in the areas of privacy and security, and consequently, industry and governmental moves to address these concerns have begun, including the development of international and local standards, guidelines, and regulatory frameworks.

**Applications :**The extensive set of applications for IoT devices is often divided into consumer, commercial, industrial, and infrastructure spaces.

#### **Consumer applications:**

A growing portion of IoT devices are created for consumer use, including connected vehicles, home automation, wearable technology, connected health, and appliances with remote monitoring capabilities.

#### **Smart home**

IoT devices are a part of the larger concept of home automation, which can include lighting, heating and air conditioning, media and security systems and camera systems. Long-term benefits could include energy savings by automatically ensuring lights and electronics are turned off or by making the residents in the home aware of usage.

A smart home or automated home could be based on a platform or hubs that control smart devices and appliances. For instance, using Apple's HomeKit, manufacturers can have their home products and accessories controlled by an application in iOS devices such as the iPhone and the Apple Watch. This could be a dedicated app or iOS native applications such as Siri. This can be demonstrated in the case of Lenovo's Smart Home Essentials, which is a line of smart home devices that are controlled through Apple's Home app or Siri without the need for a Wi-Fi bridge. There are also dedicated smart home hubs that are offered as standalone platforms to connect different smart home products and these include the Amazon Echo, Google Home, Apple's HomePod, and Samsung's SmartThings Hub. In addition to the commercial systems, there are many non-proprietary, open source ecosystems; including Home Assistant, OpenHAB and Domoticz.

#### **Elder care**

One key application of a smart home is to provide assistance to elderly individuals and to those with disabilities. These home systems use assistive technology to accommodate an owner's specific disabilities. Voice control can assist users with sight and mobility limitations while alert systems can be connected directly to cochlear implants worn by hearing-impaired users. They can also be equipped with additional safety features. These features can include sensors that monitor for medical emergencies such as falls or seizures. Smart home technology applied in this way can provide users with more freedom and a higher quality of life.

The term "Enterprise IoT" refers to devices used in business and corporate settings. By 2019, it is estimated that the EIoT will account for 9.1 billion devices.

### **ORGANIZATIONAL APPLICATIONS**

#### **Medical and Healthcare**

The **Internet of Medical Things (IoMT)** is an application of the IoT for medical and health related purposes, data collection and analysis for research, and monitoring. The IoMT has been referenced as "Smart Healthcare", as the technology for creating a digitized healthcare system, connecting available medical resources and healthcare services.

IoT devices can be used to enable remote health monitoring and emergency notification systems. These health monitoring devices can range from blood pressure and heart rate monitors to advanced devices capable of monitoring specialized implants, such as pacemakers, Fitbit electronic wristbands, or advanced hearing aids. Some hospitals have begun implementing "smart beds" that can detect when they are occupied and when a patient is attempting to get up. It can also adjust itself to ensure appropriate pressure and support is applied to

the patient without the manual interaction of nurses. A 2015 Goldman Sachs report indicated that healthcare IoT devices "can save the United States more than \$300 billion in annual healthcare expenditures by increasing revenue and decreasing cost." Moreover, the use of mobile devices to support medical follow-up led to the creation of 'm-health', used analyzed health statistics."

Specialized sensors can also be equipped within living spaces to monitor the health and general well-being of senior citizens, while also ensuring that proper treatment is being administered and assisting people to regain lost mobility via therapy as well. These sensors create a network of intelligent sensors that are able to collect, process, transfer, and analyze valuable information in different environments, such as connecting in-home monitoring devices to hospital-based systems. Other consumer devices to encourage healthy living, such as connected scales or wearable heart monitors, are also a possibility with the IoT. End-to-end health monitoring IoT platforms are also available for antenatal and chronic patients, helping one manage health vitals and recurring medication requirements.

Advances in plastic and fabric electronics fabrication methods have enabled ultra-low cost, use-and-throw IoMT sensors. These sensors, along with the required RFID electronics, can be fabricated on paper or e-textiles for wireless powered disposable sensing devices. Applications have been established for point-of-care medical diagnostics, where portability and low system-complexity is essential.

As of 2018 IoMT was not only being applied in the clinical laboratory industry, but also in the healthcare and health insurance industries. IoMT in the healthcare industry is now permitting doctors, patients, and others, such as guardians of patients, nurses, families, and similar, to be part of a system, where patient records are saved in a database, allowing doctors and the rest of the medical staff to have access to patient information. Moreover, IoT-based systems are patient-centered, which involves being flexible to the patient's medical conditions. IoMT in the insurance industry provides access to better and new types of dynamic information. This includes sensor-based solutions such as biosensors, wearables, connected health devices, and mobile apps to track customer behavior. This can lead to more accurate underwriting and new pricing models.

The application of the IoT in healthcare plays a fundamental role in managing chronic diseases and in disease prevention and control. Remote monitoring is made possible through the connection of powerful wireless solutions. The connectivity enables health practitioners to capture patient's data and applying complex algorithms in health data analysis.

### **Transportation**

#### Digital variable speed-limit sign

The IoT can assist in the integration of communications, control, and information processing across various transportation systems. Application of the IoT extends to all aspects of transportation systems (i.e. the vehicle, the infrastructure, and the driver or user). Dynamic interaction between these components of a transport system enables inter- and intra-vehicular communication, smart traffic control, smart parking, electronic toll collection systems, logistics and fleet management, vehicle control, safety, and road assistance.

### **V2X communications:**

In vehicular communication systems, vehicle-to-everything communication (V2X), consists of three main components: vehicle to vehicle communication (V2V), vehicle to infrastructure communication (V2I) and vehicle to pedestrian communications (V2P). V2X is the first step to autonomous driving and connected road infrastructure.

### **Building and home automation**

IoT devices can be used to monitor and control the mechanical, electrical and electronic systems used in various types of buildings (e.g., public and private, industrial, institutions, or residential) in home automation and building automation systems. In this context, three main areas are being covered in literature:

- The integration of the Internet with building energy management systems in order to create energy-efficient and IOT-driven "smart buildings".
- The possible means of real-time monitoring for reducing energy consumption and monitoring occupant behaviors.
- The integration of smart devices in the built environment and how they might be used in future applications.

**Industrial application: Industrial internet of things**

Also known as IIoT, industrial IoT devices acquire and analyze data from connected equipment, operational technology (OT), locations, and people. Combined with operational technology (OT) monitoring devices, IIoT helps regulate and monitor industrial systems. Also, the same implementation can be carried out for automated record updates of asset placement in industrial storage units as the size of the assets can vary from a small screw to the whole motor spare part, and misplacement of such assets can cause a percentile loss of manpower time and money.

**Manufacturing**

The IoT can connect various manufacturing devices equipped with sensing, identification, processing, communication, actuation, and networking capabilities. Network control and management of manufacturing equipment, asset and situation management, or manufacturing process control allow IoT to be used for industrial applications and smart manufacturing. IoT intelligent systems enable rapid manufacturing and optimization of new products, and rapid response to product demands.

Digital control systems to automate process controls, operator tools and service information systems to optimize plant safety and security are within the purview of the IIoT. IoT can also be applied to asset management via predictive maintenance, statistical evaluation, and measurements to maximize reliability. Industrial management systems can be integrated with smart grids, enabling energy optimization. Measurements, automated controls, plant optimization, health and safety management, and other functions are provided by networked sensors.

In addition to general manufacturing, IoT is also used for processes in the industrialization of construction.

**Agriculture**

There are numerous IoT applications in farming such as collecting data on temperature, rainfall, humidity, wind speed, pest infestation, and soil content. This data can be used to automate farming techniques, take informed decisions to improve quality and quantity, minimize risk and waste, and reduce the effort required to manage crops. For example, farmers can now monitor soil temperature and moisture from afar, and even apply IoT-acquired data to precision fertilization programs. The overall goal is that data from sensors, coupled with the farmer's knowledge and intuition about his or her farm, can help increase farm productivity, and also help reduce costs.

In August 2018, Toyota Tsusho began a partnership with Microsoft to create fish farming tools using the Microsoft Azure application suite for IoT technologies related to water management. Developed in part by researchers from Kindai University, the water pump mechanisms use artificial intelligence to count the number of fish on a conveyor belt, analyze the number of fish, and deduce the effectiveness of water flow from the data the fish provide. The FarmBeats project from Microsoft Research that uses TV white space to connect farms is also a part of the Azure Marketplace now.

**Maritime**

IoT devices are in use monitoring the environments and systems of boats and yachts. Many pleasure boats are left unattended for days in summer, and months in winter so such devices provide valuable early alerts of boat flooding, fire, and deep discharge of batteries. The use of global internet data networks such as Sigfox, combined with long-life batteries, and microelectronics allows the engine rooms, bilge, and batteries to be constantly monitored and reported to a connected Android & Apple applications for example.

**Infrastructure applications**

Monitoring and controlling operations of sustainable urban and rural infrastructures like bridges, railway tracks and on- and offshore wind-farms is a key application of the IoT. The IoT infrastructure can be used for monitoring any events or changes in structural conditions that can compromise safety and increase risk. The IoT can benefit the construction industry by cost-saving, time reduction, better quality workday, paperless workflow and increase in productivity. It can help in taking faster decisions and save money with Real-Time Data Analytics. It can also be used for scheduling repair and maintenance activities in an efficient manner, by coordinating tasks between different service providers and users of these facilities. IoT devices can also be used to control critical infrastructure like bridges to provide access to ships. Usage of IoT devices for monitoring and operating infrastructure is likely to improve incident management and emergency response coordination, and quality of service, up-times and reduce costs of operation in all infrastructure related areas. Even areas such as waste management can benefit from automation and optimization that could be brought in by the IoT.

**Metropolitan scale deployments**

There are several planned or ongoing large-scale deployments of the IoT, to enable better management of cities and systems. For example, Songdo, South Korea, the first of its kind fully equipped and wired smart city, is gradually being built, with approximately 70 percent of the business district completed as of June 2018. Much of the city is planned to be wired and automated, with little or no human intervention.

Another application is currently undergoing a project in Santander, Spain. For this deployment, two approaches have been adopted. This city of 180,000 inhabitants has already seen 18,000 downloads of its city smartphone app. The app is connected to 10,000 sensors that enable services like parking search, environmental monitoring, digital city agenda, and more. City context information is used in this deployment so as to benefit merchants through a spark deals mechanism based on city behavior that aims at maximizing the impact of each notification.

Other examples of large-scale deployments underway include the Sino-Singapore Guangzhou Knowledge City; work on improving air and water quality, reducing noise pollution, and increasing transportation efficiency in San Jose, California, and smart traffic management in western Singapore. Using its RPMA (Random Phase Multiple Access) technology, San Diego-based Ingenu has built a nationwide public network for low-bandwidth data transmissions using the same unlicensed 2.4 gigahertz spectrum as Wi-Fi. Ingenu's "Machine Network" covers more than a third of the US population across 35 major cities including San Diego and Dallas. French company, Sigfox, commenced building an Ultra Narrowband wireless data network in the San Francisco Bay Area in 2014, the first business to achieve such a deployment in the U.S. It subsequently announced it would set up a total of 4000 base stations to cover a total of 30 cities in the U.S. by the end of 2016, making it the largest IoT network coverage provider in the country thus far. Cisco also participates in smart cities projects. Cisco has started deploying technologies for Smart Wi-Fi, Smart Safety & Security, Smart Lighting, Smart Parking, Smart Transports, Smart Bus Stops, Smart Kiosks, Remote Expert for Government Services (REGS) and Smart Education in the five km area in the city of Vijaywada, India.

Another example of a large deployment is the one completed by New York Waterways in New York City to connect all the city's vessels and be able to monitor them live 24/7. The network was designed and engineered by Fluidmesh Networks, a Chicago-based company developing wireless networks for critical applications. The NYWW network is currently providing coverage on the Hudson River, East River, and Upper New York Bay. With the wireless network in place, NY Waterway is able to take control of its fleet and passengers in a way that was not previously possible. New applications can include security, energy and fleet management, digital signage, public Wi-Fi, paperless ticketing and others.

**Energy management**

Significant numbers of energy-consuming devices (e.g. lamps, household appliances, motors, pumps, etc.) already integrate Internet connectivity, which can allow them to communicate with utilities not only to balance power generation but also helps optimize the energy consumption as a whole. These devices allow for remote control by users, or central management via a cloud-based interface, and enable functions like scheduling (e.g., remotely powering on or off heating systems, controlling ovens, changing lighting conditions etc.). The smart grid is a utility-side IoT application; systems gather and act on energy and power-related information to improve the efficiency of the production and distribution of electricity. Using advanced metering infrastructure (AMI) Internet-connected devices, electric utilities not only collect data from end-users, but also manage distribution automation devices like transformers.

**Environmental monitoring**

Environmental monitoring applications of the IoT typically use sensors to assist in environmental protection by monitoring air or water quality, atmospheric or soil conditions, and can even include areas like monitoring the movements of wildlife and their habitats. Development of resource-constrained devices connected to the Internet also means that other applications like earthquake or tsunami early-warning systems can also be used by emergency services to provide more effective aid. IoT devices in this application typically span a large geographic area and can also be mobile. It has been argued that the standardization that IoT brings to wireless sensing will revolutionize this area.

**Living Lab**

Another example of integrating the IoT is Living Lab which integrates and combines research and innovation processes, establishing within a public-private-people-partnership. There are currently 320 Living Labs that use the IoT to collaborate and share knowledge between stakeholders to co-create innovative and technological products. For companies to implement and develop IoT services for smart cities, they need to have incentives.

The governments play key roles in smart city projects as changes in policies will help cities to implement the IoT which provides effectiveness, efficiency, and accuracy of the resources that are being used. For instance, the government provides tax incentives and cheap rent, improves public transports, and offers an environment where start-up companies, creative industries, and multinationals may co-create, share a common infrastructure and labor markets, and take advantage of locally embedded technologies, production process, and transaction costs. The relationship between the technology developers and governments who manage the city's assets, is key to provide open access to resources to users in an efficient way.

### **Military applications Internet of Military Things**

The Internet of Military Things (IoMT) is the application of IoT technologies in the military domain for the purposes of reconnaissance, surveillance, and other combat-related objectives. It is heavily influenced by the future prospects of warfare in an urban environment and involves the use of sensors, munitions, vehicles, robots, human-wearable biometrics, and other smart technology that is relevant on the battlefield.

### **Internet of Battlefield Things**

The **Internet of Battlefield Things (IoBT)** is a project initiated and executed by the U.S. Army Research Laboratory (ARL) that focuses on the basic science related to the IoT that enhance the capabilities of Army soldiers. In 2017, ARL launched the Internet of Battlefield Things Collaborative Research Alliance (IoBT-CRA), establishing a working collaboration between industry, university, and Army researchers to advance the theoretical foundations of IoT technologies and their applications to Army operations.

### **Ocean of Things**

The **Ocean of Things** project is a DARPA-led program designed to establish an Internet of things across large ocean areas for the purposes of collecting, monitoring, and analyzing environmental and vessel activity data. The project entails the deployment of about 50,000 floats that house a passive sensor suite that autonomously detect and track military and commercial vessels as part of a cloud-based network.

### **Product digitalization**

There are several applications of smart or active packaging in which a QR code or NFC tag is affixed on a product or its packaging. The tag itself is passive, however, it contains a unique identifier (typically a URL) which enables a user to access digital content about the product via a smartphone. Strictly speaking, such passive items are not part of the Internet of things, but they can be seen as enablers of digital interactions. The term "Internet of Packaging" has been coined to describe applications in which unique identifiers are used, to automate supply chains, and are scanned on large scale by consumers to access digital content. Authentication of the unique identifiers, and thereby of the product itself, is possible via a copy-sensitive digital watermark or copy detection pattern for scanning when scanning a QR code, while NFC tags can encrypt communication.

### **Trends and Characteristics:**

The IoT's major significant trend in recent years is the explosive growth of devices connected and controlled by the Internet. The wide range of applications for IoT technology mean that the specifics can be very different from one device to the next but there are basic characteristics shared by most.

The IoT creates opportunities for more direct integration of the physical world into computer-based systems, resulting in efficiency improvements, economic benefits, and reduced human exertions.

The number of IoT devices increased 31% year-over-year to 8.4 billion in the year 2017 and it is estimated that there will be 30 billion devices by 2020. The global market value of the IoT is projected to reach \$7.1 trillion by 2020.

### **INTELLIGENCE**

Ambient intelligence and autonomous control are not part of the original concept of the Internet of things. Ambient intelligence and autonomous control do not necessarily require Internet structures, either. However, there is a shift in research (by companies such as Intel) to integrate the concepts of the IoT and autonomous control, with initial outcomes towards this direction considering objects as the driving force for autonomous IoT. A promising approach in this context is deep reinforcement learning where most of IoT systems provide a dynamic and interactive environment. Training an agent (i.e., IoT device) to behave smartly in such an environment cannot be addressed by conventional machine learning algorithms such as supervised learning. By reinforcement learning approach, a learning agent can sense the environment's state (e.g., sensing home temperature), perform actions (e.g., turn HVAC on or off) and learn through the maximizing accumulated rewards it receives in long term.

IoT intelligence can be offered at three levels: IoT devices, Edge/Fog nodes, and Cloud computing. The need for intelligent control and decision at each level depends on the time sensitiveness of the IoT application. For example, an autonomous vehicle's camera needs to make real-time obstacle detection to avoid an accident. This fast decision making would not be possible through transferring data from the vehicle to cloud instances and return the predictions back to the vehicle. Instead, all the operation should be performed locally in the vehicle. Integrating advanced machine learning algorithms including deep learning into IoT devices is an active research area to make smart objects closer to reality. Moreover, it is possible to get the most value out of IoT deployments through analyzing IoT data, extracting hidden information, and predicting control decisions. A wide variety of machine learning techniques have been used in IoT domain ranging from traditional methods such as regression, support vector machine, and random forest to advanced ones such as convolutional neural networks, LSTM, and variational autoencoder.

In the future, the Internet of things may be a non-deterministic and open network in which auto-organized or intelligent entities (web services, SOA components) and virtual objects (avatars) will be interoperable and able to act independently (pursuing their own objectives or shared ones) depending on the context, circumstances or environments. Autonomous behavior through the collection and reasoning of context information as well as the object's ability to detect changes in the environment (faults affecting sensors) and introduce suitable mitigation measures constitutes a major research trend, clearly needed to provide credibility to the IoT technology. Modern IoT products and solutions in the marketplace use a variety of different technologies to support such context-aware automation, but more sophisticated forms of intelligence are requested to permit sensor units and intelligent cyber-physical systems to be deployed in real environments.

### **Architecture**

IoT system architecture, in its simplistic view, consists of three tiers: Tier 1: Devices, Tier 2: the Edge Gateway, and Tier 3: the Cloud. Devices include networked things, such as the sensors and actuators found in IoT equipment, particularly those that use protocols such as Modbus, Bluetooth, Zigbee, or proprietary protocols, to connect to an Edge Gateway. The Edge Gateway layer consists of sensor data aggregation systems called Edge Gateways that provide functionality, such as pre-processing of the data, securing connectivity to cloud, using systems such as WebSockets, the event hub, and, even in some cases, edge analytics or fog computing. Edge Gateway layer is also required to give a common view of the devices to the upper layers to facilitate in easier management. The final tier includes the cloud application built for IoT using the microservices architecture, which are usually polyglot and inherently secure in nature using HTTPS/OAuth. It includes various database systems that store sensor data, such as time series databases or asset stores using backend data storage systems (e.g. Cassandra, PostgreSQL). The cloud tier in most cloud-based IoT system features event queuing and messaging system that handles communication that transpires in all tiers. Some experts classified the three-tiers in the IoT system as edge, platform, and enterprise and these are connected by proximity network, access network, and service network, respectively.

Building on the Internet of things, the web of things is an architecture for the application layer of the Internet of things looking at the convergence of data from IoT devices into Web applications to create innovative use-cases. In order to program and control the flow of information in the Internet of things, a predicted architectural direction is being called BPM Everywhere which is a blending of traditional process management with process mining and special capabilities to automate the control of large numbers of coordinated devices.

### **Network architecture**

The Internet of things requires huge scalability in the network space to handle the surge of devices. IETF 6LoWPAN would be used to connect devices to IP networks. With billions of devices being added to the Internet space, IPv6 will play a major role in handling the network layer scalability. IETF's Constrained Application Protocol, ZeroMQ, and MQTT would provide lightweight data transport.

Fog computing is a viable alternative to prevent such a large burst of data flow through the Internet. The edge devices' computation power to analyse and process data is extremely limited. Limited processing power is a key attribute of IoT devices as their purpose is to supply data about physical objects while remaining autonomous. Heavy processing requirements use more battery power harming IoT's ability to operate. Scalability is easy because IoT devices simply supply data through the internet to a server with sufficient processing power.

### **Decentralized IoT**

Decentralized Internet of things, or decentralized IoT, is a modified IoT. It utilizes Fog Computing to handle and balance requests of connected IoT devices in order to reduce loading on the cloud servers, and improve

responsiveness for latency-sensitive IoT applications like vital signs monitoring of patients, vehicle-to-vehicle communication of autonomous driving, and critical failure detection of industrial devices.

Conventional IoT is connected via a mesh network and led by a major head node (centralized controller). The head node decides how a data is created, stored, and transmitted. In contrast, decentralized IoT attempts to divide IoT systems into smaller divisions. The head node authorizes partial decision making power to lower level sub-nodes under mutual agreed policy. Performance is improved, especially for huge IoT systems with millions of nodes.

Decentralized IoT attempts to address the limited bandwidth and hashing capacity of battery-powered or wireless IoT devices via lightweight blockchain.

Cyberattack identification can be done through early detection and mitigation at the edge nodes with traffic monitoring and evaluation.

### **Complexity**

In semi-open or closed loops (i.e. value chains, whenever a global finality can be settled) the IoT will often be considered and studied as a complex system due to the huge number of different links, interactions between autonomous actors, and its capacity to integrate new actors. At the overall stage (full open loop) it will likely be seen as a chaotic environment (since systems always have finality). As a practical approach, not all elements in the Internet of things run in a global, public space. Subsystems are often implemented to mitigate the risks of privacy, control and reliability. For example, domestic robotics (domotics) running inside a smart home might only share data within and be available via a local network. Managing and controlling a high dynamic ad hoc IoT things/devices network is a tough task with the traditional networks architecture, Software Defined Networking (SDN) provides the agile dynamic solution that can cope with the special requirements of the diversity of innovative IoT applications.

### **Size considerations**

The Internet of things would encode 50 to 100 trillion objects, and be able to follow the movement of those objects. Human beings in surveyed urban environments are each surrounded by 1000 to 5000 trackable objects. In 2015 there were already 83 million smart devices in people's homes. This number is expected to grow to 193 million devices by 2020.

The figure of online capable devices grew 31% from 2016 to 2017 to reach 8.4 billion.

### **Space considerations**

In the Internet of things, the precise geographic location of a thing—and also the precise geographic dimensions of a thing—will be critical. Therefore, facts about a thing, such as its location in time and space, have been less critical to track because the person processing the information can decide whether or not that information was important to the action being taken, and if so, add the missing information (or decide to not take the action). (Note that some things in the Internet of things will be sensors, and sensor location is usually important. The GeoWeb and Digital Earth are promising applications that become possible when things can become organized and connected by location. However, the challenges that remain include the constraints of variable spatial scales, the need to handle massive amounts of data, and an indexing for fast search and neighbour operations. In the Internet of things, if things are able to take actions on their own initiative, this human-centric mediation role is eliminated. Thus, the time-space context that we as humans take for granted must be given a central role in this information ecosystem. Just as standards play a key role in the Internet and the Web, geo-spatial standards will play a key role in the Internet of things.

### **A solution to "basket of remotes"**

Many IoT devices have the potential to take a piece of this market. Jean-Louis Gassée (Apple initial alumni team, and BeOS co-founder) has addressed this topic in an article on *Monday Note*, where he predicts that the most likely problem will be what he calls the "basket of remotes" problem, where we'll have hundreds of applications to interface with hundreds of devices that don't share protocols for speaking with one another. For improved user interaction, some technology leaders are joining forces to create standards for communication between devices to solve this problem. Others are turning to the concept of predictive interaction of devices, "where collected data is used to predict and trigger actions on the specific devices" while making them work together.

### **Social Internet of things**

Social Internet of things (SIoT) is a new kind of IoT that focuses the importance of social interaction and relationship between IoT devices. SIoT is a pattern of how cross-domain IoT devices enabling application to

application communication and collaboration without human intervention in order to serve their owners with autonomous services, and this only can be realized when gained low-level architecture support from both IoT software and hardware engineering.

### **Social Network for IOT Devices (Not Human)**

IoT defines a device with an identity like a citizen in a community, and connect them to the internet to provide services to its users. SIoT defines a social network for IoT devices only to interact with each other for different goals that to serve human.

### **How SIoT different from IOT?**

SIoT is different from the original IoT in terms of the collaboration characteristics. IoT is passive, it was set to serve for dedicated purposes with existing IoT devices in predetermined system. SIoT is active, it was programmed and managed by AI to serve for unplanned purposes with mix and match of potential IoT devices from different systems that benefit its users.

### **How SIoT Works?**

IoT devices built-in with sociability will broadcast their abilities or functionalities, and at the same time discovers, navigates and groups with other IoT devices in the same or nearby network for useful service compositions in order to help its users proactively in every day's life especially during emergency.

### **Social IOT Examples**

1. IoT-based smart home technology monitors health data of patients or aging adults by analyzing their physiological parameters and prompt the nearby health facilities when emergency medical services needed. In case emergency, automatically, ambulance of a nearest available hospital will be called with pickup location provided, ward assigned, patient's health data will be transmitted to the emergency department, and display on the doctor's computer immediately for further action.
2. IoT sensors on the vehicles, road and traffic lights monitor the conditions of the vehicles and drivers and alert when attention needed and also coordinate themselves automatically to ensure autonomous driving is working normally. Unfortunately if an accident happens, IoT camera will inform the nearest hospital and police station for help.

### **Social IOT Challenges**

1. Internet of things is multifaceted and complicated. One of the main factors that hindering people from adopting and use Internet of things (IoT) based products and services is its complexity. Installation and setup is a challenge to people, therefore, there is a need for IoT devices to mix match and configure themselves automatically to provide different services at different situation.
2. System security always a concern for any technology, and it is more crucial for SIoT as not only security of oneself need to be considered but also the mutual trust mechanism between collaborative IoT devices from time to time, from place to place.
3. Another critical challenge for SIoT is the accuracy and reliability of the sensors. At most of the circumstances, IoT sensors would need to respond in nanoseconds to avoid accidents, injury, and loss of life.

### **Enabling Technologies for IOT:**

There are many technologies that enable the IoT. Crucial to the field is the network used to communicate between devices of an IoT installation, a role that several wireless or wired technologies may fulfill:

#### **Addressability**

The original idea of the Auto-ID Center is based on RFID-tags and distinct identification through the Electronic Product Code. This has evolved into objects having an IP address or URI. An alternative view, from the world of the Semantic Web focuses instead on making all things (not just those electronic, smart, or RFID-enabled) addressable by the existing naming protocols, such as URI. The objects themselves do not converse, but they may now be referred to by other agents, such as powerful centralised servers acting for their human owners. Integration with the Internet implies that devices will use an IP address as a distinct identifier. Due to the limited address space of IPv4 (which allows for 4.3 billion different addresses), objects in the IoT will have to use the next generation of the Internet protocol (IPv6) to scale to the extremely large address space required. Internet-of-things devices additionally will benefit from the stateless address auto-configuration present in IPv6, as it reduces the configuration overhead on the hosts, and the IETF 6LoWPAN header compression. To a large extent, the future of the Internet of things will not be possible without the support of

IPv6; and consequently, the global adoption of IPv6 in the coming years will be critical for the successful development of the IoT in the future.

**Application Layer**

- ADRC defines an application layer protocol and supporting framework for implementing IoT applications.

**Short-range wireless**

- Bluetooth mesh networking – Specification providing a mesh networking variant to Bluetooth low energy (BLE) with an increased number of nodes and standardized application layer (Models).
- Light-Fidelity (Li-Fi) – Wireless communication technology similar to the Wi-Fi standard, but using visible light communication for increased bandwidth.
- Near-field communication (NFC) – Communication protocols enabling two electronic devices to communicate within a 4 cm range.
- Radio-frequency identification (RFID) – Technology using electromagnetic fields to read data stored in tags embedded in other items.
- Wi-Fi – Technology for local area networking based on the IEEE 802.11 standard, where devices may communicate through a shared access point or directly between individual devices.
- ZigBee – Communication protocols for personal area networking based on the IEEE 802.15.4 standard, providing low power consumption, low data rate, low cost, and high throughput.
- Z-Wave – Wireless communications protocol used primarily for home automation and security applications

**Medium-range wireless**

- LTE-Advanced – High-speed communication specification for mobile networks. Provides enhancements to the LTE standard with extended coverage, higher throughput, and lower latency.
- 5G - 5G wireless networks can be used to achieve the high communication requirements of the IoT and connect a large number of IoT devices, even when they are on the move.

**Long-range wireless**

- Low-power wide-area networking (LPWAN) – Wireless networks designed to allow long-range communication at a low data rate, reducing power and cost for transmission. Available LPWAN technologies and protocols: LoRaWan, Sigfox, NB-IoT, Weightless, RPMA.
- Very small aperture terminal (VSAT) – Satellite communication technology using small dish antennas for narrowband and broadband data.

**Wired**

- Ethernet – General purpose networking standard using twisted pair and fiber optic links in conjunction with hubs or switches.
- Power-line communication (PLC) – Communication technology using electrical wiring to carry power and data. Specifications such as HomePlug or G.hn utilize PLC for networking IoT devices.

**Policies and Civic Engagement:**

Some scholars and activists argue that the IoT can be used to create new models of civic engagement if device networks can be open to user control and inter-operable platforms. Philip N. Howard, a professor and author, writes that political life in both democracies and authoritarian regimes will be shaped by the way the IoT will be used for civic engagement. For that to happen, he argues that any connected device should be able to divulge a list of the "ultimate beneficiaries" of its sensor data and that individual citizens should be able to add new organisations to the beneficiary list. In addition, he argues that civil society groups need to start developing their IoT strategy for making use of data and engaging with the public.<sup>1</sup>

**Government resolution and IOT:**

One of the key drivers of the IoT is data. The success of the idea of connecting devices to make them more efficient is dependent upon access to and storage & processing of data. For this purpose, companies working on the IoT collect data from multiple sources and store it in their cloud network for further processing. This leaves the door wide open for privacy and security dangers and single point vulnerability of multiple systems. The other issues pertain to consumer choice and ownership of data and how it is used. Though still in their infancy, regulations and governance regarding these issues of privacy, security, and data ownership continue to develop. IoT regulation depends on the country. Some examples of legislation that is relevant to privacy and

data collection are: the US Privacy Act of 1974, OECD Guidelines on the Protection of Privacy and Transborder Flows of Personal Data of 1980, and the EU Directive 95/46/EC of 1995.

**Current regulatory environment:**

A report published by the Federal Trade Commission (FTC) in January 2015 made the following three recommendations:

- Data security – At the time of designing IoT companies should ensure that data collection, storage and processing would be secure at all times. Companies should adopt a "defense in depth" approach and encrypt data at each stage.
- Data consent – users should have a choice as to what data they share with IoT companies and the users must be informed if their data gets exposed.
- Data minimisation – IoT companies should collect only the data they need and retain the collected information only for a limited time.

However, the FTC stopped at just making recommendations for now. According to an FTC analysis, the existing framework, consisting of the FTC Act, the Fair Credit Reporting Act, and the Children's Online Privacy Protection Act, along with developing consumer education and business guidance, participation in multi-stakeholder efforts and advocacy to other agencies at the federal, state and local level, is sufficient to protect consumer rights.

A resolution passed by the Senate in March 2015, is already being considered by the Congress.<sup>1</sup> This resolution recognized the need for formulating a National Policy on IoT and the matter of privacy, security and spectrum. Furthermore, to provide an impetus to the IoT ecosystem, in March 2016, a bipartisan group of four Senators proposed a bill, The Developing Innovation and Growing the Internet of Things (DIGIT) Act, to direct the Federal Communications Commission to assess the need for more spectrum to connect IoT devices.

Approved on 28 September 2018, Senate Bill No. 327 goes into effect on 1 January 2020. The bill requires "a manufacturer of a connected device, as those terms are defined, to equip the device with a reasonable security feature or features that are appropriate to the nature and function of the device, appropriate to the information it may collect, contain, or transmit, and designed to protect the device and any information contained therein from unauthorized access, destruction, use, modification, or disclosure,"

Several standards for the IoT industry are actually being established relating to automobiles because most concerns arising from use of connected cars apply to healthcare devices as well. In fact, the National Highway Traffic Safety Administration (NHTSA) is preparing cybersecurity guidelines and a database of best practices to make automotive computer systems more secure.

**A recent report from the World Bank examines the challenges and opportunities in government adoption of IOT. These include –**

- Still early days for the IoT in government
- Underdeveloped policy and regulatory frameworks
- Unclear business models, despite strong value proposition
- Clear institutional and capacity gap in government AND the private sector
- Inconsistent data valuation and management
- Infrastructure a major barrier
- Government as an enabler
- Most successful pilots share common characteristics (public-private partnership, local, leadership)

In early December 2021, the U.K. government introduced the Product Security and Telecommunications Infrastructure bill (PST), an effort to legislate IoT distributors, manufacturers, and importers to meet certain cyber security standards. The bill also seeks to improve the security credentials of consumer IoT devices.

**Result:** At very vast level the IOT applications are going to be implemented in coming years all over the world. It will change the world scenario. Many things become automated. Also atomization will create new opportunities for startup companies, new job opportunities, new entrepreneurs will come up.

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**EFFECT OF CELEBRITY ENDORSEMENTS ON BRAND IMAGE DURING COVID-19 PANDEMIC****<sup>1</sup>Rajiv Jain, <sup>2</sup>Prof. (Dr.) Vishal Kumar and <sup>3</sup>Dr. Ranbir Singh**<sup>1</sup>Research Scholar, Maharaja Agrasen University, Baddi, Kalujhanda Brotiwala Dist. Solan<sup>2</sup>Principal, Sri Aurobindo College of Commerce and Management, Ludhiana., Former Dean Research, Director - School of Management, Maharaja Agrasen University<sup>3</sup>Assistant Professor, (Management), Himachal Pradesh University College of Business Studies, Shimla-4**ABSTRACT**

*Celebrity endorsement (CE) has been a hit as one of the marketing communications gear and has attained such reputation. Doubting the influencing power and its impact on the audience clearly out mine the philosophy. During last two crucial years, most of the endorsement is being done by celebrity. Celebrity endorsements come with some inherent risks. Extant literature and numerous studies works now no longer support. Organizations are confronted with the aid of usingenticing Celebrities to recommend the brand. It is thoughtthat duringeachundertaking there are few demanding situationswhich can be set to militate against some true intentions or goals that missionwould possibly have. This paper therefore, is on findings from a studieschallenge that meditated upon the demanding situations of Celebrity endorsement (CE) and the waythey have got affected diffusion. Limitations and associated risk of using celebrities is also being discussed.*

*Keyword: Celebrity endorsement, Diffusion*

**INTRODUCTION**

If India had been an event, celebrities will be the ones who make the maximum heads turn. So it's no wonder that celebrities preserve to play matchmaker among consumers and sellers. Association of a product emblem with a movie star now no longer handiest generates a better emblem remember however additionally will increase the credibility of the product. Celebrity emblem ambassadors upload fee to the product's emblem picture and positioning through influencing patron buy decisions, developing awareness, attracting capability clients and growing the likeability of the related emblem.

**Celebrity Endorsement**

Celebrity endorsement has emerged as one of the well-known and worthwhile advertising communications tool in current times. Companies spend big sums of cash to settlement celebrities to certify or advise their services and products simply to decorate their image, credibility, acceptability, and attractiveness.

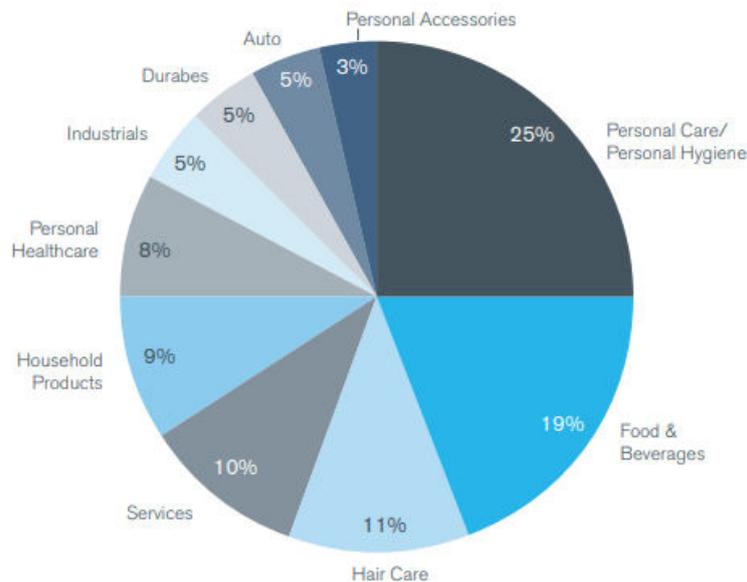
According to Katyal (2007), marketers spend massive quantities of cash on superstar endorsement primarily based totally at the notion that celebrities may be powerful interface for companies. Edrogon, Baker, and Tagg (2001), and Mistry (2006), suggested that televised advertisements characteristic celebrities contributes to the level of about 25% in USA, 57% in Korea (Choi, Lee and Kim, 2005); and 70% in Japan (Money, Shimps and Sakano,2006). Also, in Germany, about 12% of all marketing and marketing campaigns appoint those endorsers (Ipsos Response, 2008).

According to Erfgen, 2011, 40% of the youth-merchandise commercial featured at the least one movie star in China (Chan, 2008). This suggests that CE has assumed a much broader size internationally due to its effectiveness in persuading its fans to simply accept the advocated logo at the market. Research has proven that the usage of celebrities in classified ads will have a tremendous influence at the credibility, message recall, reminiscence and likeability of the classified ads and ultimately on buy intentions (Menon, 2001; Pornpitakpan, 2003; Pringle and Binet, 2005; Roy, 2005). Earlier researches have been confined to the analyzing of movie star endorsers' characteristics, movie star credibility, attractiveness, expertise, their monetary worth, logo suit up, the Meaning Transfer Model, supply results model, and terrible information (Erfgen, 2011).

Celebrity Endorsement interest has been growing during the last years (Biswas, Hussain, & O'Donnell, 2009). From 1984 to 1999, there has been a mentioned eleven-fold boom in sponsorship expenditure representing \$23 billion or 7.0% of the global marketing and marketing budget (Pope, Voges & Brown 2009). Published reviews imply that making use of movie star endorsers in marketing communications sports have long gone up remarkably. On the average, one in each 5 commercials in UK and one in each 4 US classified ads function a movie star in today's marketing campaigns (Hollensen & Schimmelpfennig, 2013). On a worldwide scale additionally more or less each fifth advert consists of a movie star, making endorsements an extensively used and famous method among entrepreneurs and advertisers to sell client merchandise and offerings (Halonen-Knight & Hurmerinta, 2010).

Find below the sector wise bifurcation of celebrity endorsement.

Celebrity Endorsements: Top Sectors (% share)



Source: AdEx India, A Division of TAM Media Research

**Celebrity Advertising**

Branding or advertising, whereby a celebrity uses his or her position in promoting a product or service is called celebrity branding. With the appearance of celebrity in advertisement of service, good, idea through public relation events, publicity and sale promotion, celebrity branding emerges in different forms as a brand. At present there has been a trend towards celebrity voiceovers in advertising. Celebrities having different voices are recognizable without having their presence. One of the suitable examples related to above context is Mr. Amitabh Bachchan who is endorsing many product & service.

In the competitive and ever changing environment, marketing team of every organization has been facing immense pressure/difficulties to connect with their prospective market. The encounter of entrenching the maximum consideration of the customers is becoming tougher and bigger due to the incisiveness flow of information into the society lamenting people attractive more agile and choosy about their need and demands. To be remained present in the challenging world and to be apart, many marketers tend to get involved up in scrounger effect of their advertisements. Many a time the medium or tools used for getting the attention of customers turns out to be ill fully affected leading to diversion of attention away from the actual product & service thereby put a negative effect to the brand including sports, electronic food and many more. In comparing different brands, firms spend a substantial amount of capital in highlighting various features its desirability, charisma and fidelity. They believe to get suitable outcomes in using such properties but a few of the time this come as altogether opposite, inappropriate & irrelevant.

In order to develop brand identity in today's era it is very important for companies to design such devices or to inculcate such technology that make the advertisement reach the consumer. Here come the role of celebrity and much bigger role is selection of celebrity which again an important task for the advertiser. Let for example in order to product related to children, one has to look on the cartoon characters influencing the child decisions. Looking into the overall perspective necessitating parent's need the product to be endorsed which is appreciated by children and overall affecting the personality of the child. The other concept which decides the power of specific brand depends on pestering power. Along with that family's role, customer participation, reference group do play a crucial role in deciding the endorsements. Product with high involvement characteristics, the role of the celebrity become more crucial wherein he/she has to highlight product/service features. In similar line, product related to environment and health issues whenever the celebrity bring to mind with the character consumer régime and to some medical attentions then celebrity ads work a lot. The biggest challenge that prevail that the celebrity should not oversuppress the issue, but should enhance the product or the concept firmed up in the mind. Taking an example for vaccinations then Mr. Amitabh Bachchan as celebrity endorsement is used. Like in pulse polio drops campaign, especially in rural are the presence of Mr. Amitabh Bachchan in the advertisement make the campaign impactful.

**DEAD CELEBRITY CONCEPT**

The concept of Dead Celebrity endorsement is not appreciated by Indian as most of the consumer do not appreciate the idea of promotion by dead celebrity and even children like to watch the latest cartoon appeal like shin Chan, Doreman etc leading to determination a question mark on the achievement of advertisement. This effect sometimes can create the difficulty in the mind of consumer whether to recognize the product or celebrity memories.

Celebrity endorsement has become the limelight in India with current controversies over products endorsed by established personalities. The issue is more highlighted in developing market in India wherein celebrities do carry high credibility. This is more because of the fact that there are power distances and asymmetrically dispersed power, is high in countries.

Recently Maggi noodles; a popular brand of Nestle India was engrossed with a controversy wherein usage of Monosodium glutamate (MSG) in excessive quantity was found in food as food additive leading temporary withdrawal of the product from retailer's space. Although Nestle came out unscratched from the controversy but a guarantee downfall focus on the celebrity (Bollywood actors Amitabh Bachhan, Madhuri Dixit and Preity Zinta ) who was endorsing the same and the extent of accountability on the quality and claims forwarded by the producers. This was further reestablished by a disagreement of cricketer M S Dhoni's endorsement of the Amarपाली housing project making it the cream issue in newspaper headlines.

So much so, recently India's Consumer Affairs Minister Ram Vilas Paswan was reported to have stressed a new Consumer Protection Bill which hold celebrity to be held accountable and responsible for the product/service which are being endorsed by celebrity. This comes slam on the heels of the opinion of the Standing Committee on Food, Consumer Affairs and Public Distribution in April that the existing laws were not sufficient enough and bonded enough in order to dishearten producers & middlemen for using celebrities for misleading advertisements. In order to inculcate the seriousness, the committee was of the recommendation that a fine of 10 lakhs or jail for two years for first time offenders & subsequent to that a fine of 50 lakhs and imprisonment of 5 years for second offenders.

Now the real question arises that celebrity endorsement is more of a concerned issue in emerging economies like India and not so in country like USA. The extensive research through several studies have come to the conclusion that as power distance increases the impact of celebrity endorsement increases is more visible wherein the mediating parameters like credibility & trustworthiness play a bigger role. A country like India, the influencing power or perceived power of celebrity is very high so the responsibilities and accountability of celebrity play a major role for any substandard or poor quality of the products. That is the reason celebrity endorsement is being adjudged more popular and famous in emerging market

**CELEBRITY-BRAND CORRESPONDENCE:**

Success of any advertisement depends upon choice of right celebrity because consumer most of the time believe that chosen celebrity should have positive affect and recognition and there has to be high degree of correlation between celebrity and product. Taking a clue of the example like Michael Jordan and Tiger Woods endorsing Nike and David Beckham endorses Adidas whereas movie star is not being preferred for endorsing sport products. Here come role of celebrity/brand congruence. A perfect tie-up between celebrity and product generates more effectiveness and result in positive result thereby enhances believability and effectiveness than a miss match fit leading to divorce. A positive congruent product-endorser equivalent is more likely to influence customers to buy the certified product by transferring cultural and subculture meanings residing in their brand image to the product. Moreover, some studies have given the reference that attitude and purchase intention is more towards celebrity than non-celebrity spokesperson. Earlier studies have further justified that family culture and social friends are being professed to be more truthful than salespeople, and some time celebrities are thought to be as friends even if they might not actually know. So it can be made statement that celebrity and brand endorsement should have a positive and impactful relation leading to brand image and harder the bond/link the steadier association between the two. Also it is proven that a moderate congruence is perceived to be beneficial. A relatively unfortunate fit between brand and celebrity may be boring and support individuals to process the information more intensively and elaborate more

**LITERATURE REVIEWS:**

According to Parmar & Patel, 2014, although celebrity endorsement is a powerful marketing strategy, it is to be kept in mind the factors contributing towards unsuccessful celebrity endorsements.

A set of models fully describe the uniqueness pertaining to importance of celebrity endorsements.

**Source Credibility Model:** According to (Hovland, 1953; Dholakia & Sternthal, 1977; Sternthal, 1978), Trustworthy and credibility of the celebrity determine the efficacy of the message and it is only be established when that trust build up

**Source Attractiveness Model:** Relating and to be like the celebrity also inculcate the feeling of acceptance. A study by McGuire (1985) shows that many dimensions like resemblance, acquaintance and amiability cause influences on the consumer. But a mismatch between the celebrity and the product exists may interrupt the finalization of credibility or attractiveness.

According to (Atkin and Block (1983)), many ways to look upon as to why an eminent endorser may be dominant.

As per (Kamins et al. 1989), celebrities are predictably observed as being significantly active individuals with eye-catching and likeable traits

Also a study by Dholakia & Sternthal (1997), there are factors other than credibility that result in behavioral changes.

According to (Haghirian & Madlberger 2005), use of eye-catching celebrity provides groundwork to augment approach towards the advertisement. This mind-set is identified as psychological conditions that is to be exercised by persons to organize the manner, how to be acquainted with the surrounding.

According to (Agrawal & Wagner 1995; Erdogan 1999; Kaikati 1987; Mathur et al. 1997; Gabor et al. 1987), By adopting the skill to navigate the mass of publicity thereby portraying customer consideration to produce more memory thereby brand do spend a large chunk of capital.

According to .( Gupta, Kishore and Verma (2015), Celebrity endorsements have a significant impact on consumers' ad perception

Biswas et al. (2006) have conducted research on risk perception through three studies lying within the context of the product's technology alignment, consumer acquaintance and congruency between the endorser and the product.

Tanvir and Arif (2012) have done research on impact of cartoon endorsement on children impulse buying of food.

To witness the amendment in attitude and purchase intention of customers influenced by the celebrity source endorser Kahle and Homer (1985) have conducted a study on physical attractiveness of celebrity and concluded that attractive endorser leave a better impact than unattractive source.

Maddux and Rogers (1980) have done similar research on the effect of source expertness, physical attractiveness and supporting arguments on persuasion.

Kamins (1990) studied the attractiveness aspect of the "match-up" hypothesis of celebrity selection. The findings of this research suggest that characteristics of a spokesperson interact with the nature of products advertised.

## **RESEARCH METHODOLOGY:**

The study has been carried out with the help of secondary data and the same is being taken from various sources such as books, journals, magazines, internet etc.

### **1.1 RESEARCH PROBLEM**

While doing promotion and celebrities' endorsement for their products, Marketers sometime fail to establish strong connotation between brand / product and celebrity being endorsed which is very vital factor to consider for achieving desired outcomes.

### **1.2 RESEARCH QUESTIONS**

- Does pandemic influenced celebrity endorsement on brand image?
- Identification of factors of celebrity endorsement having a significant impact on success of an endorsement?
- Limitations of using celebrities as well as other possible risks with the celebrity association

### **1.3 RESEARCH OBJECTIVES**

- To study the impact of celebrity endorsement on brand image during pandemic

- To identify the most challenging and prominent factors that play the prominent role in the success of an endorsement.
- To study the limitations of using celebrities as well as other possible risks with the celebrity association

**1.4 SCOPE OF THE STUDY**

This research is beneficial in following manner:

It is beneficial for companies in terms of the brand differentiation or brand image celebrity endorsement creates in the minds of consumers. Another benefit of it is that it helps consumers remember such brands, like when they go for shopping and see those brands in market celebrities who have endorsed that brand quickly come to their mind which means consumers can easily recall the brands endorsed by well-known personalities.

**FINDING & ANALYSIS**

Let’s discuss a brief about recent incidence that has inculcated the need for some of the issues that need to be addressed.

- In current marketing, bollywood actor Aamir Khan became stuck with the first huge case in which Khan’s statements approximately rising “intolerance” brought about a typhoon of protest and one of the foremost company Snapdeal which became recommended at that time, determined to now no longer renew the agreement with Khan and company’s formally made a announcement that “Snapdeal is neither related nor performs a function in feedback made via way of means of Aamir Khan in his private capacity.”
- During the same Mr. Aamir Khan was also dropped from the brand ambassador of “Incredible India Campaign” thereby making a statement not to take any celebrity or infact prefer non celebrity as a part of campaign for further campaign
- The recent case of JNU wherein Deepika Padukone, attended a protest at Jawaharlal Nehru University (JNU) in Delhi, where she stood in unanimity with the students leading to top trending attention in the country, receiving both honor and revolt in equal measure. Infact there was reports of re-evaluation of some brands delaying ads and wait for the die down of the recent controversy.

**PROPORTION OF ADVERTISEMENT INCLUDING CELEBRITIES**



Source: KantarLinkdatabase

**CELEBRITY ADVERTISEMENT DURING PANDEMIC**

As per TAM AdEx report, Celebrity-endorsed ads spiked 63% in June’20 versus April’20: Out of these, 79% ads were endorsed by film celebrities followed by 15% by sports persons and rest 7% is divided between TV personalities. Among all professions, actress leads in endorsing brands with 43% share of ad volumes and film actors commands 36% share.

- Celebrity advertisement declined by 41% through COVID-19 Wave 1 phase, whereas it cultivated by 15% and 23%, respectively, related to the pre-COVID-19 phase. Associate to Wave 1, 96% celebrity ad volumes improved during the Unlock period and 2.1x advance observed in volumes in Wave 2. Compared to the pre-COVID-19 phase, computation of advertisers and brands decreased through the other three COVID-19 phases.
- Food & Beverages is the prominent sector in the pre-COVID-19 and both the phases, whereas Personal Care/ Hygiene sector was on top through the Unlock phase thanks to the festive period.
- Out of the Maximum 10 growing classifications, highest growth was observed in Corporate/ Brand Image, which grew 39x and a whopping 587x during Wave 2 over Wave 1 and Wave 2 over Dec’20-Feb’21, respectively.

- During Wave 2, more than 120 new advertisers and 225 new brands were seen compared to Dec'20-Feb'21 and more than 175 new advertisers and 375 new brands observed as compared to Wave 1.

### **LIMITATIONS OF CELEBRITY ADVERTISING**

There are surebarriers of celebrity marketing. Marketers anticipate magical impact from the superstaraffiliation. To a hugevolumetarget markettake into account celebrities in particular, mainlymovie and sports activities personalities as their icon or position model. Sometimes even celebrities are perceived as a Role Model. Nonethessthere may be no assurty that this magic will paint for all merchandise in all situations. Some researchers warn the advertisers who blindly rely uponthe celebsapproximatelythe restrictions of superstar endorsements.

Friedman and Friedman (1979) endorse that celebrities are fine for sellingsuresorts ofmanufacturershandiest and aren'tpowerful for all manufacturers. Therefore, superstartmarketing cannot be a certain shot achievementmethod for the advertisers in all of the situations. Celebrity Advertising – A Critical Perspective 2902 Ogilvy and Mather's locating is that handiest one in 5superstar campaigns lives as much aspatron expectations (pronounced in Miciak and Shanklin 1994) whilst McEwen (2003) opined that entrepreneurs are spending hundreds of thousands to reapsuperstar advertisings for his or hermerchandisehoweverregrettablya good deal of that cash is wasted. This is definitelynow no longer any encouraging information for the advertisers. All superstar endorsements will now no longerconvey any magic and superstarby myselfwon't do wonders for the manufacturers. Study through Silvera and Austad (2003), concludes that effectiveness of superstar endorser is dynamic in nature. It relies uponat thesuperstar, the goodsor even societal situationson the time and vicinityin which the commercial is shown. Superstar is no 'silver bullet' howeverneed to be used along side marketing, emblem and marketing and marketingfine practices – considerateapproach, smartinnovativethoughts and a legitimate product – all of which awareness on connecting with purchasers and their needs. Interestingly, whilstfashion of the use of celebrities with inside thecommercials is rising, studiethrough Charbonneau and Garland (2005) found outthat almost all of New-Zealand practitioners are creating aawareattemptto transportfarfar fromsuperstar advertisings, as illustrated throughthe subsequent quote - "We locate that additionally it is too pricey, almostintricate and the superstar can overpower the emblem message. We couldfavor tovirtually interrogate the product or service, and make the marketing and marketingconcept revolve round that, in place ofa 3rd party".

According to Singh, R (2005) and Khatri, M (2006), there are 5importantmotivesin the back of failure of superstartmarketing such as: a) Improper or incorrect positioning, b) emblem-superstar disconnect, c) clutter, d) bad product and e) confusion or skepticism. Mere affiliation with superstar does now no longerassure sales. At the maximum, they could generate hobbywith inside the product or create a buzz round it. If the superstar represents values that war with the emblem values and positioning, the commercial creates a warwith inside the minds of the audience who won'treceive the proposition. Overexposure of superstartmay behorrific for emblem. As there are too many manufacturers chasing too few celebrities, a couple of endorsements through one superstar is certain to happen.

### **RISKS ASSOCIATED WITH CELEBRITY ADVERTISING**

Celebrity affiliationwill havea few in-constructeddangers with financial losses as it took place in many incidents. The potential intangible dangersencompass a movie starturning intoworried in a controversy, the movie star being overexposed through too many endorsement contracts.

Celebrity's marketability and fan following is primarily based totally on many elementswhich includes acting/gambling skills, non-publicphoto and media hobby, etc. All those can extradeall at oncebecause ofdifferent factorsand decrease the profits for advertisers. Researchers like Friedman and Friedman (1979), Ohanian (1991), Tripp et al., (1994) and Solomon (2002) who examinemovie starmarketing, its effectiveness and feasibleeffectat thetarget market, additionally warn entrepreneursapproximately the feasible dangersrelated to the movie starmarketing. Though, maximumstudies findings aid the effectiveness of movie starmarketing, the dangersassociated with celebrities' poorfacts, more than one product endorsement and movie star overshadow effect, etc. also are addressed through many researchers. Mowen and Brown (1981), Tripp (1990) and Tripp, Jensen, and Carlson (1994) indicates that movie star endorsement methodmay have poorconsequences on celebrities themselves in addition tomarketing, logo evaluation, and buy intentions.

Erdogan and Kitchen (1998) warn that the elevatedinterest comes with the danger of overshadowing the logo. Till and Shimp (1998) locate that poorfactsapproximately the movie star tended to decreasecustomers' logo evaluations. Louie and Obermiller (2000) view that celebrities who're blamed for pooroccasionswill haveunfavourableconsequences on the goods they recommend. Athletes giftthe extradanger of injury, which

reduces visibility and overall performance, lowering endorsement potential. When movie star endorser is essentially unknown and unrecognized through the meantarget market, marketer can not get anticipated returns from that affiliation.

Celebrities like movie stars and cricket gamers aren't everlasting. They can payoff higher until they may be young, famous, appearing nicely of their respective fields. Celebrity endorsement will become trickier whilst manufacturers have restricted shelf lives. Till the time, the movie star has a large fan following, the manufacturers promote like warm cakes. Consumers can be inclined to pay the top class for obtaining the logo. But the moment, the movie star profits poor exposure regarding his non-public or expert existence, it spells doom for the logo he's related to. Recovery of fee will become a paramount trouble because of the pressured shorter existence cycle of the logo. Due to the influential energy of movie star, frequently human beings have a tendency to recall the movie star however there may be no or much less or wrong recollect for the manufacturer she's endorsing.

Success of logo widely relies upon on 3 elements: P-D-AV i.e. powerful Product, Differentiation and Added Value. Celebrity cannot absolutely do something to enhance or debilitate the performance and functions of the middle product. But can clearly and in large part make a contribution in differentiation and cost addition. When there may be no or little or no cost addition from even pinnacle celebrities, such classified ads can not create any waves. Tripp et al., (1994), Dyson and Turco (1998), Erdogan and Kitchen (1998), James and Ryan (2001) and Garland and Ferkins (2002) speak approximately the danger of more than one product endorsements. They kingdom that celebrities endorsing more than one merchandisedanger overexposure, lessening the effect and specialty of every product dating in addition to diminishing customer perceptions of movie star credibility and likeability.

#### **Through analysis and research, the following challenges in celebrity advertising-**

- Overriding the product that is attention diversion from brand to celebrity. The target viewers may center their attention on the celebrity and may fail to notice the brand. Company should select a celebrity who can attract attention and convince the target audience, yet not outshine the brand.
- Over-exposure - It is common to see celebrities endorsing more than one brand. Specially in India multiple brand endorsement is common among celebrities and this often brings to glow the concept of celebrity over exposure.
- Consumers' Psychology skepticism; consumers might not believe that the endorsers really consume the product that they endorse & thereby give less credibility to celebrities who endorse many products whereas single endorser of a product might be seen as boredom whereas consumers might get confused by using multiple celebrity endorsement.
- Celebrities attached with negative events can have damaging effects on the endorsing products
- Risk of celebrity losing the fame can have a contradicting affect on the image on the brand endorsed by him/her
- Always a chance of detrimental affect wherein attractive celebrity draw attention away from the product leading to loosening of brand personality in front of celebrity personality.
- Effectiveness ratio based on bad fit between the endorsing person and the product is reduced
- Target Audience Receptivity-In any celebrity endorsement deal proper match of the celebrity with the target audience profile is very essential to establish the right connects with the target audience.
- Risk to Advertiser - There has been a lot of instances of leading celebrities getting caught in controversies in their personal life. This is an important aspect that needs to be taken into consideration and a moral clause should be implemented to deal with this issue. Beauty brands and fragrance houses have
- Apart from this the celebrities' adequacy, accessibility, regional demand factors, esteem, magnetism, illustration, conviction system also have an impact of celebrity endorsement on brands.
- Multiple endorsements create cluttering the minds of the consumer and further the success of celebrity endorsement for a particular brand depends entirely on the power of the brand.
- Professional & designed presentation of the endorser is important in deciding the success of the endorsement. Connection of the celebrity with a controversy can cause reverse impact to the endorsements.

**CONCLUSION**

This research paper was intended at gaining an insight about the challenges of celebrity advertising in India keeping the diversity in mind. The paper also highlighted the rising trends in celebrity advertising in India in regard to multiple brand endorsement, celebrity branding etc. The paper focused on some key objectives regarding determining the familiarity and popularity of Indian celebrities because they are endorsing different brands and occupying huge amount of advertising space and time across different mass media. The researcher came to the conclusion those certain factors to be kept in mind while choosing the celebrity. Also the message to be delivered need to be checked and the congruence between the celebrity and brand need to be validated else the negative effect will creep up leading to destroying the brand identity as such.

**RECOMMENDATION**

Celebrity marketing does now no longer come without risk. It has a few apparent limitations. It can yield most advantages till the celeb is famous and acting properly in his or her selected field. However, in the end celebrities have toes of clay as they're human beings. Hence they can't constantly supply their 'best' and obviously happenings of their personal and expert lifestyles can undoubtedly or adversely have an effect on the manufacturers they're endorsing. Therefore, advertisers shall now no longer over rely upon the stars and permit them to overpower or overshadow the brand. Instead of getting blind faith, manufacturers 'first' and celebrities 'later' could be extra suitable approach for the advertisers.

When to use or when not to use the celebrity and for which products is the biggest challenge.

- The celebrities should perceive to make certain guarantee believability and delivery of the proposed effect.
- Step to grab attention leading to create the interest and finally the recall has to be the basic understanding for the company.
- Failing in getting the result lead to worst situation for the endorsement.
- Credibility, expertise and trustworthiness need to be the fit between the endorsing person and the product.
- Basic knowledge along with company and experience should be the primary perspective while choosing the celebrity.
- Having no knowledge about the product and its production may land up in wrong information.
- Knowing the reality regarding endorsement creation and leaving the impression on the consumer can make an impact on the consumer,

**LIMITATION OF THE STUDY**

As the study has been conducted using secondary data from various sources and which are already in existence. It was infeasible to conduct the primary data due to time and cost constraint.

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**DIGITAL TRANSFORMATION: WHAT DO WE REALLY KNOW?****Bhavana Sharma<sup>1</sup> Shikha Aggarwal<sup>2</sup> and Dr. Vineet Sengar<sup>3</sup>**<sup>1,3</sup>Assistant Professor, GL Bajaj Institute of Management and Research, Greater Noida<sup>2</sup>Assistant Professor, Institute of Technology & Science, Ghaziabad**ABSTRACT**

Scholars have been increasingly interested in digital transformation over the last decade, as seen by the increase in the number of articles published in this field. Even yet, there is a lot of misunderstanding about this phrase. Contributing to strategic pros, DT is certainly the need of the hour, at the same time, also very challenging for the leaders and managers across the industry to bring about and guide this change. Largely synonymized with the terms digital, digitization and digitalization, digital transformation has its own ground. The purpose of the present study is to have a better grasp of the concept of digital transformation and differentiate it from the similar terms. The goal of this article is to discover the challenges that the organization has as it embarks on its digital transformation path. This article is based on rigorous review of literature performed in an attempt to provide an overview about the existing body of knowledge. The findings of the research suggest that, in light of rapid technological change, businesses must take major and serious steps in their digital transformation path.

*Keywords: Digital, Digitalization, Digital transformation, Systematic literature review, organization digital transformation, customer engagement, digitized solutions*

**1. INTRODUCTION**

The sudden increase in the number of publications in the subject of digital transformation gives conceptual and empirical research a new direction, however it has also brought a lot of uncertainty among scholars and practitioners about the domain knowledge (Gong, 2016). Digital transformation is one of the most prominent trends in today's world. There is a large number of literature available on DT, but somehow, it is not clear and sufficient for a better understanding of the topic (Warner and Wäger, 2019) and its concepts (Wessel et al., 2020). Many changes are occurring as a result of the digital transformation in various industries as well as in society (Agarwal et al., 2010; Majchrzak et al., 2016.). Within the evolving society, consumer demand is also shifting with great speed. In order to accommodate the ever- altering demand, develop a competitive lead (Bhardwaj, 2000) and persevere the fierce competition of globalization (Westerman et al. 2011), companies are now concentrating on their digital transformation.

Contributing to strategic pros, DT is certainly the need of the hour, at the same time, also very challenging for the leaders and managers across the industry to bring about and guide this change (Westerman et al., 2014; Andriole, 2017; Benner and Waldfogel, 2020; (Correani et al., 2020). Most of the established, long haul market leaders in the industry are at early stages of digital transformation and majority contribution in their revenues is still continuing from traditional products and services. On the other hand, the “born digital” companies like Facebook, Google, Amazon have realized tremendous growth leaving behind and threatening big companies like GE and Philips who have long dominated the industry with their traditional value propositions. Consequently, businesses are rethinking their strategies to compete within the digital economy and transpose themselves as digital leaders (Sebastian et al., 2017). Having said that, it is not merely about the digital technologies driving digital transformation but business strategies which must be transformed to bring about digital transformation (Almeida et al., 2020; Sebastian et al., 2017).

In the era of Industry 4.0 & digital economies, digital transformation is the new word play around the block. Largely synonymized, and used by practitioners (Reis et al., 2016), with the terms digital age, digitization and digitalization, digital transformation has its own implications. It is essential to understand the concept and challenges of digitalization and digital transformation in order to devise better strategies of going through with the process. Inspired by the thought, the present article aimed to (i) to provide clarity on the concepts of digital, digitalization, and digital transformation, (ii) to provide an integrative outlook of current body of knowledge on DT, (iii) to highlight persistent issues and highlight opportunities in bringing about DT, and (v) to contribute to the existing body of knowledge with directions for future research.

**2. CONCEPTUAL INFORMATION****2.1 Digitization and Digitalization**

Several scholars and researchers used the terms digitization and digitalization interchangeably, especially during the early stages of considering and describing digital transformation (Gong et al. 2021). According to

Bloomberg (2018), digitization entails transforming analogue, physical form of data into binary data in the form of zeros and ones, which computers can easily store and manipulate (Gagre 2018). Lozic (2019) defines digitization as "the conversion of data from analogue to digital format." Digitization, also known as digital enablement, is the process of converting analogue data into digital data (Dictionary.com). Digitalization, on the other hand, is the process of employing digital technologies to reengineer business models and create new income prospects (www.gartner.com). Digitalization is a term that is used to describe the practice and use of digital technologies in everyday life (business dictionary). According to Schreckling and Steiger (2017), it is a process of changing business day-to-day tasks into more technology-based events.

Digitization is, purely, translating analogue data into digital data or in the form zero and ones, and Digitalization is the process of organizations concentrating heavily on digital technologies to reengineer their business-related activities.

## 2.2 Digital Transformation

Stolerman and Fors mentioned in a 2004 article that digital technology has an impact on every element of a person's life. In comparison to digitalisation and digitation, digital transformation is a much larger notion. Gaivoronskii et al., 2017, contributed digital transformation as a revolutionary rather than evolutionary shift in company technology. Westerman et al. (2005) defined digital transformation as the use of digital technology to improve an organization's overall performance. Martin, 2008, noted that digital transformation is, simply put, IT technology that empowers the government, business and people societal life and gives them lots of new opportunities. Digital transformation, according to Mazzone (2014), is a company's development into the digital age via digitally converting its business model, assets, and revenue model. In another article published in 2016, Hess et al., defined digital transformation as "the change in business process, culture, structure, or product as a result of changes in digital technology in the organization". Betz et al. 2016, described DT as the increasing automation of business models, techniques, and procedures for boosting computer technology's opportunities and influence. Rows, 2017, perceived it as an advantage for people and organizations, allowing them to develop, learn, and adapt in the future. Sebastian et al., 2017, companies have two options articulated in the following types of digital strategies: customer engagement and digitized solutions. Customer engagement strategy aimed to provide customers with augmented, innovative and personalized experiences and easier navigation in terms of inquiry, ordering, payment and support services while they are utilizing the companies' product and services, especially in digital form. On the other hand, a digitized solutions strategy aimed at redeveloping the value proposition by offering integrated products and services. Mainly utilizing data and customer information in order to anticipate, rather respond to, the customer needs. Digitized solutions, eg: sensor based equipment, primarily enhances revenues from repeat sales of ongoing products and services. DT, according to Al-Ruithe, 2018, empowered organizations, improved organizational performance, and integrated online and offline operations. In similar vein, Gong, 2020, categorizes DT into three components. The first is based on technological qualities, the second on organisational factors, and the third on social characteristics. There is requirement of "digital strategy", defined below, for businesses, in order to adopt DT for survival and success (Sebastian et al., 2017).

"A business strategy, inspired by the capabilities of powerful, readily accessible technologies (like social, mobile, analytics, cloud and Internet of things [IoT] or SMACIT), intent on delivering unique, integrated business capabilities in ways that are responsive to constantly changing market conditions."

- Sebastian et al., 2017

## 3. METHODOLOGY

For the completion of the objective, scoping literature review is used as the research methodology. Scoping literature reviews are descriptive in nature, where boundaries of research are pre- defined. Scoping literature reviews assist in presenting a descriptive picture within set boundaries (Wang, 2019). The secondary data is collected from journal articles, magazines, and websites. Google scholar, ResearchGate and Academia were as databases for amassing the literature.

## 4. CHALLENGES FOR DIGITAL TRANSFORMATION

Digital innovations, in the last decade, has introduced breakthrough changes in economies, developed or developing, and transformed products and services, businesses, processes, structures, and relationships (Yoo, Y., 2012 & Jahangir K. & Walter, Z. 2015). Digital transformation is indispensable and organization, essentially, need to rethink and restructure in order to survive and excel in the contemporary and digitized business world (Hartl, E., & Hess, T., 2017). Having said that, the journey of achieving digital transformation, for an individual, company or economy, has its own issues and challenges. Gong, 2020 & Reis et al., 2016,

categorizes digital transformation into three distinct namely Technological, Organizational, and Social. The present paper discussed challenges with respect to each of the above categories.

### Technological Challenges

1. **Requirement for advanced processes:** Almeida et al., 2020 suggested that there exists a array of technologies which have already contributed greatly toward digitalization journey of many big businesses. Internet of Things (IoT), Big Data, Metaverse, cloud computing are some concepts, to name a few, that aim to deal with the insane amount of data and information available in any and every context. However, there still seem to be a challenge and requirement to find new processes that can manage, organize and analyze the large volumes of heterogenous data.
2. **Data privacy and security:** With the penetration and widespread use of information and communication technologies by economies and societies, the vulnerability has also increase multifold. Cybersecurity incidents such as malicious activities and misuse of information are growing at disturbing rate and fear of disrupting business activities. Such problems may lead to resistance and difficulty in adopting digitalization technologies and hinder the process of digital transformation (Martin, 2021).

### Organizational Challenges

1. **Higher difficulty for big old companies:** It is not easy for legacy companies to let go of their systems, processes and cultures (Sebastian et al., 2017). In similar vein of thought, Kanter, 2001, proposed that the fundamental problem of change, especially for companies founded before the digital age, would be solved if they focus more toward changing the attitude and organizational culture. Sanchez, 2017, suggested a framework for assessment of organization's change readiness that proposed to define resources, opportunities and solutions for digital transformation.
2. **Dematerialization of existing products:** The adoption of digital technologies has brought an enormous change from point of view of customer and markets as well. It has led to existing products and services getting obsolete and demand for their up-graded, technically enhanced version has increased. This phenomenon has been fueled by the global pandemic crisis Covid-19 as well. The demand of a digitalized economy presents the challenge for highly personalized products & services at affordable costs and convenience of home for the customers. And all this require huge commitment towards digitalizing organizational processes that will in turn lead to customer engagement and increased customer loyalty (Almeida et al., 2020).
3. **Commitment to one strategy:** Sebastian et al., 2017, found that many times company leaders failed to stick to any one type of digital strategy primarily because they believed that both the startegies are important for bringing about digital transformation. Contrarily, it was suggested that "best strtaegies" integrally guides startegic choices as well as operational decisions and comitting to one option is usually advantageous.

### SOCIAL CHALLENGES

1. **Lack of key skills:** Commission of the European communities, 2007, established that in order to keep abreast of the rapid technological advancements, raising and widening the level of e- skills of workforce is essential, which would also support the foundations of a knowledge- based society. Developing key "digital skills", shared values and customer- oriented approaches was highlighted as a major trial zone while driving digital transformation in companies (Boneva, 2018).
2. **Structural Impediments:** Jiang, 2015, highlighted **political and structural challenges** as clear impediments in the process toward achieving digitalization. Regional asymmetries, for instance, access to data network, in the process of digitalization has been pointed as another huge challenge (Almeida et al., 2020).

### 5. LIMITATION & CONCLUSION

The limitations of this study include a certain amount of selection bias due to the process applied for selection of studies which was entirely based on the subjective assessment of the researchers. Moreover, journal articles were highly emphasized to be include in this study. This might have omitted the body of knowledge available on the topic in dissertations and books. Nevertheless, in the limited scope of the study, it integrated the core concepts and also highlighted some pressing issues in adoption of DT. As such future researches may find more suitable formats of literature review to explore the topic and also discuss pathway for smoothening the adoption of DT on social and organizational level.

To conclude, the clarity of the concept is itself a big challenge that has been worked upon in the present paper to some extent. Business is an integrative practice. Every component works in synergy and not isolation. The journey of DT, which is hugely dependent on process and operation management modifications, choosing an appropriate strategy and sticking to it will ultimately lead to smoother transition or expansion. It assists leaders in taking tough decisions and also optimally allocate resources without getting challenged or distracted by dynamic one-off opportunities. Almeida et al., 2020, suggested that even the most technically advanced companies are not yet fully equipped to face the challenges posed by the process of DT. It requires, restructuring, agility, organic structures, standardization and automation in order to optimize customer processes. Moreover, the impact of the ongoing Covid-19 pandemic has certainly amplified the challenges. Virtual or remote workplaces, which is an important characteristic of post-Covid-19 world and digitalization requires new communications skills and knowledge of virtual world. Socially, customers are also acquiring new competences, to be able to engage with digital organizations, in order to subsist in the Digital Era. People training becomes another crucial aspect, in order to embrace the challenges.

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## CRYPTOCURRENCIES AS THE DRIVERS OF GLOBAL ECONOMY IN FUTURE

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India is on the thresh hold of introducing its very own digital currency in the financial year 2022-2023 as announced by the Finance Minister, Ms. Nirmala Sitharaman in the latest budget presented by her. It is indeed going to join the ranks of some of the world's largest economies. China has already been working on the digital version of its yuan since 2014 and would be the pioneer in introducing CBDCs ( Central Bank Digital Currency). Even Japan and US are looking into it but no concrete announcements have been made so far.

These steps are being taken to control the use of private virtual/ digital currencies such as cryptocurrencies that are difficult to regulate. The Indian government is planning to introduce a Bill to prohibit the use of private cryptocurrencies. Another option is to tax these transactions at a very high rate as high as 30%. So what are these cryptocurrencies and how do they work? Cryptocurrency is a decentralized medium of exchange that utilizes cryptographic functions to perform financial transactions ( Doran, 2014). It does not rely on banks to verify transactions. They use Block chain technology to achieve immutability, transparency and decentralization ( Meunier, 2018). Blockchain is a digital ledger of economic transactions that can be used to record any object with an intrinsic value ( Tapscott and Tapscott, 2016). We can say that Blockchain is a series of immutable data records with time stamps that are managed by a cluster of machines that are not owned by any one person. Each of these data blocks is protected by cryptographic principle and attached to each other in a chain.

Cryptocurrencies are conducted on a peer-to-peer network structure. Each peer has a complete history of all transactions, thus recording the balance of each account. Units of cryptocurrency are created through a process called mining, it involves using computer power to solve complicated mathematical problems that generate coins. Users can also buy cryptocurrencies from brokers, then store and spend them using cryptographic wallets. The currency is not tangible, it is in the form of key that allows one to move a record or a unit of measure from one person to another without any trusted intermediary. Crypto wallets may be physical electronic devices( Cold wallet storage) or online software (Hot wallet storage) that securely store ones private keys.

The origin of cryptocurrencies can be traced back to the 1980s, when they were termed as cyber currencies, but it was in the early 1990s when cryptographic protocols and software began to be developed that made the introduction of a truly decentralized digital currency possible. In October 2008, a paper by Satoshi Nakamoto ( a pseudonym) titled Bitcoin: A Peer-to-Peer Electronic Cash System outlined a system for creating a digital currency that did not require trust in any third party. Since then Bitcoin has become very popular with individuals who need to send money across borders without any interference from banks or governments.

Until 2010, Bitcoin was not traded but only mined, for the first time someone decided to buy two pizzas in exchange of 10,000 Bitcoins, in this way it was assigned a value. As it became more popular, alternative currencies emerged referred to as altcoin. They tried to be better in terms of speed, anonymity or on the basis of some other factor. Namecoin and Litecoin were among the first to be introduced. Currently there are 1000s of them.

**TOP 5 CRYPTOCURRENCIES**

According to CoinGecko , on the basis of Market capitalization top 5 cryptocurrencies are:

**Bitcoin:** Bitcoin is a decentralized digital currency, without a central bank or single administrator, that can be sent from user to user on the peer-to-peer bitcoin network without the need for intermediaries.

**Ethereum:** Ethereum is a decentralized, open-source blockchain with smart contract functionality. Ether is the native cryptocurrency of the platform. Among cryptocurrencies, Ether is second only to Bitcoin in market capitalization. Ethereum was conceived in 2013 by programmer Vitalik Buterin

**Binance coin:** It is the cryptocurrency issued by the Binance exchange and trades with the BNB symbol. BNB was initially based on the Ethereum network but is now the native currency of Binance's own blockchain, the Binance chain.

**Tether:** Tether is a cryptocurrency that is hosted on the Ethereum and Bitcoin blockchains, among others. Its tokens are issued by the Hong Kong company Tether Limited, which in turn is controlled by the owners of Bitfinex.

**Solana:** Solana is a public blockchain platform with smart contract functionality. Its native cryptocurrency is SOL. Solana claims to offer faster transaction times and lower costs than its main competitor, Ethereum.

### **Why Cryptocurrencies should be**

**Easy Transactions:** Transactions can be done easily at lower costs and in a more private manner. It just requires a smart phone app, hardware wallet or exchange wallet. They can be bought with cash too. Some types can be bought from Bitcoin ATM and the buyer can send these coins to his/her phone.

**Incredible Security:** As they are based on Cryptography and Blockchain Technology, they are more secure than any other form of payments. Crypto security depends on hash rate. The higher the hash rate, more computing power required to compromise the system. Bitcoin has the highest hash rate and hence considered to be most secured.

**Short settlement time and cheap transactions:** Payments for most of the cryptocurrencies are settled within a few seconds of minutes. Compared to that bank transfers take a few days to settle.

**Exponential Growth:** It is one of the fastest growing markets. The total market cap in 2013 was \$1.6 billion which rose to \$ 1.4 trillion by June 2021.

**High returns:** Bitcoin is one of the best performing asset since its valuation in 2010. It has led to million of percentage points' worth of gain. Sometimes altcoins have outperformed it too but later collapsed.

**Portfolio Diversification:** Cryptocurrency has become one of the best investment avenue as it is not related to any other market such as stocks, bonds or commodities. One of the major reason for people buying it has been to reduce market risks.

**Cross border payments:** Cryptocurrencies don't have any regard for national borders. Any individual can send coins to any individual of any other country without any extra charge, time factor or any restrictions.

**Transactional freedom:** Cryptocurrencies can be used to exchange value between two parties without any interference from a third party.

**Can be traded 24X7:** They can be traded 24 hours a day, 7 days a week without any obstruction. Only thing that can interrupt a transaction is power outage or failure of internet or some issue in the centralized exchange.

**Hedge against inflation:** cryptocurrencies that are limited in supply like bitcoin are considered to be good hedge against inflation. If the government prints more money, it might increase monetary inflation but cryptocurrencies limited supply results in appreciation in value.

### **Why Cryptocurrencies should not be**

In spite of all these reasons to invest in these currencies, some flaws are there that one needs to consider before investing. They are:

**Scalability:** Although the number of cryptocurrencies is increasing and more and more people are investing, the fact remains that the number of transactions daily are much less than processed by payment giant VISA. The speed is also slower as compared to Mastercard and VISA. There is a need to scale up the infrastructure.

**Cyber security issues:** As the cryptocurrencies are digital technologies, they are prone to the risk of hacking. Several ICOs ( Initial Cryptocurrencies Offer) have been hacked in 2021 causing losses of millions of dollars.

**Volatility of price and inherent value:** Price volatility is a crucial concern and investors like Warren Buffet call this cryptocurrency ecosystem as a bubble. There is a need to link the value of cryptocurrency directly with tangible and intangible assets.

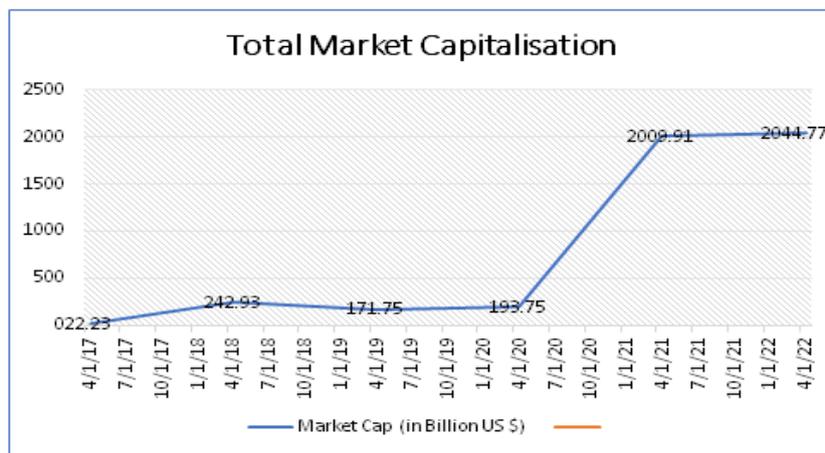
**Correlation with stock market:** It has been found that cryptocurrencies have a more positive correlation with S&P 500 than gold in term of returns. They failed to provide any diversification benefits when needed.

**Lack of regulations:** Cryptocurrencies are neither regulated nor under the control of any government. Hence investment in them are riskier as compared to other assets.

There is no doubt that the cryptocurrency market has shown exponential growth. The entire market is presently valued at \$2,060 trillion ( Source: Coin Gecko). Its valuation has grown by more than 132% over the past year.

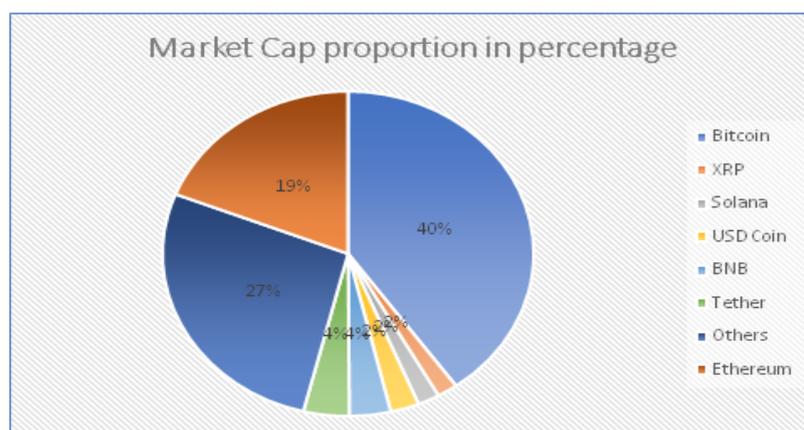
The number of active cryptocurrencies has also grown substantially, by November, 2021, there were 7, 557 unique digital currencies ( Source: Statistica). In order to understand how the market has grown exponentially, the market capitalization values of cryptocurrencies on a particular day in April for six years has been taken as represented in the table below: ( Source: TradingView)

Date	Total Market Capitalisation ( in US\$)
3/04/2017	22.23 Billion
3/04/ 2018	242.93 Billion
1/04/2019	171.75 Billion
6/04/2020	193.75 Billion
5/04/2021	2009.91 Billion
1/04/2022	2044.77 Billion



From the above graph it can be seen how the market for cryptocurrencies has grown leap and bounds within a few years especially from April, 2020 to April,2021. The proportion of total market capitalization per coin has been shown in the below table and figure: ( Source: CoinGecko)

Cryptocoin	Proportion in market Cap as Percentage
Bitcoin	40
Ethereum	19
Tether	4
BNB	3.6
USD Coin	2.5
Solana	1.9
XRP	1.8
Other	27



From the above figure it is evident that Bitcoin is the most popular coin followed by Ethereum. Besides the above shown there are thousands of coins being actively traded. There are more than 300 plus million owners of cryptocurrencies worldwide. In terms of continents, the distribution is as follows:

<b>Region</b>	<b>Crypto users (In millions)</b>
Asia	160
Europe	38
Africa	32
North America	28
South America	24
Oceania	1

**Source:** Chainanalysis,2020

**In terms of countries, some of the prominent countries are:**

<b>Country</b>	<b>Crypto users (In millions)</b>
India	100
USA	27
Nigeria	13
Vietnam	5.9
United Kingdom	3.3

**Source:** Chainanalysis,2020

**CONCLUSION**

Cryptocurrency market has indeed moved from the early adoption phase. The coins are seeing new innovations and better technologies are being worked on so as to make them more secure and trust worthy. More and more investors are using it as a way of portfolio diversification as it can act as a hedge against inflation. The transactions are also hassle free as they do not involve any third party intervention. But a few reservations are still there such as risk of hacking and absence of regulations. Bitcoin is the most traded cryptocoin, much ahead its various competitors. Seeing the increasing popularity of this currency, countries have started working on their own official digital currencies but still they are far from introducing them. Several companies have also started accepting cryptocurrencies as a way of payment. Very soon these currencies will become the currencies of global economy.

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**THE IMPACT OF AI ON DECISION MAKING PROCESSES IN HR****<sup>1</sup>Sweta Bakshi and <sup>2</sup>Dr. Sandeep Kumar**<sup>1</sup>Assistant Professor, ITS Mohan Nagar, Ghaziabad<sup>2</sup>Professor, Tecnia Institute of Advanced Studies Delhi**ABSTRACT**

*Information technology are making stress, resulting in organizations being compelled to update and restructure themselves. As digitalization improves day by day, HR processes become less complicated. With AI, HR teams can use intelligent conversational assistants to interact with employees and applicants seamlessly. AI reduces human bias in the decision-making process of the HR department. Having to deal with a myriad of queries and requests is inevitable for the HR department. Thus, using automation is the best solution there is. The benefits of AI and automation for HR and the workforce don't come instantly, however. It's a journey and one can see the short-term benefits of this journey in automation*

**INTRODUCTION**

Information technology are making stress, resulting in organizations being compelled to update and restructure themselves. Against this backdrop there is an increasing trend to adopt artificial intelligence technologies. This study aims to explore and investigate the effect of Artificial Intelligence (AI) on Human Resources (HR) practices

As digitalization improves day by day, HR processes become less complicated. Through artificial intelligence, the Human Resources department can carry out their responsibilities with ease and make real-time decisions with the help of pre-built algorithms. With that, the role of AI in HR is crucial. By combining efficient HR development and AI, you can provide a more seamless workflow and make more effective decisions. You can transform every aspect of your company using deep learning technology. To know more, here are some of the impacts of AI on the decision making process in HR.

**1. AI BASED RECRUITING**

Hiring new employees and talent acquisition are some of the time-consuming responsibilities of HR. However, companies using AI in HR are already sparing themselves from doing these complex processes.

AI can reduce HR's time spent in hiring by completing mundane tasks, such as screening the candidates, scheduling interviews, attending to job seekers' queries, and the like. Not only that, but it can also help the HR department to make better assessments. Hence, you can perform a screening process that focuses more on the candidate's credentials and relevant job qualifications.

Even more so, AI makes the screening process more effective by gathering the applicants' data and then comparing it with other applications. With that, the HR team's decisions are guaranteed to be free from any human bias and discrimination.

**AI BASED CONVERSATIONAL ASSISTANTS**

With AI, HR teams can use intelligent conversational assistants to interact with employees and applicants seamlessly. Unlike typical communication channels, AI powered conversational assistants can enable improved and quality interaction through their deployment of Natural Language Processing and Machine Learning – delivering meaningful responses in seconds.

What's more, the HR department can use conversational assistants to analyse conversations and identify their employees' needs. By identifying your employees' sentiments and needs, it is easier to take action and show that you value them. On top of that, the technology can also help you reduce turnovers and boost employee engagement.

Humley offers conversational AI assistants that are easy to deploy, use and implement. You can quickly transform your communication with your employees, teams and customers.

**3. LEARNING AND TRAINING**

One role of artificial intelligence in transforming human resource management is how it is capable of teaching and training employees. Besides, HR teams can also use AI to assess employees' skills. After analysing their activities, the system can recommend appropriate learning programs or videos to help them improve.

In fact, AI can help HR come up with individualized learning plans on interactive e-learning platforms. This is to provide employees with the right level of personalization that they need.

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#### **4. EFFECTIVE DECISION MAKING**

AI reduces human bias in the decision-making process of the HR department. Also, it helps individuals make quick decisions in their daily lives. By taking over HR's responsibility to observe and analyse each employee, gaining more insights about employees can be more manageable.

In line with that, you might want to check out this article to gain greater insights into employees. But, besides that, using behavioural analytics can also help you understand your employees more. When you know how your employees behave, you can predict how they are likely to make decisions in the future.

#### **5. ADMINISTRATIVE TASKS**

AI use cases in HR can include automation of repetitive administrative tasks. This not only saves HR teams from completing time-consuming tasks, but it can also improve efficiency. Besides, by automating administrative tasks, HR employees can focus on more valuable tasks and reduce the workforce.

Furthermore, reducing the workforce helps the company decrease operational costs. According to a survey from Statista, 30% of respondents said that their company's revenue increased after adopting AI.

Moreover, here are some of the administrative tasks that the HR department can automate:

##### **HR SUPPORT**

Having to deal with a myriad of queries and requests is inevitable for the HR department. Thus, using automation is the best solution there is. By automating instant message replies to your employees' concerns, you can respond to them on time while taking a significant burden of responsibility from the whole HR team.

##### **PAYROLL**

Processing employees' payroll takes time, not to mention the errors you might make when doing it manually. However, by automating your payroll system, you can get the job done quickly and reduce human errors from calculations.

##### **RECORDS MANAGEMENT**

Automating records management reduces paperwork and makes information accessible anytime you need it. Additionally, quickly accessing the information you need helps promote transparency and accountability.

##### **Artificial Intelligence: How it affects decision-making processes**

To wrap it up, AI is truly a valuable resource when used effectively. The 5 impacts mentioned above show how greatly it can help with the decision making process of HR. However, before implementing the system within your HR operations, consider assessing the areas that need it most.

By doing so, AI can bring about a lot of benefits to your company more than just improving the decision-making process of HR. Before you know it, AI is already helping you improve employees' overall experience and increase your company's revenue.

##### **AI and Automation in HR: Impact, Adoption and Future Workforce**

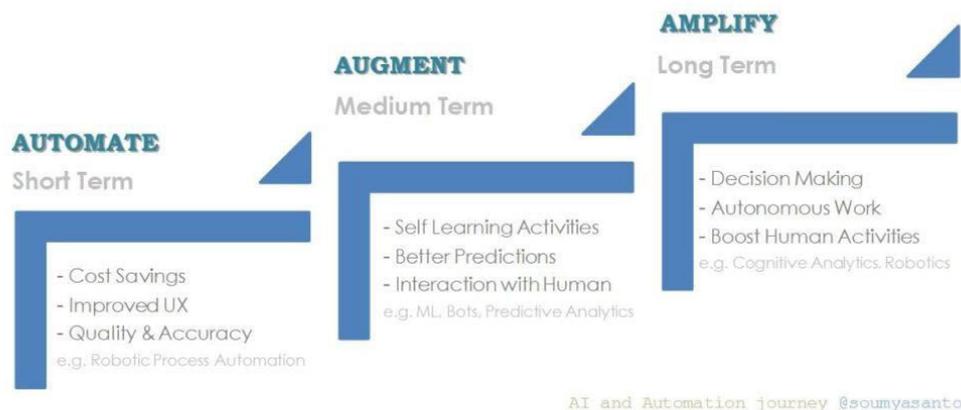
Artificial intelligence (AI) has been changing our lives for decades, but today its presence is bigger than ever before. Sometimes, we don't even realize it when a new AI-powered system, tool, or product appears and outperforms us, humans. In fact, AI is affecting human life on all kinds of levels varying from:

##### **The automation of tedious, time-consuming tasks to;**

- The augmentation of human capabilities and;
- The amplification of human functions.

“While most of the use of this AI technology is still elementary at the moment, it is radically transforming our everyday lives; both professionally and personally.”

The benefits of AI and automation for HR and the workforce don't come instantly, however. It's a journey and one can see the short-term benefits of this journey in automation, the medium-term benefits in augmentation and finally the long-term benefits in the amplification of human activities or tasks.



### AI and Automation in HR: Impact and Current State

AI is in all places today, and there are many aspects to consider as to how it will influence the future of work.

As per Josh Bersin, principal and founder of Bersin by Deloitte *It's now popping into almost every piece of software.* Based on research by Bersin by Deloitte, nearly 40% of companies are using some form of AI in HR alone.

According to Personnel Today, 38% of enterprises are already using AI in their workplace with 62% expecting to start using it as early as this year. According to Bersin by Deloitte, 33% of employees expect that their jobs will become enhanced by AI in the near future.

Artificial intelligence is present in virtually every foremost industry from healthcare to advertising, transportation, finance, legal, education, and now also within our workplaces.

Many smart home devices include the ability to learn your behavior patterns and help you save money. Like the Nest thermostat that helps to increase your daily convenience and save energy.

- **Amazon Alexa, Siri, Google Now, and Cortana** are all intelligent digital personal assistants on various platforms. **Google's 'Waymo'** and **Tesla's 'Autopilot'** features are two good examples of this.
- **Spotify** uses deep learning to create the ultimate personalized playlist and suggest new music based on the user's prior listening behavior.
- The **Hemingway app** uses a primitive artificial intelligence that recognizes writing problems through natural language processing and polishes your writing structure. It helps in saving time and increases readability.
- **Skype's Translator** currently works in 8 languages, and the text translator is available in more than 500 languages for instant messaging.
- **Clarke ai** is an AI bot that dials into your conference calls and does the entire note-taking work for you. Then, when the call is over, it emails the notes directly to your inbox.
- **Google's smart reply feature** uses machine learning to analyze your emails and suggest quick, bite-sized responses you may want to send.
- **Paradox** uses **Olivia** as an AI assistant that allows you to focus on the entire candidate management.
- **VCV** is an AI-powered Robot-Recruiter that searches for candidates; it calls them with questions using voice recognition, and then invites them to record a video interview.
- **Glider** is another example that can help in putting your hiring efforts on 'auto-pilot' when you're out of the office.
- **SAP SuccessFactors, Cornerstone, Talentsoft,** and many others are already providing similar features to recommend courses based on a person's career track and performance.
- AI company **X AI** launched '**Amy**', a virtual personal assistant that automates the process of scheduling meetings.

- **Capitan** is the smart shopping list that learns as you use it, to save you time and to avoid those missed items.
- **Netflix** recommends series and films based on the interests you've expressed and the judgments you've made in the past. No need to spend time searching.
- **Amazon's anticipatory shipping project** hopes to send them you before you even need them.
- **The North Face** is using **IBM Watson's** platform to find a perfect jacket through a more engaging, personalized and relevant shopping experience.

These are only a few examples. Whether you are aware of it or not, AI has an immense impact on our daily (working) lives already. For most of us, AI technology is helping us do our jobs more efficiently and it's generally making our lives – and jobs – easier.

As such, AI plays a big role today in transforming HR and the workforce; reducing human bias, increasing efficiency in candidate assessment, improving relationships with employees, improving compliance, increasing adoption of metrics, and improving workplace learning are some of the benefits organizations are experiencing today.

Jeanne Meister stated in her article, "The Future of Work: The Intersection of Artificial Intelligence and Human Resources", how HR leaders will need to begin experimenting with all facets of AI to deliver value to their organizations. According to her, HR leaders are beginning to pilot AI to deliver greater value to the organization by using, for example, chatbots for recruiting, employee services, employee development, and coaching. So far, recruiting and talent acquisition are the areas where AI solutions are most effective. There is a growing number of startups and service providers who target HR with artificial intelligence-based solutions for activities such as:

- sourcing (for example, Textio);
- interviewing (myInterview);
- on-boarding (Talla);
- coaching (Saberr) and;
- Employee service centers (ServiceNow).
- When it comes to AI in HR, "The applications of AI basically are analytics applications, where the software is using history and algorithms and data to be smarter and smarter over time," as per Bersin. The most interesting part of people analytics is the interface between AI and human proficiency.
- Investments in AI are growing exponentially. Research firm IDC predicts that the market for AI will grow from \$12.5 billion in 2017 to \$46 billion by 2020, impacting all business practices across almost every industry.
- The McKinsey Research Institute mentioned in its January 2017 report, "A future that works: Automation, employment, and productivity", that automation technologies such as advanced robotics and artificial intelligence are powerful drivers of productivity and economic growth which can help create economic surpluses and increase overall societal prosperity.
- According to McKinsey, automation could accelerate the productivity of the global economy by between 0.8 and 1.4 percent of the global GDP annually; assuming that the human labor replaced by automation rejoins the workforce.
- On the other hand, their automation analysis found significant variations among various sectors of the economy and among the occupations within those sectors. Taking into account the technical, economic and social factors affecting the pace and extent of automation, McKinsey estimated that up to 30% of current work activities could be displaced by 2030.
- When the topic of artificial intelligence and its impact on jobs and the economy comes up, the principal focus of the conversation used to be on blue collar jobs. As per CB Insights and the State of Automation Report, there are 4.6M retail salespeople jobs at risk in the USA alone due to AI. The same thing goes for 4.3M cooks & waiters, 3.8M cleaners, 2.4M movers and warehouse workers, 1.8 M truck drivers and 1.2M construction workers.

- According to CB Insights, a growing wave of AI-infused Expert Automation & Augmentation Software (EAAS) platforms will steer us towards a new era of AI-assisted and/or AI-enhanced productivity. These EAAS platforms use machine intelligence to replicate and augment human understanding.
- This AI-enhanced productivity is starting to threaten white-collar jobs as well. And it’s going to impact most of the common professions like lawyers, HR, teachers, traders, sales, marketing, researchers, accountants, software developers, etc.

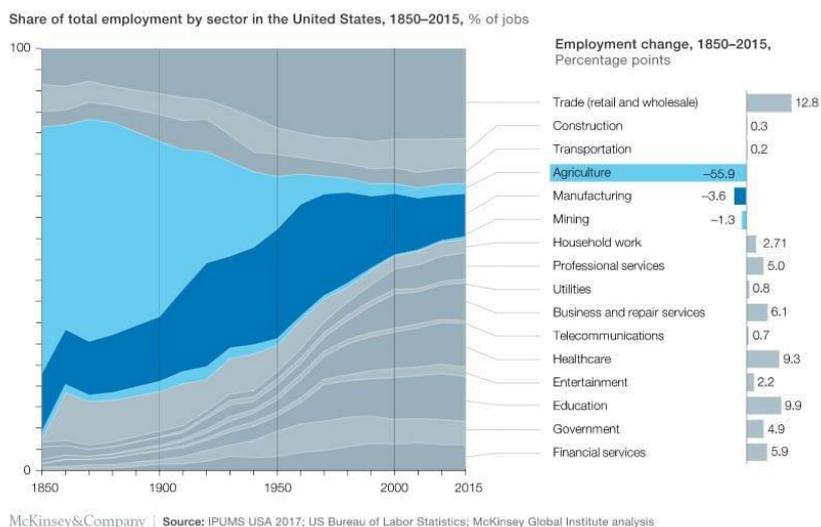
**History and Shift**

Many AI and machine learning algorithms used today have been around for decades. Advanced robots, autonomous vehicles, and Unmanned Aerial Vehicles (UAVs) have been used by defense agencies for nearly half a century.

Technology has always triggered fears of mass unemployment. Louis Anslow, a self-described solutionist, promethean, and designer explains this reaction in his publication “Robots have been about to take all the jobs for more than 200 years”. In the 1930s, it was vaunted economist John Maynard Keynes, who implicated technology as one reason for the unemployment of the Great Depression. As such, it has always been a hot topic.

BBC Capital recently published the history of unfounded fears over the future of work which states that back in 1959, the mathematician I.J. Good predicted that “All the problems of science and technology will be handed over to machines and it will no longer be necessary for people to work”.

Another recent article by the Mckinsey Research Institute, “What the future of work will mean for jobs, skills, and wages” states that this kind of skill shift or employment displacement is not new.



The First Industrial Revolution began in England in the 18th century and the economies of Europe, the United States, and other countries have undergone two intense waves of structural change since. Mechanization enabled a revolution in agriculture and in industry, encouraging a migration of workers from the countryside to cities. A second structural shift occurred in the past 60 years as the share of manufacturing employment declined in some countries while the service sectors grew.

According to research by Mckinsey, the employment shifts accompanying this process of structural transformation have been very large. Throughout these large shifts of workers across occupations and industries, overall employment as a share of the population has generally continued to grow.

Global Economies like the US, China, India, Germany, Japan, and Brazil are going to be impacted more than emerging economies like Indonesia, South Korea, Turkey etc. The impact of AI and automation varies depending on a country’s income level, demographics and industry structure.

**Expectations vs. Reality**

Most of our daily jobs are associated with tasks like paperwork, scheduling, timesheets, accounting, expenses etc. (as shown below with an average percentage). Of course, it is useful to outsource these repetitive tasks to digital assistants or automated software, freeing up more time for deep thinking and creativity.



**CONCLUSION**

It becomes pretty clear from all these analyses that occupations involving physical work in predictable environments – including production workers and building and grounds cleaners – as well as office support roles like clerks and administrative assistants, are likely to face a significant impact on their activities as a result of AI and automation. Doctors and professionals like engineers and business specialists, on the other hand, are less likely to experience as much of an impact.

The current level of educational requirements for occupations tends to be correlated with the likelihood of these activities being automated. Occupations requiring some higher education generally include work activities that are less automatable than those requiring a high school diploma and some experience.

The World Economic Forum report, “The Future of Jobs”, looks at the employment, skills and workforce strategy for the future. The writers of the report asked chief human resources officers and strategy officers from leading global employers what the current shift means, specifically for employment, skills, and recruitment across industries and geographies.

They found that the current developments in AI and automation will transform the way we live and the way we work. Some jobs will disappear, others will grow and jobs that don’t even exist today will become commonplace. What’s certain is that the future workforce will need to align its skillset to keep up the pace.



According to Laetitia Vitaud, a researcher on the Future of Work & Consumption, most of the HR divisions or departments of our modern corporates have become process-driven ‘machines’ that manage people like assets, rather than unique human beings that require personalized attention.

Instead, HR departments run top-down process-engineered ‘systems’ — to recruit large lumps of resources, handle payroll, organize annual appraisals, send simultaneous batches of employees to training, etc. — that leave little room for personalization, flexibility, and creativity.

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**BUSINESS ANALYTICS VS MARKETING ANALYTICS - UNDERSTANDING THE BASICS**

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**ABSTRACT**

*Inward marketing is rapidly changing the way organizations compete. Merriam Webmaster defines analysis as a separation of a whole into its parts, and analytics is a technique of logical analysis. Marketing is making a shift from typical outbound, offline marketing to online inbound marketing techniques. Marketing analytics depends on market feedback. It holds track of subscribers, leaders, and customers ' activities and interests, and facilitates marketers augment their operations by analyzing market performance. . Business analytics is used to evaluate operations across organizations and can be implemented in any department,*

**INTRODUCTION**

Inward marketing is rapidly changing the way organizations compete. When prospective customers are seeking for data, connecting with you via web-based networking media, and reaching your website, they leave an ample track of information all through their path. Companies acquire all this information in order to better understand their customers and design markets &products, so they are in sync with the information obtained. The process does not end there, though. Companies are also looking to combine their sales and marketing teams in order to realize a more closed-loop approach to marketing analysis. While browsing an e-commerce website, you will find the pro-active exhibit of relevant products.

**Why Analytics?**

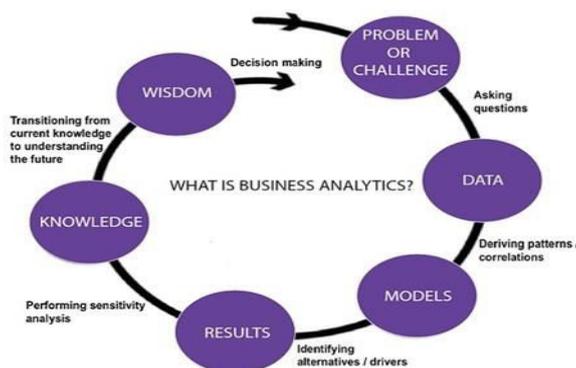
Merriam Webmaster defines analysis as a separation of a whole into its parts, and analytics is a technique of logical analysis. Data-driven marketers leverage both analytics and analysis to drive all sorts of decisions, and each application validates the unique perceptions and challenges inherent in analyzing customer behavior.

Thinking about the past and the future is an alternative way to distinguish between analysis and analysis. ‘Analysis’ looks backward and establishes a historical view for marketers to know what has happened in the past. ‘Analytics’, on the contrary, looks forward to model the future tin order to predict a result. Regardless of their individual natures, both are equally vital to marketers. In addition to providing terrific value by creating an image of their customers, they also help marketers to appraise their marketing efforts. Analysis and analytics both engage in a substantial role in identifying the specific audience as well as the marketing message. They help marketers make better business decisions and determine marketing tools performance.

**Knowing more about marketing data**

Marketing is making a shift from typical outbound, offline marketing to online inbound marketing techniques. We have identified for a long time that measurability is the power of digital marketing. However, these days, using the various marketing tools available, one can easily measure every aspect of their marketing efforts, not just from a promotion perspective, but on a lead-to-lead or account-to-account basis. However, measurement is only half what we learn — the other half being attribution - understanding how to allocate credit to your different marketing efforts and rightly realize their impact on the client endeavour.

In order to stay on competitive in business and achieve success, business analytics is crucial. It is used to determine everything – be it warehouse efficiency, information about manufacturing, sales or income contribution from marketing. What you measure and how you accumulate information is a case - by - case decision; however, the objective of business analytics continues the same.



Generally, business analytics blends data from each department to gain an understanding of how the organization works as a unit. Today, with most business capabilities moving online, gain access to and evaluating information from each department is much at ease. And you can find it the marketing department?

While it may appear simple and without any glitches, business analytics comes with its own stake of challenges. According to John Jordan from Penn State University's appropriately defined, some of the business analytics challenges include "... a greater potential for privacy invasion, increased financial exposure in fast-moving markets, increased the potential for mistaking noise for true insight, and a higher risk of spending lots of money and time chasing poorly defined issues or opportunities ..."

### **Difference b/w Marketing Analytics and Business Analytics**

Marketing analytics depends on market feedback. It holds track of subscribers, leaders, and customers' activities and interests, and facilitates marketers augment their operations by analyzing market performance. Rather than resting the obligation of marketing analytics with just a select few, it should be used for better results by every marketer in the team. This can help them to evaluate and augment their efforts. It can also inspire one to make data-backed decisions and characterize the future course of action. After all, it's not just about getting more clicks or driving more traffic to a website- a digital marketer's job is to make revenue growth as well. Failure to quantify the results of your marketing efforts will make it hard for you to realize the effect they have had on closing leads. This can also impede the analysis of your lead nurture programs.

Most marketers find their website and analytics of social media as their starting line. While website analytics measure actions like clicks, page views, and conversions; social media analytics provide you with the right acumen of your digital media exposure across social media platforms. Marketing analytics actually goes beyond the rigorous measurement of online performance - it also comprises a means to handle offline marketing efforts. Marketing analytics shows the direct impact of marketing on pipeline generation and revenue growth by bringing together all marketing areas, including offline efforts with sales and lead generation results.

In comparison, business analytics offers insights that help in making informed business decisions and can be used to systematize and optimize business processes. For data-driven businesses, all data captured are in fact assets that affect the organization's decision - making process. The quality of the data captured is, of course, important and plays an critical role in the decision-making process.

The benefits of marketing analytics are not confined to the marketing department. They hold value for verticals such as sales, customer service and senior business management, among others. This is due to their appropriate market feedback they provide, which in turn helps professionals to augment their investments and priorities in the relevant verticals.

On the other hand, business analytics enunciates you to contract with real business problems, using fundamental analytical methods such as optimization, simulation, forecasting and statistics. While marketing analytics is perfect for work on marketing issues; business analytics helps in organizational decision-making processes.

Marketing and business analytics eventually are the two sides of a coin – business analytics wouldn't tell the comprehensive story without marketing data and vice versa. In order to provide feedback on the downstream impact of marketing efforts, marketing analytics depend on on business data from other departments, predominantly sales.

### **How marketers use data analytics to reach new and existing customers**

Big data and analytics can help a business envisage consumer behavior, improve decision-making across the board and determine the ROI of its marketing efforts. By addressing these features adequately, the business would not only be able to shield its market share, but also swell into new territories.

### **Leveraging big data to grow sales and revenues**

Chief marketing officers across the country are increasingly including big data into their decision-making process. For instance, a recent study has shown that 42 percent of CMOs make marketing decisions based on customer-acquisition numbers, 40.5 percent based on customer insight, 39.1 percent prioritize digital marketing when making such decisions, 35 percent place greater importance on customer retention, and 34.5 percent make marketing decisions based on branding. It is worth noting that 46 percent of the polled marketers said that they would use various analytics strategies to gain consumer insight. Examples of such strategies include location-based targeting, personalization, and an increase in mobile and real-time reporting.

**Sources of business data**

Internal and external sources generate 54 percent and 25 percent of business data respectively. The remaining 21 percent of data comes from a combination of the first two sources. The top four ways business leaders source business data are sales and financial transactions (56 percent), leads and sales contacts from customer databases (21 percent), email correspondence (39 percent), and productivity applications (39 percent). Overall, big data boosts a business's performance, improves customer segmentation and enhances the decision-making process. More specifically, 29 percent of marketers in the US say that marketing analytics has helped them grow their organization's sales revenues by as much as 26 percent. Additionally, 54 percent of companies using customer analytics have seen their profits grow considerably.

**The three levels of analytics**

The three levels of analytics, according to tech authority Gartner, are descriptive analytics, predictive analytics and prescriptive analytics. Descriptive analysis entails examining data and content manually with the aim of understanding what happened. Some of the techniques that a business can employ to do this include business intelligence and visualizations. Predictive analysis, on the other hand, attempts to predict the outcome by employing techniques such as regression analysis, forecasting and predictive modeling. Finally, prescriptive analysis is an advanced form of analytics that aims to find suitable solutions to the problems identified in the first and second levels of analytics. Some of the techniques employed in predictive analytics include complex event processing, simulation and recommendation engines.

**The pros and cons of utilizing market analytics**

One of the main challenges of using market analytics revolves around integrating complex interfaces for accessing data. In fact, only 26 percent of the polled marketers believe that their systems are properly set up to work seamlessly together. The second key challenge revolves around a user's ability to employ analytics data effectively. On this front, only 28 percent of the polled marketers said they were able to do this. The third key challenge has to do with data verification and validation. In particular, outdated, inconsistent and irrelevant data poses a big problem to 59 percent of the businesses interviewed.

**Benefits**

According to polled US executives, American companies that invest in big-data initiatives enjoy higher decision-making, improved collaboration and sharing of information, as well as greater customer satisfaction and retention. This is mainly significant because 72 percent of the polled executives reported augmented competition for customers. Market analytics gives businesses an superiority over their competitors that have failed to invest in big-data initiatives.

**Using Big Data to Predict Consumer Behavior and Improve ROI**

Relying on data to make more informed decisions has become vital for business owners. Being able to more accurately predict results and improve upon current decisions based on past experiences is an invaluable tool.

Marketers today place a stronger reliance on the use of big data to predict consumer behavior trends and to better reach new and existing customers. Eighty-six percent of surveyed executives who were overseeing predictive analytics campaigns for at least two years reported noticing a resulting increase in their return on investment (ROI).

The retail industry is astoundingly competitive in the modern world, where millions of comparable options are presented to customers shopping online. Standing out amongst the competition is extremely important to succeed in online retail. By making accurate customer predictions based on data, retailers can expect to see a result of higher sales numbers and increased customer satisfaction levels.

**CONCLUSIONS**

Marketing analytics measures integrated online and offline marketing effects. Marketing analytics help organizations make faster, data-driven business decisions that focus on real customer feedback. Business analytics is used to evaluate operations across organizations and can be implemented in any department, be it sales, product development or even customer service. Business analytics solutions generally use data, statistical and quantitative analysis, and fact-based data to measure past performances to guide business planning for an organization.

The global digital advertising space was worth \$154 billion in 2015. By 2020, the industry will be worth over \$250 billion, largely driven by big-data initiatives including mobile internet, display internet, paid-search internet and classified internet. For this reason, more and more chief marketing officers are allocating more money to market analytics, with the average American business allocating 6.5 percent of its marketing budget to

analytics. Additionally, analytics are increasingly driving marketing decisions. When making such decisions, 40.5 percent of CMOs consider consumer insight, 42 percent consider customer acquisition and 35 percent consider customer retention. Some of the techniques marketers use to gain consumer insight include location-based targeting, customization, and an increase in mobile and real-time reporting. The sources of business data include internal, external and a combination of the two sources. There are three levels of data analytics: descriptive analysis, predictive analysis and prescriptive analysis. The pros of big-data initiatives include better insight and decision-making, greater customer satisfaction and retention, and enhanced collection and dissemination of information. The cons of big-data initiatives include technological challenges, data verification and validation challenges, and the ability of users to interpret and utilize big data effectively.

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**DIGITAL PAYMENTS: A CHANGING TREND IN MODE OF PAYMENT DURING PANDEMIC SITUATION IN INDIA PRE AND POST EFFECT****Mr. Amit Aggarwal**Assistant Professor, Management Department, Institute of Professional Excellence & Management  
Ghaziabad**ABSTRACT**

*In Today's environment, digital payments work a critical role and offer numerous benefits over cash, including ease of transaction, security, and transparency. In this pandemic condition, the banking sector plays a critical role in digital payment by providing digital instruments such as debit cards, mobile banking, and mobile wallets. Payment systems have shown to be efficient and long-lasting, and the general public continues to have a high level of trust in them due to security reason. The lock-down and company closures, however, resulted in reduced average transaction volumes. This research shows the future of digital payment environment which is increasing day by day and will be helpful even post Covid period also.*

*Another important reason for increasing the trend in digital payment is access of internet and android Mobile phone by 70% population of India and during pandemic situation this ratio has increased rapidly because it was one of the medium to connect to someone for different daily activities of human being. During lockdown few payments were in routine which cannot be avoid so digital payment was one the mode to arrange all these things such as mobile bill, electricity bill, education fee ,*

*TV recharge, Loan Installment payment, house rent etc.*

*This research paper focuses on the importance of digital payments during pandemics, the various types of digital payment systems, and the increase of digital payments over the last three years specially. In addition, The Future of Digital Payments is going be increase due to busy schedule of human being. People nowadays do not have enough time to queue for several monthly cash payouts. Even our government is also promoting to digital payment to avoid black money and cash transactions.*

*Keywords: Digital Payment, Pandemic, Banking sector*

**INTRODUCTION**

As we know Banks play an important role in the life of any Individual, group, Company and institution for any monetary transaction. In this pandemic, digital payments play a critical role. In light of the current circumstance, when people are required to maintain a physical distance, all payments such as Groceries, electricity bills, mobile recharges, Internet recharges, TV recharges, and other critical payments are all made via digital payment methods. However, in this emergency situation, digital payment solutions are quite comfortable for the human being.

Main Invention of digital payment in India started at the time of Digital India by Our Prime Minister in 2014 and later demonetization in the year 2016 when there were restriction on the withdraw limit by bank then people were exploring digital payment through different UPI Apps. People were not well educated in the past, therefore they had to wait in line to make payments. but now This is the time of technology and people are well educated so they believe in smart work and the trend of digital payment is increasing day by day since 22 March 2020 at the arrival of the corona virus, many businesses , Individuals, Companies and even normal human beings were also learning digital payment through different apps such as Google pay, pay tm, phone pay, Debit card, credit card, net banking etc due to lockdown all over the world. Now this mode of digital payment has provided a comfortable zone to all the users and has become the usual habit of 80% population all over of the country. During this lockdown those people were not aware about the online payment or digital payment; they have also learnt digital payment.

The government is currently actively urging individuals to accept digital payments, which were previously optional due to social distancing and the COVID-19 problem.

But now people are friendly with these digital payment modes due to time saving, facility from the same point, quick response, digital record and receipts etc.

Clearly, technology has simplified our lives. One of the technological advancements in banking, finance, and trade is electronic payments. Electronic Payments (e-payments) are a technological innovation that allows us to execute financial transactions electronically, reducing long lines and other issues. Electronic payments give customers additional options when it comes to paying their taxes, licenses, and other fees.

**REVIEW LITERATURE**

Dr Nirmala M, Associate Professor, Canara Bank School of Management, Bangalore City University, Bangalore this paper is about the digital payment in India specially during the pandemic situation that how the users of digital payments are increasing during pandemic situation. Digital payment helps people to make any payment without wasting much time to stand in queue and during this pandemic situation It became compulsion for those customers also who were not aware about this methodology of digital payment due to lack of knowledge and fear factor of technology. Now this digital payment has become easy and friendly for more than 80% population of the country.

**OBJECTIVES**

1. To know the significance of digital payment in Banking Sector.
2. To know the different modes of electronic payment by banking sector.
3. To know the number of users/ Population of digital payment in India

**DIGITAL PAYMENT METHODS****Banking Sector and Different Methods Of Digital Payment****Types of Digital Payment Methods in India**

1. UPI
2. Mobile Wallets
3. Bank pre-paid cards
4. Point of Sale (POS)
5. Internet Banking
6. Mobile Banking
7. Bharat Interface for Money (BHIM) app

**1) UPI**

UPI is a cross-border payment system that allows anyone with a bank account to send and receive money through a UPI-enabled app. A user can link numerous bank accounts to a UPI app on their Smartphone, allowing them to execute money transactions and collect requests smoothly 24 hours a day, 365 days for whole year.

**2) Mobile Wallets:**

A mobile wallet is a type of virtual wallet that can be accessed via an application. The digital or mobile wallet stores bank account, debit/credit card information, or bank account information in an encrypted format to allow safe payments. A mobile wallet can be used to make payments and purchase goods and services after being loaded with funds. Credit/debit cards were no longer required..

**3) Bank pre-paid cards**

A prepaid card is a type of payment card that you can load money onto before using it to make purchases. The card could be linked to the customer's bank account or not. A debit card provided by a bank, on the other hand, is linked to the customer's account.

**4) POS terminals**

Traditionally, point-of-sale (POS) terminals were installed in all stores where customers could use credit or debit cards to make transactions. A credit card reader is usually a compact device. The scope of POS is increasing as a result of digitization, and it is now available on mobile devices and through web browsers.

**5) Internet Banking:**

Internet banking is a means of doing banking transactions over the internet. Many services are accessible, such moving funds, creating a new fixed or regular deposit, cancelling an account, and so on. Internet banking is sometimes known as e-banking or virtual banking. NEFT, RTGS, and IMPS online fund transfers are commonly made through internet banking.

**6) Mobile Banking:**

The method of making financial/banking transactions using a Smartphone is referred to as mobile banking. The scope of mobile banking is expanding with the advent of various mobile wallets, digital payment apps, and other services such as UPI. Many banks have their own applications that consumers can use to conduct banking transactions with the click of a button.

### 7) Bharat Interface for Money (BHIM) app:

Users can use the UPI app to pay through the BHIM app. It also works with UPI and you can use VPA to perform transactions. The BHIM interface makes it easy to link your bank accounts. You can also link multiple bank accounts. Anyone with the help of a registered mobile number, debit card and bank account can use the BHIM app.

#### Benefits of Digital Payments

**Faster and more convenient:** One of the most significant advantages of cashless payments is that it expedites the payment process and eliminates the need to fill out long information. There is no need to queue for an ATM or carry cards in your wallet.

- Cost-effective and low transaction fees:
- It's quicker, easier, and more convenient.
- Waivers, discounts, and cash backs are all available.
- Transactions are recorded digitally:
- All-in-one bill-paying solution
- Assists in the control of black money

Digital payments are steadily gaining traction in India, and a slew of new apps are being released in this space. It has evolved into a simple and secure method of payment.

The Digital India programme is the government of India's flagship initiative, with the goal of transforming India into a digitally enabled society and knowledge economy. One of the professional mottos is "Faceless, Paperless a finally cashless."

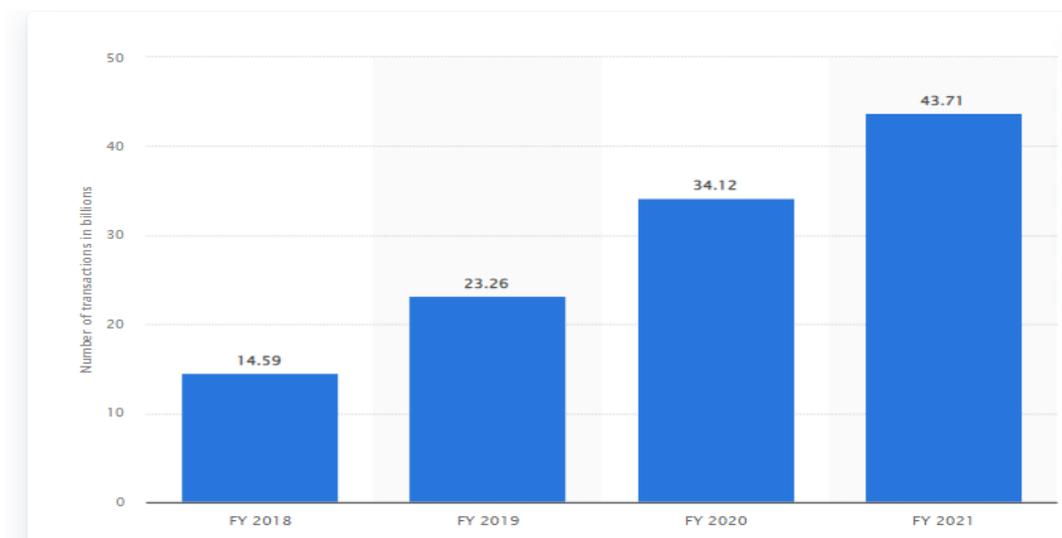
#### RESEARCH METHODOLOGY

- Primary Data
- Secondary Data

In this research I have collected data from secondary sources such as different websites of government, Books and articles.

#### Data Analysis

Statistically we can see Digital payments across India from financial year 2018 to 2021 (in billions)



#### Digital payments in India FY 2018-2021

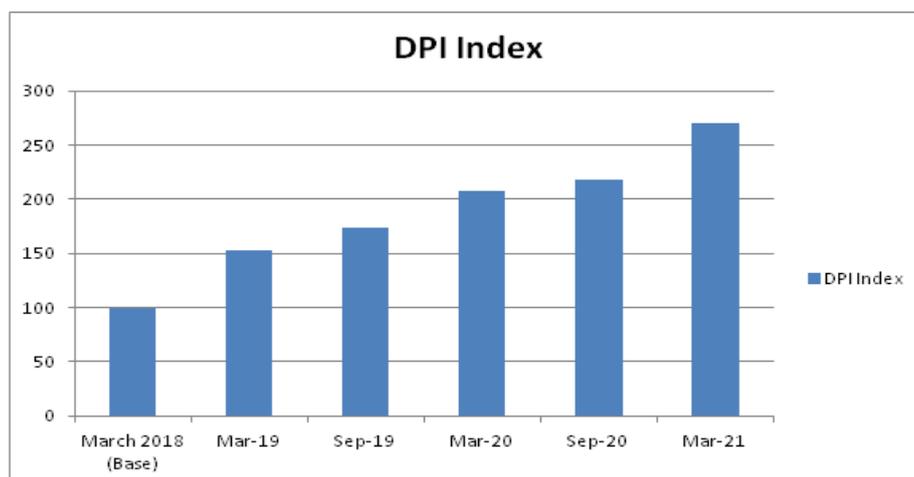
Statistic Research Department, Jul 8, 2021

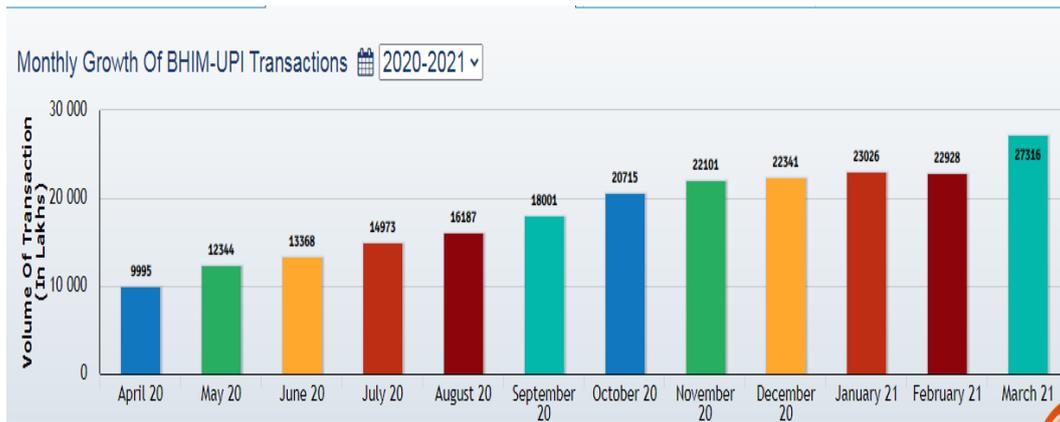
Payment Enablers	Payment Infrastructure-Demand-side factors	Payment Infrastructure-Supply-side factors	Payment Performance	Consumer Centricity
(25%)	(10%)	(15%)	(45%)	(5%)
Internet	Debit cards	Bank Branches	Digital Payments Systems-Volume	Awareness and education
Mobile	Credit cards	Business Correspondents	Digital Payments System-Value	Declines
Aadhar	Prepaid Payment Instruments	ATMs	Unique Users	Complaints
Bank Accounts	Customers registered-Mobile and Internet Banking	POS terminals	Paper Clearing	Frauds
Participants	FASTag	QR Codes	Currency in Circulation	System Downtime
Merchants		Intermediaries	Cash withdrawals	

Reserve Bank of India has constructed a composite Digital Payment Index (DPI) to capture the extent of digitization in India.

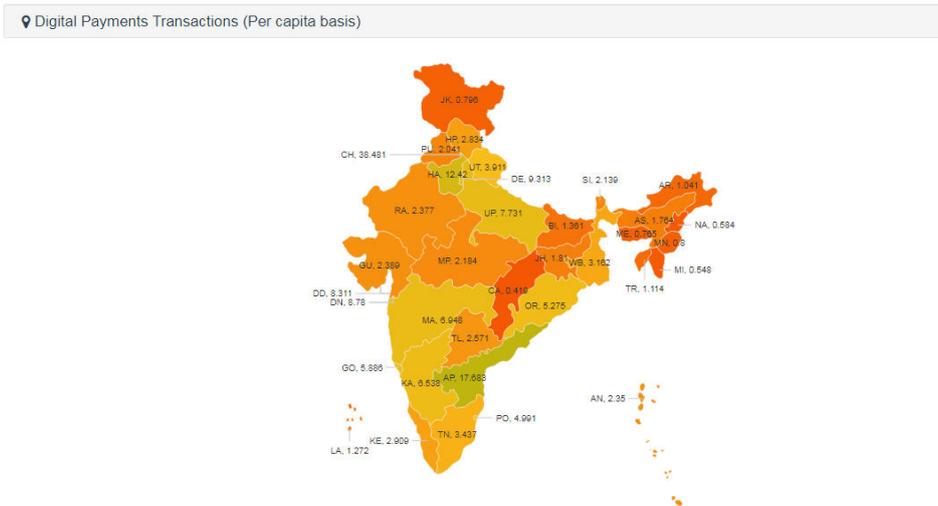
The Reserve Bank of India –DPI (Digital Payment Index) has been drafted with March 2018 as the base period, i.e. DPI score for March 2018 is set at 100. The Digital Payments Index is published on a semi-annual basis with a lag of 4 months. The value of index increased 2.7 times a span of 3 years, from 100 in March 2018 to 270.59 in March 2021. The index has demonstrated significant growth in the index representing the rapid adoption and deepening of digital payments across the country in recent years.

Period	DPI Index
March 2018 (Base)	100
March 2019	153.47
September 2019	173.49
March 2020	207.84
September 2020	217.74
March 2021	270.59





State wise Digital Payment (Per capita Basis)



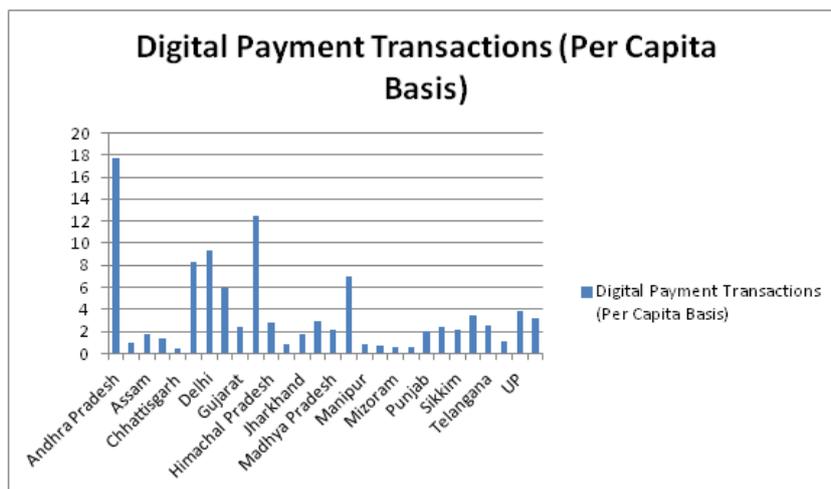
(Sources: digipay.gov.in)

(Digidhan Dashboard, 2021)

State	Digital Payment Transactions (Per Capita Basis)
Andhra Pradesh	17.683
Arunachal Pradesh	1.041
Assam	1.764
Bihar	1.361
Chhattisgarh	0.419
Daman and Diu	8.311
Delhi	9.313
Goa	5.886
Gujarat	2.389
Haryana	12.420
Himachal Pradesh	2.834
Jammu & Kashmir	0.796
Jharkhand	1.81
Kerala	2.909
Madhya Pradesh	2.184
Maharashtra	6.948
Manipur	0.8
Meghalaya	0.765
Mizoram	0.548
Nagaland	0.584
Punjab	2.041
Rajasthan	2.377

Sikkim	2.139
Tamil Nadu	3.437
Telangana	2.571
Tripura	1.114
UP	3.911
West Bengal	3.162

digipay.gov.in



(Sources: digipay.gov.in)

(Digidhan Dashboard, 2021)

**CONCLUSION**

As per above analysis and according to available data from different sources we can conclude this research paper that the digital payment mode is increasing day by day. As we have compared a data since 2018 to 2021 and found a positive Change is 170, DPI Index in March 2021 is 270.59 and it was 100 in 2018.

State wise comparison on the basis of Digital Payment Transactions (Per Capita Basis) we come to know that Andhra Pradesh is on highest level and Chhattisgarh is at the lowest level for using Digital Payment Transaction.

Digital Payment in India Growth rate as per financial year 2018 to financial year 2021 is 66%. (In 2018 it was 14.59 and reach up to 43.71 till 2021.)

We have also focused a Monthly growth rate as main impact of digital payment started from April 2020 due to Covid-19. In April 2020 Transaction was Rs 9995 lakh and it was found in the month of March 2021Rs 27,356 Lakh. (Increase the way of transaction is 173.69%).

The digitalization of the banking sector with smart phones will surely meet the expectations of a growing population. It actually reduces human error and increases comfort. With digital banking, mostly Businessmen, Entrepreneurs, MSME and anyone who are in the need to make payment, don't need to focus attention on banking timing. Trading now takes place even at odd times also.

Last but not least the main reason for digital payment in India due to Smartphone's and another reason is pandemic situation.

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**HUMAN RESOURCE MANAGEMENT DURING COVID-19: IMPLICATIONS AND CHALLENGES****Tejindra Singh**Assistant Professor, Department of Management, Institute of Professional Excellence and Management,  
Ghaziabad**ABSTRACT**

*We all know that the work environment has been altogether changed by recent pandemic. The rapid and sudden increase of remote work, shifting roles, competing home and work obligations, and focus on workplace health and safety have forced businesses to rethink everything.*

*The COVID-19 has affected to a great extent organizations, creating a complex and challenging environment for managers and HRM practitioners. To ensure the continuity for their organizations and help employees to cope with the situation, the Managers need to search for some ingenious solutions. Studies dealing with the impact of this pandemic on HRM are few. Through general literature review, the aim of this paper is to review and to explore the Human Resource management during Covid 19.*

*Keywords: work environment, HRM Practitioners, Covid 19*

**INTRODUCTION**

The whole world has been shocked and shaken severely by the unpredicted Covid-19 pandemic. Economies, organisations, employees, and societies are affected to a great extent by this pandemic. The Covid pandemic originated and spread from Wuhan city of China, started in December 2019, which is the severe acute respiratory syndrome corona virus 2 that has been reported to a very fast infection spread and on March 11, 2020, pandemic has been declared by the World Health Organization (WHO, 2020)

During the rapid spread of the COVID-19 virus, several economies have implemented various non-medical measures intended to reduce its infection like work from home, social distancing. Lockdown have been imposed; people were compulsorily quarantined; educational institutions, businesses, and non-government organizations were been temporarily closed; public transportation were restricted; flights were banned; public gathering as well as social events have been totally banned. Moreover All the employees globally were ordered to work from home. Globally, economic activities were witnessed to a significant slowdown, resulting into layoffs due to COVID 19 outbreak (World Economic Forum, 2020). The increased unemployment rate is reported in many countries. Companies have started reopening (Major & Machin, 2020), in the middle of this ongoing pandemic, to recover from this economic crisis, with new working conditions and extraordinary rules at the workplace like physical distancing. (Shaw, Main, Collie, Kristman, & Gross, 2020). Therefore due to this pandemic, the emergence of a new and challenging working environment is experienced by managers and HRM practitioners and it was not easy to find the ingenious solution to carry on their company's business and to help their employees to overcome with the challenges of this unpredictable situation.

The studies on the topic Human Resource Management During COVID-19: implications and challenges are very few. HRM practitioners need more relevant and accurate information relating to issue for to be able to support employees and maintain their employees and company's activities. In fact, organizations are not generally prepared to deal with such crises (Wang, Hutchins, & Garavan, 2009). Therefore, the objective of this research is to investigate the impact of COVID-19 on HRM and to identify the challenges. Considering the scarcity of papers on this important topic, this paper aims at widening the scope of management research.

**METHODOLOGY**

This paper is a general literature review, with an informative purpose. The aim of this paper is to examine the related and recent available literature in the field of HRM. Very few studies that have been conducted in this field of HRM which investigated the impact of Covid -19 pandemic on HRM.

The articles which have been examined the impact of Covid -19 on HRM were searched online along with the articles which further examined the Challenges of Covid-19 on HRM functions like recruitment, training and compensation. The articles were searched online using the terms HRM during covid pandemic and or Covid-19 a challenge for HR managers

**LITERATURE REVIEW**

Human Resource management is all about the employing and managing people in organizations which has been impacted to a great extent

HRM is about how people are employed and managed in organizations. It has been totally impacted by COVID-19, resulting into significant challenges for managers and HRM practitioners. This impact and these challenges are explored in this section, in relation to HRM and working conditions, as well as HRM functions, specifically, staffing, performance management, training and development, compensation management. Each HRM function is discussed individually, however, they are interrelated. This suggests that any change in one HRM function will affect the other function.

### **WORKING CONDITIONS**

Working conditions means ‘the core of paid work and employment relationships’. Working conditions include various topics and issues, from working time (hours of work, rest periods, and work schedules) to remuneration, as well as the physical conditions and mental demands that exist in the workplace’ (ILO, 2020).

The COVID-19 pandemic has changed working conditions to a great extent. To continue their business activities, most organizations have moved to remote working, allowing their employees to work from home (Aitken-Fox et al). The class of employees working from home represents a small percentage of the overall workforce (Gourinchas, 2020), It is because, remote working is not suitable for manufacturing industries and it cannot be applied to all job positions (Koirala & Acharya, 2020). In this context, there were two possible ways for companies whose nature of business does not allow to remote working.

Firstly to allow their employees to be present physically and maintaining physical distancing (i.e. 2 meter distance between individuals in 360 degree) and wearing personal protective tools like face masks and hand gloves and secondly to lay them off. Golin, and Rauh in a study emphasized that employees whose job tasks cannot be performed from home are more likely to lost their jobs. In such circumstances, HR managers need to mark those jobs which can be performed remotely and those which can only be performed on the physical workplace, and those also that have to be laid off because of the situation of pandemic. Therefore it is a great challenge for managers and HRM practitioners to cope up with these sudden and big changes in organizations.

Managers and HRM practitioners face many challenges for remote working. Main challenge is that employees working from home are not having necessary equipments to perform their job. There are many employees not having laptop or Desktop and or approach to network to perform their job. The net strength is the main issue in remote areas. Various technological tools like Laptop, Desktop, Zoom, Team viewer and Microsoft teams etc required for remote working and for communication are not afforded by all organizations. (Prasad and Vaidya, 2020).

The employees during work from home feel isolation as no regular interaction and peer advice is available. Lack of one to one interaction with peers results into the stress and employees are under psychological pressure as they are in multiple roles relating to their job as well as family while working from home. (Prasad and Vaidya 2020). Working from home undermine the psychological health of employees as they have to use information and communication technology (ICT) regularly to be in regular contact with their seniors and organization through emails and this leads to increase in the volume of information and data. Molino et al 2020 refer it as technostress.

### **STAFFING**

Staffing refers to a process of obtaining, utilizing and retaining, qualified and competent personnel to achieve the organizational goals. This process is highly affected by covid pandemic. Covid effected the business organisations to a great extent. Some industries were forced to temporarily close their business as they mark decline in their business, On the other hand some industries flourish their business during Covid crisis ( Giupponi & Landais, 2020).

Organisations noted decline were facing financial crisis and forced either to stop their recruitment process or start hiring person with low skills at low salary to reduce their cost and struggling to mere survival of their organisation. Many organizations were forced to lay off their employees (Kankanhalli, & Muthukrishnan, 2020). Millions of people become jobless due to this pandemic.

On the other hand, the organizations noted expansion in their business faced new challenge of acquiring the desired talent. Person with desired skills and qualification are not ready to apply as they are afraid off the pandemic situation. To handle the situation organizations opted to move to agencies for contract work or contact freelancers (Spurk & Straub 2020). These organisations found themselves facing the pressure of workforce shortage. How to recruit efficient man power when people are in fear of getting infection? How to select an employee when it is not allowed to meet face to face, due to the physical distancing measures? Under such

circumstances, these organizations had to focus toward virtual recruitment and selection techniques (Carnevale & Hatak, Maurer 2020).

### **Performance Management**

Performance management is the process of systematic, periodic and an impartial rating of an employee's excellence in matters pertaining to his present job and his potential for a better job. Covid pandemic has altogether changed the performance management in organisations. Appraising employees performance during this pandemic become challenging, considering the change in the working conditions. There are many issues related to the pandemic that may influence employee performance. A study by Prasad and Vaidya suggest that workplace isolation, lack of communication, family distractions, role overload, and occupational stress factors (role ambiguity, role conflict, career, and job-control), which have clubbed due to COVID-19, mainly among employees working from home are significant predictors of employees' performance. Performance of employees during work from home also depend on manager's understanding of how and what is required to manage a remote team.

In this context, the study by Prasad and Vaidya reported that workplace isolation, lack of communication, family distractions, role overload, and occupational stress factors (role ambiguity, role conflict, career, and job-control), which have emerged due to COVID-19, mainly among employees working from home are significant predictors of employees' performance.

While remote working, the performance of employees' also depend on the willingness of the manager, how managers is understanding a remote team. There are some authors with opinion that some managers do not like remote working as they think that remote working affects negatively the performance of employees, which paves a way to untrustworthy of employees towards manager.(Aitken-Fox et al2020), which can create tension between them and their manager. According to Aguinis and Burgi-Tian, during this health crisis it was very much crucial for organizations to maintain the performance of their employees. Relevant and proper information related to the company's strategic direction should be communicated with their employees, to collect information and important business data, and to give feedback to them, in turn it help these organizations in retaining their potential employees. To appraising of performance frequently fosters the employees' learning and maintaining, which in turn helpful to organizations to sustain their business. Considering the interrelation between HRM functions, the study by Sembiring et al2020 showed that compensation might have a significant impact on employees' performance in the COVID-19 era. Hence, the authors suggested that organizations should be more concerned about employees' total compensation (financial and non-financial), and its fairness to sustain and improve their performance during crises (Sembiring et al2020). The main challenge, in this context, might be related to the financial capacity of the organization during this ongoing pandemic.

### **Training and Career Development**

Training plays very important role in crisis period like pandemic, (Devyania, Jewanc, Bansal, & Denge 2020). Training plays an important role to develop the desired skills for employees (Richardson, & Kraimer, 2020). Training enhances the awareness about Covid 19 and reduce the risk of contamination of covid virus.

All employees are not having the knowledge and expertise in digital skills particularly in using ICT (Information and Communication Technology). Use of ICT becomes the necessity of the hour as it helps to facilitate employees work and communication with their manager and peers while they are away from their workplace (Greer & Payne, 2014).To cope with these changes generated by pandemic, the necessity to train employees on the utilization of ICT become the most challenging task for HR managers and HR practitioners. According to Przytuła, Strzelec, and Krysińska-Kościańska, organizations face the challenge of upskilling and reskilling their workforce capable to deal with the requirement of situational context of distance economy. How to design a training programme in this situation of distance economy became the head aching situation for HR managers. The situation suggests that managers and HRM practitioners need to go beyond the traditional training methods. Devyania et al. recommended, in this case, changing employee's training programs in a way that ensures a long-term transition toward the new working practices. Aitken-Fox et al2020 opines that the success of remote working depends on managers' understanding of the virtual supervision of employees. How to manage a virtual team is also a challenge for managers and HR practitioners. HR practitioners need to help employees to overcome these difficulties and to cope with remote working challenges in order to be able to support their team members (Hamouche2020).

**COMPENSATION MANAGEMENT**

Compensation management is the process of managing, analyzing, and determining the salary, incentives, and benefits each employee receives. The aim of compensation management is to attract, retain, and engage employees by offering broad and competitive compensation plans within the company budget. Compensation management ensures that employees get paid a fair salary based on work performance, position, responsibilities, experience, and job market and company budget. Compensation influence employee performance, motivation, and retention (Elsafty & Ragheb, 2020). Covid pandemic pose a very bad picture for many industries. Many organisations are struggling for mere survival. The financial position of many organisations became worse. Many organisations are under pressure to lay their employees off. Many of them offered lesser pay to their employees. Mostly private companies who report decline in their business adopt the policy of reduced payment and the employees are under pressure of losing job are ready to accept the decreased level of salaries. Many industrial sectors like service industry, hospitality industry faced worse situation as a result many organisations opt for temporary closure of the unit and lay off the employees. There are many organisations go with a decision of opting lesser wages to their employees. In the private education industry there are many institutions giving reduced salary to their employees. Transport allowance and other allowance deducted in toto. (Sharma 2020a). In case of health care industry, particularly in hospitals the compensation management can be challenging as the risk of contamination is very high. According to Hecker, individuals use to select jobs based on their risk tolerance in return for more compensation for higher risks. Generally, the employer's intervention is oriented toward the necessary control of hazards to be able to recruit individuals for job positions with higher risks. Hence, in case of a high level of risk associated with the job position without sufficient compensation, many employees might decide to leave the organization.

Compensation management can be particularly challenging in workplaces where the risk of getting infection is very high, for example in hospitals. In this context, the level of compensation offered to employees may be questioned, to know if it is high enough considering the level of risk that these employees encounter. Hecker in his study emphasized that, individuals select jobs based on the risk and compensation. If compensation is higher than employees are ready to take higher risky jobs. The employer's orientation is towards the necessary control of hazards and to recruit individuals for job positions be able to handle higher risks. Therefore, where high level of risk associated with the job position with less compensation, so many employees decide to leave the organization.

A survey by law firm Blank Rome, conducted through March 2021, found that among the approximately 150 client respondents, just 49 percent of the employers that had temporarily shut down business operations were continuing to pay all employees full wages. That finding reflects the tip of the iceberg as businesses begin their response to the pandemic, the firm said.

**CONCLUSION**

The contribution of this paper is limited in understanding the impact of covid pandemic on HRM. This paper is limited to some basic HR functions of managers and HRM practitioners. There is more scope for research in this field. Though the covid still exists, therefore many organisations still exercising work from home. Every organization globally is affected by this pandemic, only a few industries like pharmaceutical and healthcare industries bloomed during this crisis otherwise every industry is adversely effected. Economies through the globe are negatively impacted and workforce is directly affected. There are millions of employees who have been adversely affected with this Covid crisis. Managers and HR practitioners are facing new challenges to cope up with situation of uncertainty. It was very annoying for managers to lay-off employees or to offer less wages to employees.

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**THE IMPACT OF TECHNOLOGY DISRUPTION AND RELATIONSHIP MARKETING ON BUSINESS SURVIVAL DURING THE COVID-19 PANDEMIC****<sup>1</sup>Mr. Amit Singla and <sup>2</sup>Mr. Pankaj Sharma**<sup>1</sup>Assistant Professor, Department of Management, Panipat Institute of Engineering & Technology, Panipat, Haryana (India)<sup>2</sup>Assistant Professor, IPEM, Ghaziabad (U.P)**ABSTRACT**

*The Covid-19 was disclosed to the world as a true epidemic affecting millions of people throughout the globe. The disease covid-19 wreaked havoc on India, the world's second-most populous country. India had been probed for millions of confirmed cases, with thousands of deaths, as of January 31, 2022. India, like other countries, experienced a time of lockdown and unlocked laws and rules, which harmed human lives and the economy. Human survival on limited resources was never difficult, but it did have economic ramifications, as people realised. The goal of this research was to learn about the various tactics and approaches utilised by local merchants to survive during lockdown and to keep their businesses afloat by satisfying their clients. It is a preliminary investigation based on personal observation and case study methodology. The cases were purchased from Panipat's local sellers. The study challenge illustrates how local vendors have dealt with the covid epidemic by employing cutting-edge digital approaches and relationship marketing. During this research, I spoke with these vendors in an attempt to find a solution to the problem described here.*

*Keywords: Panipat, Local Vendor, Digital Payments, GPay, Pandemic*

**INTRODUCTION**

After World War II, mankind can look back on the corona virus epidemic as the century's biggest challenge and worldwide health catastrophe. The first Corona virus epidemic was detected in Wuhan, Hubei Province, China, in December 2019. A virus has infected several individuals, and it has been connected to the city's famed Huanan seafood market (S. Kapoor & Dubey, 2020). In the last week of January 2020, the WHO declared an outbreak, and corona virus covid-19 was legally named (Co- corona, Vi- virus. D-disease and 19-2019 the year the epidemic). In February 2020, a Public Health Emergency of International Concern (PHEIC) was proclaimed, making Covid-19 the sixth PHEIC (A. Ghosh et al., 2020).

The covid crisis impacted India hard, which has the world's second-largest population and a massive rural and increasing urban economy. The Covid-19 affected tally started at 1,000,000 in July 2020 and ended at 1,000,000 on December 31, 2020. Over hundreds of days of various lockdown phases were imposed on the country from the 24th of March 2020 to 2021. (WHO Covid-19, India, Dec 2021).

**REVIEW OF THE LITERATURE**

On Covid-19 for 2020-21, the literature was gathered from numerous publications and reports from various national and international governments and other news organisations.

The influence of Covid-19 on the Indian economy

The Indian economic growth rate began to deteriorate in 2017, dropping from 8.2% in 2016-2017 to 6.8% in 2018-2019, and the numbers are much worse now, with India's economic growth rate set to 5% in 2019-20 & 2020-21 because to the Covid-19 crisis.

The Indian economy benefited greatly from tourism, healthcare, information technology, and other industries. Nonetheless, there is a major negative impact on these industries' development (Economic Survey 2019-20, 2020-21). Covid-19 has caused havoc on India's still-weak economy.

When rich economies collapse, India has a long way to go and has turned to the International Monetary Fund (IMF) for financial assistance.

Economists warned of the harmful consequences of the lockdown and the cost to citizens. Educational institutions were shuttered, as were many shops, offices, dining joints, retail malls, workshops, warehouses, and many other companies. Workers and labourers, usually migrants, were the hardest hurt, with online businesses being impeded. Many people have lost their employment, and some settled for work from home. Educated or uneducated, worker or farmers, upper/ middle or lower, whichever class one belonged, faced severe impact (www.ETBFSI.com, n.d.).

As previously stated, a large portion of our economic society is reliant on their daily paychecks or monthly salaries. Drivers of rickshaws and autorickshaws, plumbers, carpenters, and electricians, delivery boys, domestic servants, scrap collectors, and tea/vegetable vendors, among others, were all affected, and their survival was a major concern. Unaware of the pandemic's termination, every social being is putting out every attempt to return to their pre-lockdown state of existence (Javadekar & Kannur, 2020).

As previously said, a significant percentage of our economic culture is dependent on daily or monthly income. The survival of rickshaw and autorickshaw drivers, plumbers, carpenters, and electricians, delivery boys, household employees, scrap collectors, and tea/vegetable sellers, among others, was a big issue. Unaware that the epidemic has ended, every social being is attempting to return to their pre-lockdown way of existence (Javadekar & Kannur, 2020).

### **RESEARCH GAP**

The Covid-19 epidemic was a brand-new form of global catastrophe that had never been seen before. Few earlier examinations of the Covid-19 problem and its implications have been conducted. Because it was a one-of-a-kind situation, it was impossible to locate literature on economic lockdowns, business opportunities, or human survival and sustenance. I don't believe this study is groundbreaking. It has, however, sought to shed some light on how our country is dealing with the epidemic and its ramifications. During this historical time, I've included a few examples of local vendors that used their creative business brains to use digital innovation and relationship marketing to achieve commercial successes, proving the proverb "making opportunities in adversity."

### **RESEARCH OBJECTIVES**

The research sought to achieve the following goals:

1. To investigate the influence of Covid-19 on the Indian economy today.
2. To look into how local merchants dealt with Covid-19 using digital innovation and relationship marketing as a strategy.

### **RESEARCH METHODOLOGY**

It is a preliminary investigation based on personal observation and case study methodology. The cases were purchased from Panipat's local sellers. The study challenge illustrates how local vendors have dealt with the covid epidemic by employing cutting-edge digital approaches and relationship marketing. During this research, I spoke with these vendors in an attempt to find a solution to the problem described here. The goal of this research was to learn about the various ways and approaches employed by local merchants during lockdown in order to retain their livelihood and market share by satisfying their consumers.

### **Some Innovative Entrepreneurial Opportunities during Covid-19 Pandemic**

As a result of Covid-19, the Indian economy has had a huge and ripple effect. To keep the infection rate flat, most worldwide economies (Bofinger et al., 2020) implemented the Covid-19 restrictions to safeguard the healthcare system. As a result, the forced closures had a significant, immediate, and unavoidable impact on most economic sectors (Verma & Gustafsson, 2020). Insolvency or reduced work productivity hit many small and medium-sized businesses and companies, resulting in increasing unemployment and underemployment. The Covid-19 issue has jeopardised nascent firms and, in some cases, cast doubt on novel notions that could have been viable under normal conditions (Kuckertz et al., 2020). The Covid-19 has radically transformed client demand patterns for a variety of goods and services, putting local, regional, and global supply chain networks at risk of fraud and instability. During the shutdown, when Covid-19 sent shivers down most corporate and commercial spines (car, retail, hotel, aviation), certain firms (technology and health) were seeking for ways to differentiate themselves from the economic crisis crowd. Drone technology, vending and payment machines, digital educational platforms, digital healthcare, hygiene products, logistics and transportations, and other enterprises have all benefited from the new prospects.

### **Cases of local vendors who adopted digital innovation to sustain their business:**

The following are a few examples of Panipat local vendors that have used digital innovation and relationship marketing to grow their businesses:

**Dinesh Provisional Store:** In Model Town, it is a well-known temporary shop. Dinesh, the business owner, informed me about how he uses KHATABOOK to keep track of his creditors. He also concentrated on his customers' prior orders, and he began to save a page of each order delivered by his customers in an EXCEL SHEET on his tablet. He gave his WHATSAPP number to his consumers and continued to use it to share fresh schemes and new arrivals. He got the order through it and delivered it to all of his customers at their homes. He

also launched the GOOGLE PAY and PAYTM digital payment services. He even credited his clientele for maintaining relationships during the outbreak. He also assisted his quarantined clients by offering support in every way they need. This sense of commitment to his consumer aided him in keeping his sales and business afloat.

**Ayush Medical Store:** In Patel Nagar, there is a medical shop. The proprietor informed me that he had partnered with a doctor to help his consumers. Online medical stores did not sell drugs without a prescription, and it was difficult for anybody to leave their residence to receive a prescription during the lockdown. He assisted all of his consumers by offering a FREE ONLINE CONSULTANCY with a doctor. Even during a pandemic, when other medical shop owners were profiting by selling at a premium, the doctor's prescription drugs were offered at a 10% to 15% discount. This humanity, as well as maintaining positive relationships with his clientele, assisted him in generating sales and sustaining his firm. He sold both on credit and at a discount. Home delivery was available. During the epidemic, each purchase included a free MASK. He also took orders via WHATSAPP and accepted payments using GOOGLE PAY and PAYTM.

**Suceses Coaching Centre** is located in Vikas Nagar, and it offers a variety of coaching services. Due to lockdown, the owner, Sachin Gupta, told me that it was difficult to interact with the pupils throughout the epidemic. He began to make use of technology. His YOUTUBE videos were created by him. On his BLOG, he also posted his notes and study materials. He also spoke with his students through WHATSAPP video conference to address their concerns. He began his lessons using the platforms GOOGLE MEET and ZOOM. He also used Whatsapp to share notes. This is how he remained in touch with his students and did not leave them alone at home throughout the epidemic, keeping them occupied and motivated.

**Vishu Auto Dealer:** Vishu Auto Dealer is located on the Delhi-Panipat Road. Mr. Amar, the Sales Manager, briefed me on how his team handled sales. He used 3D TECHNOLOGY to assist his clientele. With the use of 3D technology, the sales representative gave a thorough virtual tour of the showroom. They used their iPad to demonstrate the new automobile and its amenities. Customers would be able to experience everything in the automobile as a result of this. They may use touch technology to unlock doors, listen to music, and view the interiors. They did this by bringing the show room to the homes of customers who wanted to buy the goods for a wedding but couldn't make it to the display room.

## CONCLUSION

Finally, the study focused on the significance of technology disruption and relationship marketing in keeping the firm afloat throughout the Covid epidemic. The local instances picked for this research were from a variety of industries, including retail, medical, education, and automobiles. These case studies demonstrated that using technology and creating relationships with consumers benefited during a pandemic. Local merchants were able to retain sales by using digital payment systems, home delivery, and digital communication. They were also able to create long-term relationships with their clients by giving credit and answering their calls. According to the report, the role of disruptive technology has grown during the epidemic. It also implies that relationship marketing always paves the road for future bonding and business sustainability. The study was conducted solely in Panipat city; however, it might be replicated in other regions of the state to create a larger image of local sellers across the state and nation.

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**SELF-EFFICACY & WORK READINESS AMONG POST GRADUATE STUDENTS IN NCR****<sup>1</sup>Ms. Smita Barik and <sup>2</sup>Dr. Sourabh Jain**<sup>1</sup>Assistant Professor, Institute of Technology & Science, Mohan Nagar, Ghaziabad<sup>2</sup>Assistant Professor, Global Group of Institution, Jabalpur, Madhya Pradesh**ABSTRACT**

*Work Readiness of students towards having a good career opportunity is a burning issue these days. Organizations are welcoming new talents with attractive packages but still our country are facing unemployment issue. It is a major factor to find out the root cause behind the Gap which is existing between students not getting their dream jobs and companies are still looking for the best talent and are ready to offer them handsome pay packages. Our Study is to find out student's job/work readiness and impact of their ability or self efficacy behind it. . We have taken believing in one's own ability, positive sense to self, decision making ability as dimensions to Self Efficacy and different dimensions of Work readiness are studied against it. . Purpose- The main objective of the study is to identify the impact of Self-Efficacy on Students' Work Readiness. Methodology- A structured questionnaire was designed to collect the data on the dimensions of Self Efficacy and also for Work Readiness.. The sample size of the study is 189. The cluster random sample technique was used for data collection. Correlation, Regression and ANOVA technique is used for hypothesis testing. Findings- It is found that there exists strongly positive relationship between various dimensions of Self- efficacy with Work Readiness of Students.*

*Keyword: Self- Efficacy, Work Readiness, Post graduate students, career readiness.*

**INTRODUCTION**

Individual need to have work readiness , or the passion to work hard if he wants to face the challenges the world gives everytime.[1]. Work readiness is a continuous process which need to be improved continuously so that students can meet the requirements of employer.[2] . In a study , researchers found that graduates believe to have personal and communication skills to keep them ready for work [3], but also according to an article in The Hans India, As the dynamics of education and employment change due to increased integration with the international world and the increase in the use of artificial intelligence, our 21st-century learners are not ready for industry-related work and lack relevant skills.[4]

It is need of the hour that individual who are work ready should be highly encouraged to enhance their mobility & to produce skilled, well qualified and flexible work force according to the requirements of the employers.[5] by gaining qualities of work readiness, individual will be more intend towards quality production, and effectively using their skills and other attributes to optimize their work ability. [6]

With the availability of work readiness individuals tend to be more able to operationalize affective skills, utilize emotional and social attributes and join job-specific cognitive skills to help optimize individual work ability[6].

Work readiness are the extent to which individuals are considered to have the knowledge and skills to work independently [7]. Work readiness can be said as an individual's readiness to adapt to the demands of culture and workplace [8]. According to Kwok, Gujral, and Chan [9] work readiness is the extent to which individuals have attitudes, skills, and knowledge that can prepare themselves for success in the workplace. Bandaranaike and Willison [6] defines work readiness as a bridge that connects work-oriented learning with the skills needed by the world of work.

Coming to factors that affect Work readiness , one such factor is Self-Efficacy. Self Efficacy can be understood as the confidence on one's ability to perform the required task. It is further understood as one's belief in his capacity to behave which is necessary to attain desired performance [10][11][12].

**LITERATURE REVIEW****SELF EFFICACY**

Self- efficacy is the capacity to attain required result. It is hypothesized to control activities, persistence and energy [13] . Self –efficacy believed to be come from 4 major sources. Again higher self efficacy increases the chance of individual being more motivated towards job search, increased frequency of job search and readiness to perform required activity to get a successful job. [14] According to Makki, Salleh, Memon, and Harun [15] , Individual need to improve Self-efficacy in order to get a better and more confident career life and in that way he can obtain his work readiness skill enhanced [16]. Self- efficacy is a major component of social cognitive theory and it says that behavior is strongly affected by self influence [12]. High

self efficacy students can be able to solve a complex problem as compared to low self efficacy students[11]. Self efficacy has multiple number of sources and it is a learned process but Bandura and Schunk, the two famous socio cognitive psychologist believed that self efficacy can have 3 major factors which develops low and high self- efficacy and they are : 1. Teacher's message, 2. Others performance and 3. student's own earlier academic record.[17]

1. Teacher's Message: When Teacher gives a positive or negative remark on students ongoing performance, according students get motivated or demotivated to increase or decrease hi self – efficacy. This may also happen when teacher tries to boost the student's confidence to perform a task.

2. Other's performance :When student sees that his fellow mate can perform in a more better way and gets success, he can be motivated to perform by his own with little more confidence. Highs self efficacy rises when students sees that his fellow mate who is a low performer, performs well in a task.

3. Student's own academic record: Sometimes students past performance helps him to increase or decrease his self efficacy. If a student is a good performer in class then he has comparatively high self efficacy to start a new task.

**Work Readiness:** According to Cabellero, Walker, and FullerTyszkiewicz (2011) [18], work readiness (WK) is defined as “ a benchmark that graduates have attitudes and attributes that lead them to ready to work and succeed in the workplace”. Meanwhile, Hersey and Blanchard (1996)[19] suggest that work readiness is a level of ability and willingness for someone to complete a particular task. The work-readiness (WR) aspects, according to Cabellero et al. (2011), are: 1) Personal characteristics, in term of individual attitude maturity, include self-resilience, adaptability, self-direction, self-knowledge, and personal development; 2) organizational acumen refers to individual attitudes in the organization which includes motivation, maturity, organizational awareness, professionalism or work ethics, social responsibility, and attitude to work; 3) work competence refers to attitudes, knowledge, and skills in work which include work motivation, problem solving, critical thinking, and creative thinking or innovation; 4) social intelligence refers to the attitude of individuals in dealing with social relationships with others in their environment, which includes teamwork, social skills, adaptability, and interpersonal communication skills [20]. Many states, including Georgia, have adopted work readiness credentialing processes that attempt to validate that students and other citizens possess work-ready skills required by employers (Hyslop, 2008)[21]. These skills include soft skills (people skills needed for everyday life) and hard skills (technical or administrative procedures related to an organization's core business) that are transferable across industries and are considered valuable for any occupation at any level of education (American College Testing, 2006a)[22][23]

### OBJECTIVE OF THE STUDY:

1. To identify the relationship between dimensions of Self- efficacy on Student's work Readiness.
2. To identify the impact of self efficacy on work readiness of post graduate students.

### HYPOTHESES

In this, Author have taken 3 dimensions of Self- Efficacy under study and their hypothesis is being tested with Work Readiness individually. Likert scale was used to measure the work readiness and self efficacy. Work readiness aspects are taken as responsibility, skills, work flexibility, speaking ability and self view. Self efficacy is revealed by taking aspects as believing in one's own ability, positive sense to self, decision making ability.

**Hypothesis 1** finds the relationship between dimensions of Self- efficacy on Student's work Readiness.

**Hypothesis-2** identifies the impact of self efficacy on work readiness of post graduate students

#### Hypothesis-1

H<sub>0</sub> There is no significant relationship between Self- efficacy on Student's work Readiness.

H<sub>01</sub> There is significant relationship between “Believing in one's own ability” and Student's work Readiness

H<sub>02</sub> There is significant relationship between “Positive sense to self” and Student's work Readiness

H<sub>03</sub> There is significant relationship between “Decision making ability” and Student's work Readiness

#### Hypothesis-2

H<sub>1</sub> There is no significant impact of Self- Efficacy on Students' Work Readiness

H<sub>11</sub> There is significant impact of Self- Efficacy on Students' Work Readiness

**RESEARCH METHODOLOGY**

Likert scale was used to measure the work readiness and self efficacy. Work readiness aspects are taken as responsibility, skills, work flexibility , speaking ability and self view.. Self efficacy is revealed by taking aspects as believing in one’s own ability, positive sense to self, decision making ability.

Author have taken 189 (57 Girls, 132 Boys) responses From PG Students of NCR, India to conduct the study. Researcher has collected the data through questionnaire and online survey method from different social networking sites including Facebook and LinkedIn and also some Secondary data are collected through journals, whitepapers and web references etc. The data hence collected is analysed through SPSS tools like Correlation, Regression and ANOVA techniques are used to draw the conclusion of the analysis.

**Table-1 : Research Method**

<b>Area of Study</b>	Respondents are taken from Post Graduate students of Delhi NCR.
<b>Research Design</b>	Causal Research Design is preferred
<b>Sample Size</b>	189 (57 Girls, 132 Boys)
<b>Sampling Technique</b>	cluster random sampling .
<b>Data Collection</b>	Primary Data is collected through Structured Questionnaire. Researcher has used Likert Scale to conduct the survey. Secondary data is collected through various sources like journals, white papers, web references and articles.
<b>Tools Used for Analysis</b>	Correlation, Regression & ANOVA Analysis

**DATA ANALYSIS**

Using SPSS reliability , correlation and regression analysis are done with the collected data and the outcome is depicted in different table and interpreted individually.

**Table – 2 Reliability analysis**

<b>Croanbach's Alpha</b>		
<b>Variable</b>	<b>No. of Items</b>	<b>Relaibility</b>
<b>R</b>	<b>3</b>	<b>0.968</b>
<b>SK</b>	<b>4</b>	<b>0.991</b>
<b>WF</b>	<b>2</b>	<b>0.988</b>
<b>SA</b>	<b>2</b>	<b>0.97</b>
<b>SV</b>	<b>2</b>	<b>0.991</b>
<b>BEL</b>	<b>3</b>	<b>0.984</b>
<b>PS</b>	<b>5</b>	<b>0.988</b>
<b>DM</b>	<b>5</b>	<b>0.986</b>

Table- 2 depicts the Reliability analysis of the self-Efficacy where 5 variables re taken from dependent variable and 3 variables are taken from dependent variable. The Variable taken as Responsibility(R ), Skills (S), Work Flexibility(WF) , Speaking Ability(SA) and Self View (SV) are describing dependent variable Work Readiness. The Variable taken as Believing in one’s own ability (BEL), positive sense to self (PS), decision making ability(DM) are describing independent variable Self-Efficacy. Cronbach’s Alpha is used to measure the strength of consistency of the data. It depicts the extent to which the data under study is reliable. The values of Cronbach’s Alpha for all the items used in our research are more than 0.700. It depicts the reliability of the data to be considered **good**. So we can take the data for study as it is reliable.

**TESTING OF HYPOTHESES**

Researcher has separately tested both the hypothesis using Correlation and ANOVA. Hypothesis 1 is tested using correlation and Hypothesis 2 is tested using ANOVA.

**Hypothesis-1**

H<sub>0</sub> There is no significant relationship between Self- efficacy on Student’s work Readiness.

H<sub>01</sub> There is significant relationship between “Believing in one’s own ability” and Student’s work Readiness

H<sub>02</sub> There is significant relationship between “Positive sense to self” and Student’s work Readiness

H<sub>03</sub> There is significant relationship between “Decision making ability” and Student’s work Readiness

Table 3 Correlation Analysis

		RES	SKIL	WF	SA	SV	BEL	PS	DM
RES	Pearson Correlation	1	.893**	.864**	.900**	.897**	.868**	.849**	.882**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
	N	190	190	190	190	190	190	190	190
SKIL	Pearson Correlation	.893**	1	.913**	.960**	.978**	.932**	.924**	.966**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000
	N	190	190	190	190	190	190	190	190
WF	Pearson Correlation	.864**	.913**	1	.903**	.922**	.964**	.959**	.903**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000
	N	190	190	190	190	190	190	190	190
SA	Pearson Correlation	.900**	.960**	.903**	1	.949**	.917**	.912**	.947**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000
	N	190	190	190	190	190	190	190	190
SV	Pearson Correlation	.897**	.978**	.922**	.949**	1	.946**	.936**	.962**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000
	N	190	190	190	190	190	190	190	190
BEL	Pearson Correlation	.868**	.932**	.964**	.917**	.946**	1	.983**	.924**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000
	N	190	190	190	190	190	190	190	190
PS	Pearson Correlation	.849**	.924**	.959**	.912**	.936**	.983**	1	.916**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000
	N	190	190	190	190	190	190	190	190
DM	Pearson Correlation	.882**	.966**	.903**	.947**	.962**	.924**	.916**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	
	N	190	190	190	190	190	190	190	190

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table -3 gives result of correlation between different constructs with each other and also with the dependent variable. Dimensions of Work Readiness with “Believing in one’s own self” has a correlation value 0.868, 0.932, 0.964, 0.917 & 0.946 which signifies that “Believing in one’s own self” has very strong correlation with dimension of Work Readiness.. Also the p value is 0.000 which says that correlation is significant with Alpha value at 0.05 and 0.01 levels. Likewise “Positive Sense to Self” and Dimensions of Work Readiness are strongly positively correlated with 2-tailed p-value at significant level as the p value is 0.00 and correlation value are 0.849, 0.924, 0.959, 0.912 and 0.936. “Decision making ability” is also showing positive correlation with Dimensions of Work Readiness. This may happen as ,Students who are highly motivated and have a high sense of self ability and decision making power, they are always active in job search and highly motivated to crack an interview. Students who have believe in their own capability are always ready to face the challenges and prove their efforts. As all 3 constructs are giving positive correlation with two tailed Alpha values, so our null hypothesis is rejected and alternate hypothesis is accepted. Or in other words , all dimensions of self efficacy have closely/ highly significant relationship with Work readiness.

**Hypothesis-02**

H<sub>1</sub> There is no significant impact of Self- Efficacy on Students’ Work Readiness

H<sub>11</sub> There is significant impact of Self- Efficacy on Students’ Work Readiness

For testing of hypothesis we can use both parametric and non-parametric method. Here we have used parametric method to test out Hypothesis-02.

**Regression & ANOVA Analysis  
For testing**

**Table 4** Regression Analysis

Model Summary <sup>b</sup>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.937 <sup>a</sup>	.878	.878	.33140	.878	1355.115	1	188	.000
a. Predictors: (Constant), IV : Self- Efficacy									
b. Dependent Variable: DV : Students' Work Readiness									

Elements of **Table-4** ( Multiple Regression Analysis) relevant for interpreting the results:

R-value represents the correlation between the dependent variable i.e. Students' Work Readiness and independent variable, Self-Efficacy. A value greater than 0.4 is taken for further analysis. In our case , the value is .937, which is good.

R-square shows the total variation for the Students' Work Readiness (DV) that could be explained by , Self-Efficacy ( IDV). A value greater than 0.5 signifies that the model taken is effective enough to determine the relationship. In this case, the R-Square value is 0.878, which is very good and considerable.

Adjusted R-square signifies the generalization of the results i.e. the variation of the sample results from the population in multiple regression. Again as Adjusted R-Square value is 0.878, it means Self Efficacy contributes 87.8 % to the Work Readiness and rest 12.2 % is due to other factors which is not taken in this study. It is considered if we find the difference between R-square and Adjusted R-square is minimum. In this case, the value is 0.878 for R-Square and for adjusted R Square. Which is showing nodifference and is considered very good.

As R-Value, R- square and Adjusted R –Square are giving satisfactory values, so the summary table is satisfactory to proceed with the next step.

**Table- 5** Anova

ANOVA <sup>a</sup>						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	148.826	1	148.826	1355.115	.000 <sup>b</sup>
	Residual	20.647	188	.110		
	Total	169.474	189			
a. Predictors: (Constant), IV : Self- Efficacy						
b. Dependent Variable: DV : Work Readiness						

Table 5 shows the ANOVA model. It signifies whether the model is significant enough to determine the outcome.

Elements of Table-5 relevant for interpreting the results are:

P-value/ Sig value: IN general, 5% significance level is considered for study . So P – value is expected to have value less than 0.05. In our study P Value is 0.000 . Therefore result is significant. In other words, Self-Efficacy has significant impact on Students' Work Readiness.

F-ratio: F- Ratio shows an improvement in the prediction of the variable . Generally it is considered to be value greater than 1 to yield efficient model. In Table-7, the value is 1355.115, which is strongly supporting the relationship between 2 variables...

The results estimates that p- value of ANOVA is below the tolerance significant level , which clearly rejects the null hypothesis and accepting Alternate Hypothesis,i.e. There is significant impact of Self- Efficacy on Student's Work Readiness.

**FINDINGS & CONCLUSION**

As per our study, it can be concluded that without Self- efficacy, Students cannot be claimed that they are work-Ready. For work ready they need to have self confidence in themselves, they should have very good decision making power and they have positive approach to themselves. Self Efficacy can come from various sources but , by identifying one's self efficacy , judging how much a student is work ready , can be calculated easily. In our

study, Self- View and Work Flexibility are comparatively more strongly correlated with the dimensions of Work Readiness. This can be because, students now-a- days are either very over confident about everything or are very less in confidence, Identifying the true potential and then understanding the job and adjusting according to the company norms is much more needed in this era. Students of PG Programme under study found to be either less confident or over confident with their skills. In this way if skills are utilized in a proper direction and if it can be given a proper guidance then the students can actually get benefitted out of it. Institutions are trying their hard to to increase the skill set of the student and build the student.

Again from our study it can be concluded that student who have good self efficacy then they have a positive assessment towards themselves and they can act independently in their tasks assigned. They are highly responsible, highly flexible towards task and they can take accountability of the task assigned . It is also studied from the above research that students having high self- efficacy have more belief about their own skill and their outspokenness increases the chances of getting employed.

This study concludes that students work readiness is highly dependent on his self- efficacy. If self efficacy is high then the student is believed to be more Work-Ready and student having low self- efficacy is not that much ready for Work.

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**INTERNET OF THINGS: OPPOSITIONS AND APPLICATIONS****Abhimanyu Ahluwalia**

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**ABSTRACT**

*As the Internet of Things (IoT) gradually evolves as the later phase in the evolution of the Internet, it becomes critical to understand the various potential applications of IoT and the research challenges associated with those applications. From Smart Cities to Healthcare, Smart Agriculture, Logistics and Retailing to Smart Living and Smart Environments, IoT is expected to invade virtually every aspect of daily life. Although the current IoT technologies enabling have improved a lot in recent years, there are still numerous issues that require attention. Since the concept of IoT emerges from heterogeneous technologies, there are inevitably many challenges to research. The fact that the IoT is so expansive, affecting virtually every area of our lives, makes it a significant research topic for studies in various related fields, such as information technology and computer science. IoT is paving the way for new dimensions in research. This document presents the recent development of IoT technologies and discusses future applications and research challenges.*

*Keywords: Internet of Things; IoT applications; IoT challenges; future of technologies; smart living; smart environment; smart agriculture.*

The Internet can be described as the communication network that connects people to information, while the Internet of Things (IoT) is a networked system of differently addressable physical objects with varying degrees of processing capacity, detection and operation that the ability to interoperate and communicate over the Internet as a common platform [1]. The main objective of Internet of things is to allow objects to connect to other objects, people, at any time or anywhere through any network, route or service. The Internet of Things (IoT) is gradually being viewed as the next phase in the evolution of the Internet. IoT will allow to connect ordinary devices to the Internet to achieve a myriad of different goals. Currently, it is estimated that are only 0.6% of the devices that can be part of the IoT, so far are connected [2]. However, by 2020, more than 50 billion devices are expected to have an internet connection.

As the Internet continues to evolve, it has become more than a simple computer network, but rather a network of different devices, while the IoT serves as a network of several "connected" devices, a network of networks [3], such as shown in Fig. 1. Today, devices such as smartphones, vehicles, industrial systems, cameras, toys, buildings, appliances, industrial systems and many others can share information over the Internet. Regardless of their size and functions, these devices can perform intelligent reorganization, tracking, positioning, control, real-time monitoring, and process control. In recent years, there has been a significant roll-out of Internet-compatible devices. Although its most significant commercial effect was observed in the field of consumer electronics; that is to say, especially the smartphone revolution and the interest in wearable devices (watches, headphones, etc.), connecting people has simply become a fragment of a larger movement towards the association of the digital world and physical world.

With this in mind, the Internet of Things (IoT) is expected to continue to expand its reach in terms of the devices and functions it can perform. This is shown by the ambiguity in the expression of "things", which makes it difficult to delineate the increasing limits of IoT [

]. As business success continues, the IoT consistently offers an almost limitless range of opportunities, not only in business, but also in research. Consequently, the second study addresses the different potential application areas of the IoT domains and the research challenges associated with these applications. In this context, the Internet of Things (IoT) is expected to expand its reach relative to. It continues to expand the number of devices and functions it can perform. This is shown by the ambiguity in the expression of "things", which makes it difficult to delineate the increasing limits of IoT []. As business success continues, the IoT consistently offers an almost limitless range of opportunities, not only in business, but also in research. Consequently, the second study addresses the various potential application areas of the IoT domains and the research challenges associated with these applications.

**POSSIBLE AREAS OF APPLICATION OF IOT**

The possible applications of the Internet of Things are not only numerous, but also very diverse, since they permeate practically all aspects of the daily lives of people, institutions and society. According to [5], IoT applications cover wide areas, including the manufacturing or industrial sectors, health, agriculture, smart cities, security and emergencies among many others.

### A. Smart cities

According to [6], the IoT plays a crucial role in improving the intelligence of cities and improving the general infrastructure. Some of the uses of IoT in creating smart cities include; smart traffic systems [7], smart buildings, traffic jams [7, 8] waste management [9], smart lighting, smart parking lots and city maps. This may include various functions such as: Monitoring of available parking within the city, monitoring of vibrations and the physical condition of bridges and buildings, installation of sound monitoring devices at sensitive points in the city and monitoring of the pedestrian and vehicle level. The IoT enabled with artificial intelligence (AI) can be used to monitor, control and reduce traffic congestion in smart cities [6]. In addition, the IoT enables the installation of adaptive intelligent and weather-dependent street lighting and the detection of debris and garbage cans by monitoring waste collection plans. Intelligent Highways can provide alerts and critical information such as: traffic jams.

Applying the IoT to make smart cities a reality would require with RFID and sensors. Some of the applications already developed in this area are the Aware home and Smart Santander functionalities. In the United States, some major cities like Boston, have plans to implement the Internet of Things in most of their systems, connected to the Internet. These applications will offer important advances in terms of saving money and energy.

### B. Medical care

Most health systems in many countries are inefficient, slow, and inevitably prone to errors. This can be easily changed as the healthcare industry relies on numerous activities and devices that can be automated and expanded through technology. Additional technology that can facilitate multiple operations, such as sharing reports with multiple people and locations, keeping records and dispensing medicines, would go a long way towards transforming the health sector in [10]. Many of the benefits that IoT applications offer in healthcare can best be classified as patient, staff, and object tracking, person identification and authentication and automatic data and sensor collection. Hospital workflow can be greatly improved once the flow of patients is tracked. In addition, authentication and identification reduce incidents that can be harmful to patients, maintain maintenance records and less mismatched baby incidents. In addition, automatic data capture and transfer is critically important in process automation, shortening forms processing timelines, automated process review and medical inventory management. Sensor devices enable patient-centric functions, especially when diagnosing diseases and providing real-time information on the health indicators of patients [6]. application domains in this sector; be able to monitor patient compliance with a prescription, telemedicine solutions and patient wellness alerts. The sensors can be used for outpatients and inpatients, dental Bluetooth devices and toothbrushes, which can provide post-use information and monitor the patient. Other elements of the IoT in this function are: RFID, Bluetooth and WiFi among others. These will greatly improve the techniques for measuring and monitoring critical functions such as blood pressure, temperature, heart rate, blood sugar, cholesterol levels, and many others.

### C. Smart agriculture and water management

The IoT has the ability to empower and improve the agricultural sector by studying soil moisture and, in the case of vineyards, monitoring the diameter of the trunk. IoT would make it possible to control and preserve the amount of vitamins in agricultural products and regulate the microclimate conditions to make the most of the production of fruits and vegetables and their quality. In addition, studying weather conditions allows forecasting information on ice, drought, changes in wind, rain or snow, controlling temperature and humidity to prevent fungi, and other microbial contaminants. When it comes to livestock, the IoT can help identify animals that graze in open spaces, detect harmful gases from animal excrement on farms and monitor growth conditions in offspring to improve health and chances of survival, etc. Furthermore, the application of IoT in agriculture can avoid a great deal of waste and spoilage through proper monitoring techniques and management of the entire agricultural area. It also results in better power and control of the water. In water management, the role of the IoT includes studying the suitability of water in the seas and rivers for both drinking and agriculture, detecting pressure fluctuations in pipes and the presence of liquids outside the tanks to monitor variations of water in dams, rivers and reservoirs. These IoT applications use wireless sensor networks. Examples of existing IoT applications in this area are: SiSviA, GBROOS and SEMAT.

### D. Retail and logistics

Implementing IoT in the supply chain or retail management has many advantages. Some include; Compliance with storage conditions throughout the supply chain, product monitoring to allow traceability, payment processing according to location or period of activity in public transport, amusement parks, gyms and others. In stores, IoT can be applied to various applications, such as in-store guidance based on a pre-selection list,

fast checkout processes such as automatic check-out using biometrics, detection of potential allergen products and the control of product rotation in shelves and warehouses to automate replenishment procedures [12]. Some of the most widely used IoT elements in this environment include; wireless sensor networks and radio frequency identification. The merchant currently uses SAP (products and system applications) while in logistics numerous examples include quality shipping conditions, item location, detection of warehouse incompatibility problems, fleet tracking, among others. In the industrial domain, IoT helps detect gas concentrations and leaks within and around industry, and tracks toxic gases and oxygen levels within the boundaries of chemical plants to ensure the safety of goods and workers and oil observation -, gas and water levels in tanks and storage tanks. The use of IoT also helps with maintenance and repair, as systems can be configured to predict device failures while automatically scheduling regular maintenance services before devices fail. This can be achieved by installing sensors in devices or machines to monitor their functionality and sending reports occasionally.

### **E. Smart Living**

In this domain, IoT can be applied in remote control devices whereby one can remotely switch appliances on and off hence preventing accidents as well as saving energy [1, 3]. Other smart home appliances include refrigerators fitted with LCD (Liquid Crystal Display) screens, enabling one to know what is available inside, what has over stayed and is almost expiring as well as what needs to be restocked. This information can also be linked to a smartphone application enabling one to access it when outside the house and therefore buy what is needed. Furthermore, washing machines can allow one to remotely monitor laundry. In addition, a wide range of kitchen devices can be interfaced through a smartphone, hence making it possible to adjust temperature, like in the case of an oven. Some ovens which have a self-cleaning feature can be easily monitored as well. In terms of safety in the home, IoT can be applied through alarm systems and cameras can be installed to monitor and detect window or door openings hence preventing intruders [3].

### **F. Intelligent Environment**

The environment plays a vital role in all aspects of life, from people to animals, birds and even plants, all are affected by an unhealthy environment in one way or another. There have been numerous efforts to create a healthy environment in terms of eliminating pollution and reducing waste of resources, but the existence of industries, as well as the transport of waste together with reckless and harmful human actions are elements which constantly damage the environment. Consequently, the environment requires intelligent and innovative ways to assist in the monitoring and management of waste, providing a significant amount of data that forces governments to implement systems that will protect the environment. The integration of smart environmental strategies with IoT technology should be created for the detection, monitoring and evaluation of objects in the environment that offer potential benefits for achieving sustainable living and a green world. IoT technology allows you to observe and manage air quality by collecting data from remote sensors in cities and by providing 2/7 geographic coverage to get better ways to manage traffic jams in major cities. Furthermore, IoT technology can be applied to measure levels of pollution in water and consequently illuminate decisions on water use. In waste management, which consists of different types of waste, such as chemicals and pollutants that are harmful to the environment and to people, animals and even plants, IoT can also be applied. This can be achieved with environmental protection by controlling industrial pollution through instantaneous monitoring and management systems combined with supervision and decision networks. This serves to reduce waste [13]. In weather forecasting, the IoT can be used to offer significant accuracy and high resolution to monitor time by exchanging information and exchanging data. Through IoT technology, weather systems can collect information such as atmospheric pressure, humidity, temperature, light, motion and other, information from moving vehicles, and transmit information wirelessly to weather stations. The information is obtained by installing sensors in vehicles and even buildings, after which it is stored and analyzed to aid in weather forecasts. Radiation is also a threat to the environment, human and animal health, as well as agricultural productivity. IoT sensor networks can monitor radiation through constant monitoring of its levels, particularly around nuclear power plants to detect leaks and diffuse deterrence

## **III. RESEARCH CHALLENGES**

For all of the potential IoT applications mentioned above, there must be adequate feasibility across the various domains to determine the success of some applications and their functionality. As with any other form of technology or innovation, the IoT has its challenges and implications that must be resolved in order for to be mass adoption. Although current IoT technologies have improved a lot in recent years, there are still numerous problems that require attention, thus paving the way for new dimensions of research. Since the concept of IoT arises from heterogeneous technologies, used in AI Capturing, collecting, trading, processing, deriving,

transmitting, reporting, managing and storing data, many research challenges inevitably arise. These research challenges, which require attention, consequently span different research areas [1].

### A. Privacy and Security

Owing to the fact that IoT has become a vital element as regards the future of the internet with its increased usage, it necessitates a need to adequately address security and trust functions. Researchers are aware of the weaknesses which presently exist in many IoT devices. Furthermore, the foundation of IoT is laid on the existing wireless sensor networks (WSN), IoT thus architecturally inherits the same privacy and security issues WSN possesses [3, 15]. Various attacks and weaknesses on IoT systems prove that there is indeed a need for wide ranging security designs which will protect data and systems from end to end. Many attacks generally exploit weaknesses in specific devices thereby gaining access into their systems and consequently making secure devices vulnerable [16, 17]. This security gap further motivates comprehensive security solutions that consist of research that is efficient in applied cryptography for data and system security, noncryptographic security techniques as well as frameworks that assist developers to come up with safe systems on devices that are heterogeneous. There is a need for more research to be conducted on cryptographic security services that have the capability to operate on resource constrained IoT devices. This would enable different skilled users to securely use and deploy IoT systems regardless of the inadequate user interfaces that are available with almost all IoT devices. In addition to the protection and security aspects of the IoT, additional areas like confidentiality in communication, trustworthiness, and authenticity of communication parties, and message integrity, and supplementary safety requirements should also be incorporated. These may include features like being able to prevent communication of various parties. As an example, in business transactions, smart objects must be prevented from facilitating competitors' access to confidential information in the devices and thus using this information maliciously.

### B. Data Processing, Analysis and Management

The data processing, analysis and management procedure is a huge challenge due to the heterogeneity of the IoT and the large volume of data collected, especially in times of big data [18]. Currently, most systems use centralized systems to download data and perform computationally intensive tasks on an international cloud platform. However, there is a constant concern that traditional cloud architectures are ineffective, transfer the huge amounts of data generated and consumed by IoT-enabled devices, and that can continue to support the associated computing load and meet it at the same time. time constraints [19]. Therefore, most systems rely on current solutions such as Mobile Cloud Computing and Fog Computing, both based on Edge processing, to alleviate this IoT challenge. Because these information-centric systems help in retrieving content and accessing services efficiently, they appear to be of great value not only for accessing but also for transferring and managing and transferring the content generated. However, this solution presents several challenges, such as: how to competently expand the ICN paradigm beyond the edge of the fixed network, how to include mobile and static IoT devices like and how to divide the functionality of the ICN into devices with limited resources [19]. Data analysis and its context not only play a crucial role in the success of IoT, it also poses great challenges. Once collected, the data must be used intelligently to achieve intelligent IoT functions. Consequently, the development of machine learning methods and artificial intelligence algorithms resulting from neural work, genetic algorithms, evolutionary algorithms and many other artificial intelligence systems is essential to achieve automated decision making.

### C. Monitoring and Sensing:

While technologies related to monitoring and sensing have made enormous progress, they are constantly evolving with a particular focus on energy efficiency and the appearance of form. Sensors and tags would normally have to be constantly active to obtain instant data, this aspect makes it essential for energy efficiency, especially in extending the useful life of the . At the same time, new advances in nanotechnology / biotechnology and in miniaturization of the have allowed the development of nano-scale sensors and actuators.

### D. Communication protocols M2M (Machine-to-Machine):

While there are already IoT-oriented communication protocols such as Restricted Application Protocol (CoAP) and Message Queue Telemetry Transport (MQTT), there is still no standard for an open IoT. Although all objects require connectivity, it is not necessary for every object to be Internet compatible, as they only need to have some capacity to put their data on a particular gateway. Additionally, there are many options in terms of suitable wireless technologies such as LoRa, IEEE 802.15., and Bluetooth, although it is unclear whether these available wireless technologies have the ability to continue to cover the broad range of IoT connectivity. in the future. communication protocols for devices are the driving force in updating IoT applications and constitute the framework of data flow between sensors and physical objects or the outside world. Although different

MAC protocols have been designed for various domains with frequency division multiple access, time division multiple access, and carrier detection multiple access (FDMA, TDMA and CSMA) for low efficiency of free traffic collisions, more circuits at nodes are needed respectively. The main objectives of transport layer include ensuring end-to-end reliability as well as performing end-to-end congestion control. In this regard, most protocols are unable to cooperate adequately from one end to the other. Reliability [20].

#### E. Blockchain of Things (BCoT):

Merger of Blockchain and Internet of Things Similar to IoT, blockchain technologies have also gained enormous popularity since their introduction in 2018. too, although blockchain has been implemented for first used as the technology behind the Bitcoin cryptocurrency, it is now used in multi-faceted non-monetary applications [21]. Miraz argues that both IoT and Blockchain can reinforce each other, by removing their respective inherent architectural limitations [22]. The technology behind IoT is WSN. Therefore, similar to WSN, IoT also suffers from security and privacy concerns. Rather, the top reasons for the trend of blockchain implementation in non-monetary applications are due to its built-in security, immutability, trust and transparency. These attributes are driven by the blockchain consensus approach and the use of Distributed Ledger Technologies (DLT) which require a large dependency on participating nodes. Therefore, the merger of these two Blockchain and Internet of Things (IoT) technologies conceives a new notion, namely the Blockchain of Things (BCoT) in which blockchain strengthens the IoT by providing additional layers of security while the IoT "things" can serve as participating nodes for blockchain ecosystems [22]. Thus, blockchain-enabled IoT ecosystems will provide better overall security [23] and benefit each other.

#### F. Interoperability:

Traditionally as regards the internet, interoperability has always been and continues to be a basic fundamental value because the initial prerequisite in Internet connectivity necessitates that “connected” systems have the ability to “speak a similar language” in terms of encodings and protocols. Currently, various industries use a variety of standards in supporting their applications. Due to the large quantities and types of data, as well as heterogeneous devices, using standard interfaces in such diverse entities is very important and even more significant for applications which support cross organizational, in addition to a wide range of system limitations. Therefore, the IoT systems are meant towards being designed to handle even higher degrees of interoperability [2].

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**NEGATIVE IMPACT OF CELEBRITY ENDORSEMENT: AN EMPIRICAL STUDY****<sup>1</sup>Dr. Satish Kumar and <sup>2</sup>Dr. Ashish K. Jha**<sup>1</sup>Professor and <sup>2</sup>Assistant Professor, Institute of Technology & Science, Ghaziabad**ABSTRACT**

*Celebrities have always been a source of revenue and image of the companies for a long time. Over the years not only Indian companies but also companies across the globe used to en-cash the celebrity power. The super flush image and concept of celebrity endorsement always seems to be shining but the nature and magnitude of impact of celebrity endorsements on the mind set of consumers as well as brands have always been a question that remains under the purview of gray spectacles, the paper establishes reasoning to the impact of celebrity endorsements on consumers and their purchase decision making.*

*This paper is an effort to understand the concept of celebrity endorsement and provides insights on what it is? How and whether the increasing numbers of endorsement throw a valid question to the consumers? Whether they represent a credible source of information and is there any logic behind the choice of these endorsers or is it just the result of the ongoing popularity of the celebrity? Hence, it becomes a key issue to investigate whether advertisements that endorse celebrities have any positive impact on people or do they really leave consumers in a misleading and confusing state of mind. The study uses a descriptive research approach and non-probability sampling design (convenience method) for the collection of data. Data were collected from 530 respondents covering the areas of NCR (National Capital Region) including Delhi, Ghaziabad, Noida and Greater Noida.*

*Keywords: NCR, Celebrity, Endorsement, Dark side*

**INTRODUCTION**

The evolution of celebrity endorsement in India can be traced way back during 1950s. In pioneer phase the market was demand driven and companies could find it difficult to meet it with limited supply. Also there used to be very limited number of channels of communication that too with limited developments and coverage. Government used to be the major deciding element in various aspects of the business. Hindustan Lever Ltd. (HLL) during fifties started the concept of celebrity endorsement by featuring Hindi film actress to endorse their beauty soap 'Lux' in India. 1980-90s can be seen as the growth phase of celebrity endorsement in India. Television emerged as one of the most effective and powerful medium of communication. Lux, Vimal, Thums-Up, Gwalior, and Dinesh are some of the other brands that used star-appeal in the early days of mass advertising. The ads include classics like Vicks ki goli, Inhaler, *Ha Bhai Ha* Vick action 500, VIP undies, Raymonds, Bajaj Bulb and a few more. There was a proliferation of advertisements, featuring stars like Tabassum (Prestige Pressure-cooker), Riya Sen - Dabur Vatika Shampoo, Jalal Agha (Pan Parag Pan-masaala), Kapil Dev (Palmolive Shaving Cream) and Sunil Gavaskar (Dinesh Suitings). Now competition and global realities have set the new rules of the game. Companies are continuously building up their brands on the shoulders of celebrities. (Tandon & et.al.,2015)

In this age of celebrity obsession, every public activity of the celebrity is news. What they say, talk, wear, eat, drink and how they behave is always great copy. Signing up is news, advertisements is news, ground activity is news, breaking up is news. Like the mind, celebrity endorsements are a "powerful tool" — the important factor is how it's utilised. The road to celebrity endorsement is not without pitfalls. Consistency of the performance of the celebrity is in question here — remember the hurried removal of the Thums Up campaign and how certain cricket stars vanished from hoardings after the match-fixing scandals?

Another issue is celebrity exposure and fatigue. The same personality endorsing a range of suit material, a bank, a soft drink, a polio-pulse programme, a paint company and an ayurvedic health potion, leads to sheer confusion in consumers' minds. In a country that has always been enamoured by personalities and clans, it may be a good strategy to use brand personalities to build rapid recognition, but it's not always a sustainable model.

(Debate: Do celebrity endorsements work? Strategist Team/ New Delhi. June 15, 2014. Ravi Krishnan, Managing Director IMG/TWI, South Asia, and Senior International V P, IMG & Vijay Chandorikar, Automotive Consultant, Only Solutnz (former Commercial Director, Fiat India))

**Celebrity Defined**

Celebrities are people who enjoy public recognition by a large share of a certain group of people. Whereas attributes like attractiveness, extraordinary lifestyle or special skills are just examples and specific common

characteristics cannot be observed, it can be said that within a corresponding social group, celebrities generally differ from the social norm and enjoy a high degree of public awareness.

- A celebrity is highly visible-well known.
- A celebrity is usually recognized for some form of talent, beauty, or material quality.
- A celebrity is usually recognized for a performance.
- A celebrity's image or recognition in the media may change

Globalization and power that modern media hold over the consumers societies have contributed to the popularity of various celebrities. Celebrities act as spokes-people in advertising to promote products and services, which is referred to celebrity endorsement. (Neha Taleja)

#### **Negative impacts/ dark side of endorsements in advertising:**

Following are some of the negative aspects of endorsement advertising:

##### **Overshadowing**

A common risk for the advertisers is that consumers may focus their attention on the celebrity and fail to notice the brand being promoted. The celebrity overshadowing suggests that the celebrity endorser is most likely to build a link with the predominate stimulus, which might not be the featured brand, in the ad execution. It is therefore important that the execution is single-minded in communicating the brand-celebrity pairing.

##### **Overexposure of endorser**

Another risk that needs to be considered when using celebrities as endorser is overexposure. Some celebrities endorse many diverse products. If a celebrity's image is associated with many brands, impact and identity with each product may decrease since the relationship between the celebrity and a particular brand is not distinctive. An overexposed celebrity can make consumers aware of the real reasons, why celebrities endorse, which has less to do with the brand / product attributes, and more to do with generous compensations. The outcome of this can be that consumers are skeptical of endorsements because they know the celebrities are getting paid.

##### **Target Audiences' Receptivity**

Consumers who are particularly knowledgeable about a product or service or have strongly established attitudes may be less influenced by a celebrity than those with little knowledge or neutral attitudes. For example one study found that college-age students were more likely to have positive feelings toward a product endorsed by a celebrity than were older consumers.<sup>2</sup>

##### **Negative publicity**

A celebrity's behavior can be a big risk to a company. Several entertainers and athletes have been involved in activities that could embarrass the companies whose products they endorsed.<sup>2</sup> Negative information about celebrity endorsers can have a negative impact on the consumers' perception of the celebrity as well as the endorsed product. If a celebrity who is strongly associated with a brand gets negative publicity then the occurrence of the negative information about the celebrity will also activate in memory, to some degree, the endorsed brand. The association between brand and celebrity generates the possibility that ones evaluation of the celebrity may be transferred to the brand. Therefore, it is always a risk that negative publicity about a celebrity can tarnish the endorsed brand.

To protect themselves against these kinds of problems companies often research a celebrity's personal life and background. Often companies put a moral clause in the endorsement contracts that allows the company to break the contract if controversy arises. However, the marketers should remember that adding moral clauses to their endorsement contracts only gets them out of trouble; it does not prevent them.

##### **Financial risk**

Johnson (2018) discussed financial risks as a risk associated with celebrity endorsements. Celebrity endorsements have become a part of many advertisers' promotional strategy and companies pay millions of dollars each year for the endorsements of their products by athletes. It is important for advertisers to consider if the celebrity endorser is worth the investment. For example, the costs associated with using celebrities as endorsers are rising. Some celebrities endorse several products, sometimes even switching their endorsements to rival brands; the negative publicity generated by some celebrities has added the potential risk of negative impact which can result in decreased sales.

**CONFUSION**

Some advertisers use many different celebrities to endorse a particular product or brand. Using a mix of celebrity endorsers for one product can be valuable for appealing to various audiences which the product is aimed at. It has been indicated that a product / brand might have wide range of consumers and that multiple endorsements can help to cover the whole target audience. However, it is also cautioned that using several different celebrities can cause confusion amongst consumers about the brand's identity. Advertisers should make sure that every celebrity possesses compatible meanings that are sought for the brand.

**EXTINCTION**

The positive association that has occurred between the celebrity endorser and the brand may weaken over time, particularly if the brand receives a lot of attention without association with the celebrity. Although it is not expected that every time a consumer encounters a brand that the celebrity endorser image has to be present, marketers should integrate the celebrity into the brand's marketing mix. When it comes to athlete endorser it is not unusual that the athlete is more successful in the beginning of the contractual term, but then become less successful or lose his or her fame. The athlete could for example get injured or just not perform as well as he or she used to. This could result in the fact that the athlete might not be the endorser, the company is looking for.

Celebrities can be very effective in the endorsements of products; however, they can also be dangerous. The advantages of using a celebrity are that they can increase attention to and memorability of an advertisement and product, enhance credibility of the message, and imbue a product with positive characteristics. The disadvantage or danger is that if a celebrity suffers a negative image at some later stage, it can be passed on to the product being endorsed.

**LITERATURE REVIEW**

Gomber and Gogia (2017) in their research on "The impact of celebrity endorsement contracts on firm profitability" found that the economic worth of celebrity endorsers justifies the large costs they incur. The findings of the research suggest that the impact of these endorsements on stock returns is positive, which suggests that celebrity endorsement contracts are generally viewed as a fruitful investment. They further stated that endorsers make advertisements more believable, enhance the recognition of a brand name, create a positive attitude towards the brand name and create a unique and distinct personality for the brand

The findings of research done by Bandyopadhyay, Kindra and Sharp (2011) proves that children feel validated in their choice of product when a celebrity endorses it and the impact on children becomes even more if the endorsement is done by their favorite characters.

According to Kambitsis *et al.* (2012), today the use of celebrity in advertising strategies is becoming more and more sophisticated and complicated. As a large numbers of short-lived celebrities are emerging on a daily basis. Hence, it becomes very important to investigate whether such endorsement advertisements have any socio-ethical implications.

The present study has been build upon the issues emerged from the above studies carried out at different point of time by the above mentioned researchers. In subsequent sections of this study an empirical investigation has been done to meet the purpose.

Arturan, Ulun (2017) in his article published in Management Research Review, on "Celebrity advertising in the case of negative associations: discourse analysis of weblogs" found that when a celebrity becomes involved in an undesirable event, the consumers' perceptions of the celebrity may or may not change. This study argues that this situation is influenced by "the level of negativity", "the level of blameworthiness", "admiration" and the "message content". In addition, it was found that the admiration affects the perceived image of the celebrity and it is also affected by "the level of negativity" and "the level of blameworthiness". Furthermore, the message given is directly associated with the "negativity", "blameworthiness", "perception of the celebrity", and "the perception of the brand".

Nelson, Okorie, Tunil, Oyedepo and Gloria, Akhidenor (April, 2012) in their paper on "The Dysfunctional and Functional Effect of Celebrity Endorsement on Brand Patronage" said that the use of celebrity endorsement has become a prime brand communication strategy in organizational management that aids the sale and promotion of brands across the globe. It is a popular approach in marketing communication for all brand management. This paper examines celebrity endorsement as a brand communication tool that serves as an aid to expedite brand image and purchase. However, it can also become horrific unless accompanied by a powerful idea, effective and impeccable positioning.

Abhishek and Sahay Arvind (July 2018) in their working paper on “Role of culture in celebrity endorsement: Brand endorsement by celebrities in Indian context” used culture to develop propositions on how customer attitude towards celebrity endorsements is a function of cultural parameters in emerging countries like India.

Sabunwala Zohra (Nov., 2013) in the research paper “Impact of Celebrity Brand Endorsement on Brand Image and Product Purchases- A study for Pune region of India” concluded that Celebrity Endorsements significantly impacts Brand Differentiation. Most of the beverage user associate themselves with the brand and establishes congruence between their personality and that of brand’s. They establish a linkage between their lifestyle and that of brand which prompts them to go for a particular brand irrespective of price, availability or any other factor. Various industry researches have also endorsed the findings that celebrities do create brand differentiation. Another major conclusion that was drawn from the study is that Celebrity Endorsement significantly impact Brand Image.

Kasana Jyoti and Chaudhary Naveen ((2014), in their research paper on Impact of Celebrity Endorsement on Consumer Buying Behaviour: A Descriptive Study concluded that despite the potential benefits derived from celebrity endorsements, they increase a marketer’s risk manifolds and should be treated with full attention and aptitude. They suggested that brand should be cautious when employing celebrities to ensure promise believability and delivery of the intended effect. They also pointed out the growing importance of mythical characters as celebrities.

Randhawa Anmol and Khan Javed Ahmed (2014) in their research paper on “Impact of Celebrity Endorsement on Consumer Buying Behaviour” found that Celebrity endorsement enhances product information and creates awareness among consumers. It helps them to recall the brands of the endorsed products. Celebrity Endorsed Ads persuade customers to purchase products rather than non celebrity endorsed Ads, Comic character Ads, Executive Ads and Fiction Ads. He also concluded that a good number of respondents believe that celebrities are not using those products which they themselves endorse and most of the respondents believe that frequent changes in celebrity for advertising the product reduce the purchasing decision of customers.

Kaur Supreet (May, 2014) in her research paper Impact of Celebrity Endorsement on Consumer’s Buying Behaviour concluded that marketers use celebrity endorsers to influence the purchase decision of consumers in order to increase their sales and extend their market shares. It has become a trend and perceived as a winning formula for product marketing and brand building. It is easy to choose a celebrity but it is tough to establish a strong association between the product and the endorser.

### **OBJECTIVES OF THE STUDY**

1. To study if celebrity endorsements have negative impacts on consumer decision making.
2. To study the dark (negative) side of celebrity endorsement across gender (male and female).
3. To study whether or not brands benefit from celebrity endorsement.

### **RESEARCH METHODOLOGY**

The present research is descriptive in nature as it aims at describing if celebrity endorsements have any positive impact on the consumers and their decision making process.

#### **Hypotheses**

In order to ensure effective analysis and understanding of data collected for the purpose of this study, the following null hypotheses have been formulated:

**Ho 1.** Celebrity endorsements have no specific negative impacts on consumer buying decision making

**Ho 2.** There is no significant difference between male and female consumers with respect to dark side of endorsement advertising.

#### **Sampling Design:**

**Sampling Unit-** The sample unit of the study is entire national capital region (NCR), Ghaziabad, Noida and Greater Noida. Both rural and urban areas are being covered for the purpose.

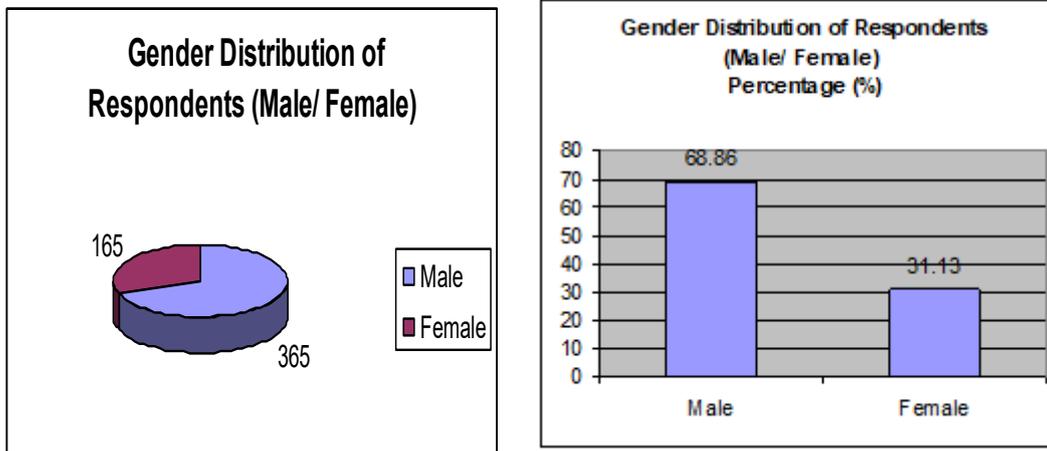
**Sample size** – Because of the time and financial constraints a sample has been drawn as a representative of the universe. Sample size is 530. The sample consist of both male and female (365 male and 165 female) from the rural as well as its urban counterpart of the selected areas of NCR, Ghaziabad, Noida and Greater Noida.

**Data Collection Instrument** – A well structured questionnaire consisting five point Likert’s scale ranging from “Strongly agree” to “Strongly disagree” has been used to measure the response to each statement (items).

**Tools of Data Analysis** - T-test has been used to study the association between various variables as well as to study the association between quantitative and qualitative variables. SPSS has been used for analysis purpose.

**Data Analysis and interpretation:**

**1. Gender Distribution of Respondents (Male/ Female)**



The above illustration represents the gender distribution status of respondents in terms of their belongingness to male or female groups. 68.83% respondents fall under male group whereas only 31.13% respondents are the representative of female counterpart. In this, male representatives are roughly more than double than that of female representatives.

**ANALYSIS**

In this section, the data obtained through questionnaire have been analyzed. The questionnaire consists of 19 statements pertaining to dark side of endorsement advertising. Following tables present analysis of data pertaining to these 19 statements. The table 1 presents mean scores of all statements across male and female respondents and overall mean score. The table 2 shows comparison of means with the help of t-test. For each of these dimensions, t-test has been used to assess whether there exists significant difference in the mean value of opinions between male and female respondents.

**Table – I: Gender wise as well as overall mean score**

S.No	Statements	Mean Score Male	Mean Score Female	Overall Mean Score
1	Celebrities are endorsing products; which they to not use themselves	3.84	3.62	3.73
2	Celebrity claims are confusing and misleading	3.66	3.23	3.445
3	Endorsers are advertising harmful product also e.g Cigarette. Alcohol	4.07	3.93	4
4	Consumers are being seduced through star attraction of celebrities	3.75	3.6	3.675
5	Sex is dominating factor in today’s culture and therefore cannot be eliminated from endorsement	3.89	3.54	3.715
6	It is ultimately the consumers who pay for hefty amount charged by endorsers.	4.37	4.26	4.315
7	When marketers do not have anything positive to say about their brands, they start using endorsers in	3.58	3.55	3.565
8	Money spent on celebrity endorsers should be used for improving the products	3.93	4.08	4.005
9	Consumers tend to ignore the facts about the product when, it is endorsed by an endorser.	3.59	3.48	3.535
10	Adolescents and younger adults are more susceptible to celebrity endorser influence.	4.04	4.18	4.11

11	It is ethical to use celebrities to influence consumers into buying a particular brand.	3.41	3.37	3.39
12	It is ethical for celebrities to endorse political parties	2.64	2.72	2.68
13	Celebrity endorser should also be held responsible if the quality of the product is not as promised	3.96	3.58	3.77
14	The body image of endorsers is artificially created which is almost impossible to achieve in real life and	3.84	3.85	3.845
15	Celebrity endorsers promote lust for materialistic pleasures.	4.05	3.86	3.955
16	It is ethical for the endorsers to endorse brand and make money, even when he or she dose not use that	3.55	3.45	3.5
17	Celebrity endorses products for which they do not possess requisite expertise.	3.65	3.71	3.68
18	The fact that the endorser is being paid must be disclosed in the ad.	3.51	3.22	3.365
19	Celebrities should practice in their personal life what they preach while endorsing social issues.	4.01	3.99	4

**Table-II: Independent Samples Test**

		Independent Samples Test					
		Levene's Test for Equality of Variances		t-test for Equality of Means			
S No.	Statements	F	Sig.	t	df	Sub- tailed	n Difference
1	Celebrities are endorsing products, which they to not use themselves.	5.240	0.022	2.565	528	0.011	0.217
				2.683	353.699	0.008	0.217
2	Celebrity claims are confusing and misleading.	0.104	0.747	4.318	528	0.000	0.427
				4.225	300.775	0.000	0.427
3	Endorsers are advertising harmful products also e.g. Cigarette. Alcohol	4.396	0.037	1.697	528	0.090	0.138
				1.808	371.015	0.071	0.138
4	Consumers are being seduced through star attraction of celebrities	2.727	0.099	1.481	528	0.139	0.145
				1.580	371.833	0.115	0.145
5	Sex is dominating factor in today's culture and therefore cannot be eliminated from endorsement advertisements.	6.308	0.012	3.435	528	0.001	0.351
				3.331	294.720	0.001	0.351
6	It is ultimately the consumers who pay for hefty amount charged by endorsers.	1.956	0.162	1.402	528	0.162	0.112
				1.432	333.804	0.153	0.112
7	When marketers do not have anything positive to say about their brands, they start using endorsers in advertisement.	7.318	0.007	0.333	528	0.739	0.035
				0.354	367.128	0.724	0.035
8	Money spent on celebrity endorsers should be used for improving the products.	0.340	0.560	-1.491	528	0.137	-0.147
				-1.563	355.720	0.119	-0.147
9	Consumers tend to ignore the facts about the product when, it is endorsed by an endorser.	2.299	0.130	1.254	528	0.211	0.110
				1.233	304.668	0.218	0.110
10	Adolescents and younger adults are more susceptible to celebrity endorser influence	0.315	0.575	-1.779	528	0.076	-0.146
				-1.877	361.499	0.061	-0.146

11	It is ethical to use celebrities to influence consumers into buying a particular brand.	0.585	0.445	0.433	528	0.665	0.044
				0.421	296.457	0.674	0.044
12	It is ethical for celebrities to endorse political parties.	4.377	0.037	-0.717	528	0.474	-0.083
				-0.684	284.293	0.494	-0.083
13	Celebrity endorser should also be held responsible if the quality of the product is not 'as promised'.	8.745	0.003	3.831	528	0.000	0.380
				3.708	293.371	0.000	0.380
14	The body image of endorsers is artificially created which is almost impossible to achieve in real life and this may create complex in the common man.	0.070	0.791	-0.077	528	0.939	-0.007
				-0.078	321.896	0.938	-0.007
15	Celebrity endorsers promote lust for materialistic pleasures.	2.149	0.143	2.266	528	0.024	0.186
				2.208	297.688	0.028	0.186
16	It is ethical for the endorsers to endorse brand and make money, even when he or she dose not use that brand.	3.734	0.054	0.805	528	0.421	0.096
				0.834	345.028	0.405	0.096
17	Celebrity endorses products for which they do not possess requisite expertise.	1.037	0.309	-0.748	528	0.455	-0.063
				-0.736	304.791	0.462	-0.063
18	The fact that the endorser is being paid must be disclosed in the ad.	0.335	0.563	2.482	528	0.013	0.289
				2.461	310.080	0.014	0.289
19	Celebrities should practice in their personal life what they preach while endorsing social issues.	0.214	0.644	0.198	528	0.843	0.020
				0.197	310.158	0.844	0.020

**INTERPRETATION**

In the present paper, efforts has been put to analyse the dark shades of endorsement advertising from customers’ perspective. The opinion of respondents with respect to 19 statements pertaining to dark shades of endorsement advertising have been cross analyzed with gender as major independent variable.

**Overall conclusions of cross tabulation:** The overall conclusion based on *t-test* has been presented in the following table:

S.No	Statements	Acceptance/Rejection of null hypothesis
1	Celebrities are endorsing products; which they do not use themselves	Rejected
2	Celebrity claims are confusing and misleading	Rejected
3	Endorsers are advertising harmful product also e.g Cigarette, Alcohol	Accepted
4	Consumers are being seduced through star attraction of celebrities	Accepted
5	Sex is dominating factor in today’s culture and therefore cannot be eliminated from endorsement	Rejected
6	It is ultimately the consumers who pay for hefty amount charged by endorsers.	Accepted
7	When marketers do not have anything positive to say about their brands, they start using endorsers in	Accepted
8	Money spent on celebrity endorsers should be used for improving the products	Accepted
9	Consumers tend to ignore the facts about the product when, it is endorsed by an endorser.	Accepted
10	Adolescents and younger adults are more susceptible to celebrity endorser influence.	Accepted

11	It is ethical to use celebrities to influence consumers into buying a particular brand.	Accepted
12	It is ethical for celebrities to endorse political parties	Accepted
13	Celebrity endorser should also be held responsible if the quality of the product is not as promised	Rejected
14	The body image of endorsers is artificially created which is almost impossible to achieve in real life and	Accepted
15	Celebrity endorsers promote lust for materialistic pleasures.	Rejected
16	It is ethical for the endorsers to endorse brand and make money, even when he or she dose not use that	Accepted
17	Celebrity endorses products for which they do not possess requisite expertise.	Accepted
18	The fact that the endorser is being paid must be disclosed in the ad.	Rejected
19	Celebrities should practice in their personal life what they preach while endorsing social issues.	Accepted

**Rejected: 06**

**Accepted: 13**

The analysis presented in the above table shows 13 approvals and 6 disapprovals of null hypotheses which reflects that there is no significant difference between male and female respondents with respect to negative impacts of endorsement advertising in decision making. It can be concluded that respondents do not exhibit significant variations when the data is analysed on the basis of gender. It can be suggested that gender does not constitute an important factor while determining the difference among respondents with respect to their opinion towards the negative impacts of endorsement advertising.

### RECOMMENDATIONS

In the light of the above analysis and findings, researcher seeks to make the following observations and recommendations:-

1. Surrogate advertising has become the by-pass route for the companies to advertise the products which are harmful for the society (Cigarettes, liquor, Beer etc.), and with the celebrity power companies do target the younger population easily to fill their deep pockets. Promoting harmful products in any form at any media by the celebrity should be discouraged.
2. Undue use of sex appeal in advertising leads to nudity and vulgarity. Promotion themes of the products exclusively used by male are woven around female celebrities. This distracts the mindset of younger generation from the core product to some thing else. Companies should use sex appeal in their promotions very carefully so as to remain focused.
3. No doubt celebrity endorsement leads to a better awareness, recall and results in better sales in general, but in this process and hefty payments to the celebrity, actual price of the product gets inflated significantly. And ultimately customers pay more for the core benefits they are seriously interested.
4. Companies should avoid to attract customers by creating superficial image of their products and services through undue use of glamour and superficiality in advertisement.
5. Younger generation, specially teenagers have greater influence of their role model celebrity. They follow what their so called role models exhibit in their reel life in real life. Companies and celebrity need to be very much sensitive in leaving a message which can turn the minds of youths around.
6. For last few years, celebrities; endorsing political parties have become a trend which brings very encouraging results in the form of their win in key elections for the parties by affecting the individual rationale thinking in democratic society like ours. Celebrities should be wise enough in choosing such offers and should leave public to use their own wisdom in casting their vote to make a better society and country.
7. The glamorized look of celebrity specially film stars; featured in advertisement leads to the arousal of unnecessary complex among youths leading to the stress among them to fulfill their dreams about becoming similar to their reel life hero/ heroine in real life.
8. Companies and celebrity both because of their mass reach and influencing ability have got the responsibility to keep social, ethical and morale values of the society up in the society they exist. So as a responsible unit and individual, both should be very much alert and sensitive.

**CONCLUSION**

In a nut shell, it can be concluded that approval of a brand by a star fosters a sense of trust for that brand and generates the feeling of belongingness among the target audience. The research concludes that there is a significant negative impact of dark side Celebrities endorsement on consumer decision making. However there is no such significant difference in the opinion of males and females in majority of the cases with respect to dark shades of celebrity endorsement. This holds even truer in case of the BRAND- CONSUMER - ENDORSER triad has a perfect fit. In all, the endorsement advertising has been accepted as a force by the respondents, which affects their purchase decisions, moulds their behaviour.

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**3DS (DATA ANALYTICS, DIGITALIZATION AND DISRUPTION) IN BUSINESS & SOCIETY)****Dr. Manoranjan Sharma**

Chief Economist, Infomerics Ratings

**ABSTRACT**

*The present era is an era of change and transformation, an era in which all elements are critically in ferment. This world is characterized by turbulence and rapidity and volatility of events. Considered in a proper historical and comparative perspective, data analytics, digitalization and disruption have altered the rules of the game and brought about a new normal in this VUCA (volatility, uncertainty, complexity and ambiguity) world.*

*The World Economic Forum (WEF) stressed that the fourth industrial revolution is striking because of velocity of change, scope of change and systems impact, e.g., telecom companies took 20 years to reach 20 billion messages a day, Whatsapp reached 34 billion messages a day in less than 7 years-changes in competitive landscape and customer segments.*

*The issues of disruptive innovations, regulatory compliances, and domain knowledge together with big-picture issues facing industries and organizations have become commonplace. These competitive realities have blurred industry boundaries, transformed standard practice and rendered conventional blueprint of development obsolete. This makes it necessary to leverage the power of the digital by extrapolating the unknown.*

*In this evolving socio-economic order, there have been game changing changes in data analytics, digitalization and disruption because of the confluence of innovation, big data, artificial intelligence (AI), machine learning (ML), deep learning (DL), robotics, analytics, internet and entrepreneurship.*

*Progressive digitalization is reflected in Direct Benefit Transfers (DBTs), the JAM Trinity (Jan Dhan, Aadhaar, Mobile- Rupay Cards) and Unified Payment Interface, Digital India initiative and literacy programmes.*

**Indian Context**

India is surging to a digital-first economy to meet the “*revolution of rising expectations*”. This inexorable process has significantly influenced employee empowerment, customer engagement, operational efficiency and business models. All four dimensions of technology- revenue, expense, experience and accuracy or compliance- impacting a company-have improved remarkably. Aadhar has become a unifying platform with performance transcending ‘reach’ and ‘legacy’.

Fintech in India, as indeed globally, will be increasingly important in banking, blockchains, alternate lending and advisory. Rapidly increasing fintech across channels and segments has been a game-changer with Paytm, Mobikwik, Freecharge, Bankbazar, etc. leading in payments, credit, investment, insurance, wealth management and financial inclusion. Zomato, swiggy are dominant food aggregators, and Ola and Uber are leading Cab players.

Gary Hamel stressed “*industry revolutionaries don't tinker at the margins; they blow up old business models and create new ones*”. In the ultimate analysis, there has to be a move from product innovation to lowering costs and finally to creating unique value.

**Banking Digitisation**

Digitization has transformed the entire financial sector because of reduced costs and unimaginably higher scale. Factors driving banking digitisation include digitally evolved consumers; smartphone penetration and low cost internet connectivity; cheaper products / services using M-banking and Wallet; government and RBI initiatives like Digital India, UPI, Bharat QR, Aadhaar, PoS and equipped market Players.

Electronic payments lead to convenience, discounts, tracking spends, lower risk and enhance gains. Further, macro-economically, it enhances efficiency and transparency by reducing transaction costs, identify borrowers by CIBIL, credit scores. Electronic economic transactions by track-able and taxable digital financing instruments, like debit cards and e-wallets drastically reduces tax evasion and avoidance, improves tax compliance and government revenue and checks counterfeit currency.

The adoption and adaptation of new technology and digital payments have transformed conventional banking and significantly enhanced banking outreach. This overarching process has been greatly aided by policy, frameworks and guidelines together with 1 billion-plus phones, 700 million internet connections, 650 million smartphones and all 5.5 lakh ration shops Aadhaar enabled.

Rapid digitization requires banks to re-imagine their business continuously. This requires an accent on API Banking; banking on the cloud; chat bot, virtual robots, artificial intelligence, social media and bring the bank to app strategy.

While infrastructure related issues like telco's poor network, connectivity, financial institutions and the availability of robust payment and settlement system have largely been resolved, there continue to be persisting challenges. Such challenges include on-boarding of customers and merchants into the digital payment landscape; cyber security threat; lack of consumer & data protection law framework for digital payment; co existence of various policies; uncertain return on investment; poor digital literacy; and age-old cash habits.

Real time data on turnover, customer profile, lifestyle, spend, customers customer's instantaneous data can transform Indian fintech's rapidly expanding space. This is doable with convergence of data, technology and money to transform lives of borrowers, investors and businesses. But cyber security emerges as a key concern, particularly with data moving data offline to the cloud.

Revamped digital ecosystem and the winds of change sweeping India provide an enabling environment to revolutionise India's socio-economic landscape, similar in its range and sweep perhaps only to the mobile or the internet revolution. This onward march would thus positively influence both growth and distributive equity.

### **Data Analytics**

Several new technologies simplify data-sharing across and between organizations without compromising privacy, e.g., by pooling clinical data on shared platforms in the early days of the COVID-19 pandemic, researchers, medical authorities, and drug makers were able to accelerate the development of treatments and vaccines. Moreover, these data-sharing protocols have helped drug makers, government agencies, hospitals, and pharmacies coordinate and execute expansive vaccination programs to prioritize efficiency and safety, and preserve intellectual property.

### **Criticality of Cloud**

Digitization has shifted from meeting the IT needs of an industry-agnostic organization to meeting the unique strategic and operational needs of each sector and even subsector. Hyperscalers and SaaS vendors are working with global system integrators and clients to provide modularized, vertical-specific business services and accelerators for easy adoption and unique differentiation, business processes becoming strategic commodities to be purchased, freeing organizations to focus on strategy and competitive differentiation.

### **Blockchain technology**

Crypto-currencies, non-fungible tokens (NFTs), blockchain and distributed ledger technologies (DLTs) have now acquired center-stage. Blockchain and DLT platforms are fundamentally changing the nature of doing business across organizations and helping companies reimagine how they make and manage identity, data, brand, provenance, professional certifications, copyrights, and other tangible and digital assets.

Emerging technical advancements and regulatory standards, especially in non-public networks and platforms, are helping drive enterprise adoption beyond financial services organizations. With enterprises using blockchain and DLT on a large scale, creative use cases are happening across industries, with established industry leaders expanding their portfolios and creating new value streams, while start-ups are exploring innovative business models.

### **Cyber AI**

Security teams may soon be overwhelmed by the sheer volume. Cyber AI can be a force multiplier that enables organizations not only to respond faster than their attackers but also to anticipate these moves and act in advance to reduce risks not just to individual companies and their customers but also to financial stability.

### **CONCLUSION**

In this explosion of information and data, I sometimes wonder-as T.S. Eliot did about a century ago, "*Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?*" This progression from information to knowledge and then from knowledge to wisdom is sorely missing today. Hence, there is a manifest need to balance culture, process and people for India to play a leading role, not only at home, but also consolidate its position in the comity of nations. This is all the more important today because Financial Service is one of the top 5 industries likely to be digitally disrupted most in this decade (*Source: Digital Vortex How Digital Disruption Is Redefining Industries by Global Centre for Business Transformation-June 2015*). Major industries likely to be digitally disrupted are 1. Technology Products & Services. 2. Media & Entertainment. 3.

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Retail. 4. Financial Services. 5. Telecommunications. 6. Education. 7. Hospitality & Travel. 8. CPG & Manufacturing. 9. Healthcare. 10. Utilities. 11. Oil & Gas. 12. Pharmaceuticals.

While change is constant and ubiquitous, the pace of change and structural transformation has increased manifold over the years. Staying ahead of the curve in terms of systems, products and processes requires companies to be ‘agile sprinting’- agile in sales and products, sprinting in technology, agile on architecture. We have today reached a tipping point necessitating a focus on providing services, engaging with customers and creating a different customer experience. This is, however, still work in process and requires coordinated and concerted measures to meet the challenges of today and the expectations of tomorrow.

Of late, there has been an accent on hyper-automation, which stems from the philosophy ‘today’s disruptive is tomorrow’s stable’. Post crisis, digital maturity and hyper-automation, which coalesce several components of process automation, integrating tools and technologies to amplify the ability to automate work, will determine the strategy of banking players and emerge as the key differentiator.

**PROBABILISTIC STUDY OF ELECTRIC VEHICLES USING SPSS**

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**ABSTRACT**

*There is a huge consumption of natural resources in and across the country. The foremost consumption is of oil, which is primarily used for transportation in every part of the world. Increasing population and increase in living standard of the middle class people has led to the increase in demand of vehicles and in return oil.*

*This increasing demand lead to the innovation of a new technology vehicle, which emerges as an opportunity for economic development benefits. After oil, there is an alternate source of energy- electricity –which seems to be a beneficial investment. Not only in terms of energy (oil)conservation, use of electric vehicles proves/ will prove to be a beneficial step in terms of pollution control and interdependency of one country on oil imports. This paper discusses types of electric vehicles, their differences and their working in brief. Later the paper demonstrates and analyses reliability of Electric vehicles. With the invent of Electric Vehicle, a milestone has been set. Different data has been taken into account in order to identify the sales of the Electric Vehicle and calculate its safety and reliability. This calculation has been done with the help of SPSS.*

*Keywords: BEVs, Electric Vehicle (EV), Energy Conservation, EREVs, HEVs, s, PHEVs*

**INTRODUCTION**

Electric vehicles can be classified on the basis of the degree of electricity they are using as their energy source.

Based on the above said classification, EVs are of three types, namely Battery Electric Vehicles (BEVs), Plug-in Hybrid Electric Vehicles (PHEVs) and Hybrid Electric Vehicles (HEVs). The basic difference between the three are discussed as under:

Difference between various types of Electric Vehicles (Source:(Un-Noor et al. 2017)

<b>Ev Type</b>	<b>Driving Component</b>	<b>Energy Source And Infrastructure</b>	<b>Key Features</b>	<b>Examples</b>
BEV	Electric motor	Battery and ultracapacitor	<ul style="list-style-type: none"> <li>• Zero emissions</li> <li>• Short range</li> <li>• Crude oil independent</li> <li>• Commercially available</li> </ul>	<ul style="list-style-type: none"> <li>• Tesla Model 3</li> <li>• BMW i3</li> <li>• Toyota Rav4</li> </ul>
HEV	Electric motor and ICE	Battery, ultracapacitor, and ICE	<ul style="list-style-type: none"> <li>• Very low emissions</li> <li>• Long driving range</li> <li>• Oil-dependent</li> <li>• Commercially available</li> </ul>	<ul style="list-style-type: none"> <li>• Toyota Prius Hybrid</li> <li>• Honda Civic Hybrid</li> <li>• Toyota Camry Hybrid</li> </ul>
PHEV	Electric motor	Plug ins	<ul style="list-style-type: none"> <li>• Ultra-low emission</li> <li>• High energy efficiency</li> <li>• Currently at a high cost</li> <li>• Under development</li> </ul>	<ul style="list-style-type: none"> <li>• Ford Fusion Energi</li> <li>• BMW i8</li> <li>• Toyota Prius</li> </ul>

**LITERATURE REVIEW**

K.W.E Cheng (2009), mentions the major developments in the field of Electric vehicles and its major components. The paper also gives brief description about different charging technologies involved in different Electric Vehicles. Zhao Xian, Wang Siqi and Wang Xiaoyue (2018), explains intheir paper that in order to get a High performance Electric vehicle, the reliability of the electric vehicle must be ensured.The paper precisely describes the reliability Of the charging system of Electric vehicles.

**ADVANTAGES**

- EVs are much cheaper to manage than conventional vehicles.

- EVs Can Reduce Reliance on Foreign Oil
- EVs Infrastructure Improves Quality of Life
- EVs can decrease Utility Prices.

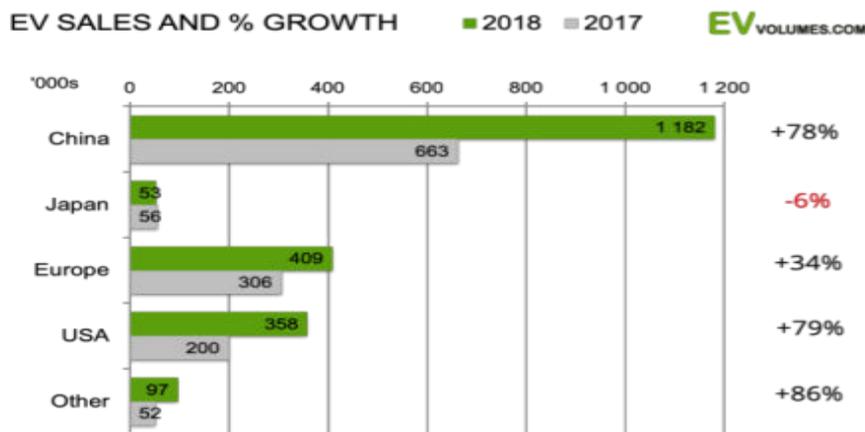
**DISADVANTAGES**

- EV’s have engines with very limited mileage range.
- EV’s have less power with top speed not more than 70mph (therefore, not good for highway driving).
- EVs cannot be considered as 100% green vehicles, there is toxicity of batteries also.
- EVs are more costlier than the same rage gasoline vehicles.
- Very few electric charging stations are available.

**SURVEY RESEARCH**

The graph below shows the sales and % growth of EVs in the year 2017-2018. Considering the given data, we will calculate how successful the EVs proved to be depending in its increase/decrease in sales from 2017 to 2018 and thus its reliability.

**Graph showing EV sales and % growth 2010-2018 (Source:EVVolumes)**

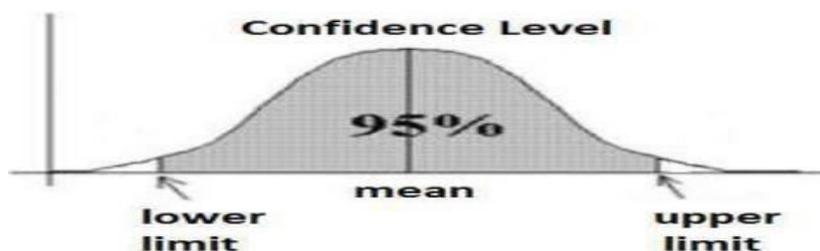


Countries/ Years	China	Japan	Europe	Usa	Other
2017	663	56	306	200	52
2018	1182	53	409	358	97
Difference	+78	-6	+34	+79	+86

Summary	Mean	StandardDeviation	Sample Size
2017	$\bar{x}_{2017} = 255.4$	$SD_{2017} = 251.44$	5
2018	$\bar{x}_{2018} = 419.8$	$SD_{2018} = 453.76$	5
Difference	$\bar{x}_{diff} = 54.2$	$SD_{diff} = 39.44$	5

Here, we can see there is certain increase/decrease in the sales of EVM during the years 2017- 2018.

Now we will find Confidence Interval using Standard Deviation. Usually 95% of CI is considered as CI above 95% i.e, 98,99 or 100% would be too high to get and Ci below 95% are not considered as good results. As the graph shows:



Step 1: Calculate degrees of freedom as  $Df = \text{sample size} - 1$

Step 2: Calculate  $\alpha = 1 - 0.95 = 0.05$

Divide  $(\alpha) / 2 = 0.05/2 = 0.025$

Step 3: Look up the t-distribution table, and find out as 2.776

Step 4: Calculate Standard Error i.e.,

$$SE = SD/\sqrt{\text{Sample Size}}$$

Step 5: Multiply t value \* SE

For (2017), For (2018), For (diff),

$$2.776 * 112.44 = 312.13 \quad 2.776 * 202.92 = 563.30 \quad 2.776 * 17.63 = 48.94$$

$$SE_{(2017)} = 251.44/\sqrt{5} = 112.44 \quad SE_{(2018)} = 453.76/\sqrt{5} = 202.92 \quad SE_{(diff)} = 39.44/\sqrt{5} = 17.63$$

Step 6: Lower Range=Sample mean – Step 5

$$\text{For (2017)}, = 255.4 - 312.13 = -56.73$$

$$\text{For (2018)}, = 419.8 - 563.30 = -143.5$$

$$\text{For (diff)}, = 54.2 - 48.94 = 5.26$$

$$\text{Step 7: Upper Range=Sample mean + Step 5}$$

$$\text{For (2017)}, = 255.4 + 312.13 = 567.53 \quad \text{For (2018)}, = 419.8 + 563.30 = 983.1 \quad \text{For (diff)}, = 54.2 + 48.94 = 103.14$$

Now, Calculating Probability as

$$P = 1 - P(\text{at least 1 car sold} / \text{Total No. of Car sold in a particular year})$$

(Since Probability is something to be related with at least once and has to be equal to 1) Therefore,  $P(2017) = 1 - (1/1277)$

$$= 0.9992$$

=99% Similarly,

$$P(2018) = 0.9995 = 99\% \text{ And,}$$

$$P(\text{diff}) = 0.9963 = 99\%$$

Now,

Since Probability is  $\approx 99\%$ , therefore reliability reaches to 1.

### CONCLUSION

From the above calculations, we can conclude that there is a huge potential of Electric vehicles in future for transport communication. This indicates that since the probability of buying an EV is more as its reliability reaches to 1, therefore there would be increase in EV's sale in the upcoming years, In order to make it a success, The Government started Faster Adoption and Manufacturing of Hybrid and Electric vehicles (FAME) scheme, which provides incentives for purchasing electric vehicles. Some state governments like the Delhi government are playing a major role to increase the use of EV's in India. The Delhi Government recently approved 1000

Electric buses to be used in Delhi's public transport system. In 2018, the Uttarakhand Government introduced a new scheme to help the manufacturing and promote the use of EV's as well.

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**IDENTIFYING THE IMPACT OF RELATIONSHIP MARKETING ON E-LOYALTY WITH SPECIAL REFERENCE TO ONLINE TRAVEL AGENCIES (OTAs) IN INDIA****<sup>1</sup>Dr. Sanjeev Tandon and <sup>2</sup>Dr. Rajnish Ratna**<sup>1</sup>Associate Professor (Marketing & Retail Mgt.), I.T.S School of Management, Ghaziabad, U.P<sup>2</sup>Associate Professor, Gedu College of Business Studies, Royal University of Bhutan**ABSTRACT**

*The e-commerce sector in India is on a consistent rise. Sophisticated information technology (IT measures) and accessibility of internet has forced businesses to move towards e-commerce. Tourism industry has evolved because of the outburst of information technology. The rapid growth of travel industry during pre-covid phase has become a normal business practice throughout the globe. The growth of tourism traffic has initiated a rapid shift in the traditional travel operator's business. Online travel agencies (OTAs) gradually swept the traditional travel business. The key indicators of performance in online travel booking market has induced relationship quality and customer loyalty. Relationship marketing (RM) is adding a new dimension to this modern e-commerce process. RM has evolved with time and has focussed on loyalty and customer lifetime value (CLV). CRM process has shifted the spotlight from transactional approach to a market-oriented business. The online travel aggregators gradually have become highly popular and are facilitating the booking of flight (air) tickets, train, bus and hotel reservations in India. These aggregators are extending various services to variety of segments of travel and tourism. During COVID-19 scenario, the dependency of online buying has also increased multi-folds. Companies are adopting and accepting omni-channel commerce (retail) to attract customers, but the online portals are more in picture to facilitate the buying process.*

*Keywords: Relationship marketing, CRM, Flight aggregators, Airline Reservation System, Flight Booking, OTAs.*

**1. INTRODUCTION**

India is one of the growing economies with world's second fastest growing GDP. The pool of high income people is largest. Indian travel and tourism market here is 42 billion US\$. Indian travel and hospitality sector have evolved with time. Information Technology has revolutionized tourism industry in due course of the growth phase. The up-gradation of internet facilities has led to the automation of tourism industry. The launch of online booking had given companies a new way to engage with customers and also had opened the door to new business models such as online travel aggregators (OTAs, Martin, C.J. (2016). This transformation has led to the creation of website / webpages of airline companies (& online travel aggregators) that highlight competitive rates and offers directly to the customers. Earlier the websites of airline companies have been used for information gathering, but in the contemporary business it's being used for direct purchase of travel services from suppliers without middleman (Stangl, Inversini & Schegg, 2016). In the digital distribution system online travel aggregators (OTA's) are being considered as a significant player. Online travel agencies which aggregate the facilities provided by many travel and tourism related companies (Reigo, 2019). These OTA's source travel inventories from global distribution system or procure directly from suppliers. OTA's further sell travel inventories to customers (Benckendoff, Sheldon & Fesenmaier, 2014). During this selling process OTA's provides services to satisfy customers with reference to comfort, accessibility and a great user experience (Buhalis, 1998). However, during 2000's most travel suppliers, aggregators and service providers focused on managing transaction costs rather than improving the customer experience, with serious implications (Leung, X.Y., Xue, L. and Wen, H. (2019).

The industry usually referred as smokeless industry has boosted the global economy significantly during pre-COVID phase. Various online travel aggregators (OTA's) have evolved subsequently to address the growing demand of air travel & related services. In India OTA's such as, Make My Trip, Yatra, Cleartrip, Ease My Trip, Goibibo, Expedia, Thomas Cook, Cox & Kings etc. have been fiercely trying to excel and grow in the travel and tourism in unimaginable ways. The union of smartphones and mobile applications has taken all the industries by storm. These technologies have accelerated growth of customer base of all industries, which consequently has boosted the businesses (Brochado, A., Troilo, M. and Aditya, S. (2017). Expedia reports that 40- 60 percent of its leisure-travel- brand traffic is through mobile devices and about half of bookings on some brands come from mobile phone (<https://www.mckinsey.com/industries/travel-logistics>). Plethora of hot deals and rebates has been extended by these OTA's. The incidences of deceiving customers are very commonly reported on social media by aggrieved customers (Stangl, Inversini & Schegg, 2016). OTA's are also being found dictating the choice of product and price available to customers (Buhalis & Law 2008).

According to experts, the major share (85%) of OTAs' business comes from flight and hotel booking ([www.financialexpress.com](http://www.financialexpress.com)). In the travel booking market in India, OTA's have been enjoying 40- 45 % market share. It has been growing at a CAGR of 10- 12% for the past eight years (pre-COVID phase: Allied Market Research, 2019). The market share by OTA's has been consistently on a rise and is estimated to be worth \$ 45- 50 Billion by 2021 (Allied Market Research, 2019). Customers look for air travel as a first choice among variety of the available modes of transportation because of its time saving parameters (Jones 2004). The online air reservation system has become more common because of the likelihood of reduced errors using manual system of reservation (Milde, 2008). An improved airline reservation system has succeeded manual systems which were requiring centralized reservation centres to represent inventory (seats on airplanes) (Desmond, 2000). The literature review of online air travel aggregators have investigated consumption values (Lei et al., 2019; Talwar et al., 2020), customer feedback and satisfaction level (Lee et al., 2017), and quality services extended by OTA's (Kustiwi, 2018). Variety of researches on the website technical failures and the negative feedbacks of the customers related to services rendered by OTA's. The refund process of air tickets booking amount to the customers by OTA's has been widely available as social media negative feedback (Rianthong et al., 2016). The extensive review of literature on consumers' expectations from online travel booking agencies has exhibited variety of dimensions of consumer online buying behaviour and their experiences (Nel and Boshoff, 2019).

### **E-complaints for Online Travel Aggregators during COVID-19 Lockdown Period:**

OTA's provide variety of offers for travel related products / services to customers (Kim et al., 2007). Globally they have exhaustive role in the working and growth of tourism sector (Buhalis & Law, 2008). During lockdown days of COVID pandemic, the refund requests and customer complaints to refunds. Airline companies and OTA's have been enormous. Customers were caught in a limbo because of blaming exercise between airlines and OTA's. The estimate from the travel industry and airline sources said that the travel industry in India experienced a cancellations of air tickets booking worth 180 crore across all private airlines (Allied Market Research, 2020). Indian government had instructed various airlines to refund tickets booked only during lockdown. Aggrieved customers had blamed both airlines and OTA's for not processing refunds. Passengers expected OTA's to refund tickets, because they had booked the tickets on their websites. The blaming exercise between OTA's and airlines had worsened the service scenario.

Based on online customer complaints, the service contracts and fairness criteria for customers are taken as standards to evaluate harm caused by integrity issues (Gong et al., 2015). The website quality plays a detrimental role in customer services for online air ticket booking. The website quality of OTAs affects customer trust and hedonic values. This in turn influences the satisfaction level of the customers leading to high loyalty factor (Albayrak et al, 2019). E- Complaints for the tour guides from a website emphasised on five significant categories: unethical behaviour, the legal requirements of the tour guides, social skills, occupational adequacy and the fulfilment of responsibilities towards the group (Avci and Dogan, 2018). Online customers' evaluation of overall satisfaction and their repurchase intentions are dependent on OTAs' website functionality, information quality and CRM parameters (Fu Tsang et al., 2010). After a decade of technological up gradation (online ticketing) and usage of internet to sell airlines tickets, hotels etc, the travel & tourism sector's ecosystem is fracturing. Companies are in the mode of abandoning the systems to provide customers with one-stop shops to book flights, accommodations, and other services (Cheng and Edwards, 2019). Customers are these days filing lawsuits and a situation of being caught in the cross fire is evident (<https://www.mckinsey.com/industries/travel-logistics>). This has given a chance to the new comer to venture into the sector with annual online sales of almost \$ 100 billion, around a third of all global e-commerce activity (<https://www.mckinsey.com/industries/travel-logistics>). The travel sector has now reached the next phase in its evolution. OTAs are rigorously changing the technology infrastructure by investing billions of dollars in the next wave of travel e-commerce. A big question here is that whether the travel sectors' players can build a sustainable path before new rivals' blaze the trail for them. To name a few the major IT wizards Google had paid \$700 million during Feb 2012 for ITA Software, whose algorithms form the backbone of 65 percent of flight sales by carriers. Apple has been filing a series of patents for a mobile- device application called iTravel (Carey Robert, Kang David, and Michael Zea, 2012).

### **2. OBJECTIVES AND CONTEXT OF RESEARCH:**

The OTAs competitive environment has gone similar to pure competition. The major challenges faced by OTAs are because of having low margins and high operating costs. Although in the present marketing scenario customers are more empowered, but the online travel (& tourism) booking services have gone highly sensitive. Customers are actually unclear about the business practices and tactics being used by online travel aggregators

(OTAs). The consumer preferences and loyalty factors have been investigated with reference to the online travel aggregators (agencies). The research encircles the following objectives:

- i. To study the related literature on Online Travel Aggregators & the services extended by various OTA's.
- ii. To investigate the marketing communication-mix strategies adopted by various OTA's and the impact of relationship marketing on e-loyalties of customers.
- iii. To verify the response of customers on various e-loyalty marketing strategies and their online behavior towards OTA's.

### 3. RESEARCH METHODOLOGY

**Problem Definition:** During this research the shift of customers in adopting the online travel (& tourism) services from traditional travel booking agents, has been the focal point of investigation. Various OTA's operating in India make use of advanced technology (online travel & tourism reservation system) which has variety of technical glitches. The customers seeking travel services are quite often confused in these website glitches, such as non-processing of refunds, rescheduling of flights, website glitch of money deduction of the booking with no tickets sent to customers, ticket booking issues, ticket price issues etc.

**Research Design:** From the customer perspective an online travel aggregator is more like an online ticket booking resource. For identifying travel at one spot these customers can visit any OTAs (websites) to undergo travel arrangements. Most of the time options like, flight tickets, hotel booking, car rentals, vacation packages, cruises, deals and destinations, maps, business travels etc. The current study is a descriptive research design (cross-sectional survey) of customers in Delhi-NCR using these online travel aggregators (OTAs) to book online air tickets. The methodology of this study adopts a scoping review of literatures related to online travel aggregators (OTAs) in India. The descriptions and reviews are carried out by analyzing the studies related to OTAs and the challenges experienced by customers to book air tickets. Data involves a review of secondary researches on OTAs in India, the technical glitches and the services rendered by these companies with reference to the failures. The primary data has been derived by the survey method using structured and non-disguised questionnaire.

### 4. DATA ANALYSIS AND INTERPRETATION

The section begins with sample description, reliability, descriptive statistics and regression analyses and its implications.

#### Sample description

Table 1. Sample description

S.N.	Demographics	Dimensions	Frequencies	Percentage
1	Gender	Male	154	68
		Female	73	32
	Age	18-30	111	49
		31-50	82	36
		Above 50	34	15
3	Marital Status	Single	118	52
		Married	109	48
4	Education Qualification	Undergraduate	18	8
		Graduate	86	38
		Post Graduate	123	54
5	Profession	Student	43	19
		Salaried	152	67
		Self-employed	32	14
		<b>Total</b>	227	

Sample profile result presented in table 4.1 revealed that 154 males and 73 females are there. Majority of respondents are in the age group of 18-30 followed by age group 31-50 then above 50.

#### Reliability Results

Table 2. Cronbach's Alpha Value

S.N.	Dimension/ Variable	No. of Items	Cronbach alpha
1.	Relationship Marketing	18	.750
2.	Customer Loyalty	6	.780

Cronbach (1951) recommended that the Cronbach’s alpha in range of 0.7 - 0.8 is considered as good scale with high internal consistency. Results of mentioned in table 2 revealed that scales for all variables used in present study are good scale of high internal consistency.

**Descriptive Analysis**

This is conducted to study the overall mean and standard deviation of sample with respect to variables taken under study.

**Table 3.** Descriptive Statistics of Variables

Descriptive Statistics			
Variables	N	Mean	Std. Deviation
Customer Loyalty	227	3.33	0.842
Relationship Marketing	227	3.53	0.697

The mean values for customer loyalty and relationship marketing are 3.33 and 3.53 (table 3).

**Regression Analysis**

In this regression analysis, relationship marketing is taken as independent variables and customer loyalty is taken as dependent variable.

**Table 4.** Model Summary of Relationship marketing and Customer loyalty

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.764 <sup>a</sup>	.584	.583	.50663

a. Predictors: (Constant), customer loyalty

As the above table shows, the value of R= 0.764 indicates a strong relationship between relationship marketing and customer loyalty. The value of R<sup>2</sup> = 0.582 explains that 58.2 % of the variation in customer loyalty is explained by loyalty, while 41.8 % remain unexplained. Thus, the predictive ability of the model is strong.

**Table 5.** ANOVA of Relationship marketing and Customer loyalty

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	160.450	1	160.450	625.119	.000 <sup>b</sup>
	Residual	114.219	445	.257		
	Total	274.669	446			

a. Dependent Variable: Customer loyalty

b. Predictors: (Constant), Relationship marketing

The ANOVA output table describes the overall variance accounted for in the model. The F value (617.797) and the small significance value level (0.000) indicate that the regression model predicts the dependent variable significantly well.

**Table 6.** Standardized Coefficients of relationship marketing and customer loyalty

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.309	.098		13.378	.000
	L	.712	.028	.764	25.002	.000

a. Dependent Variable: Customer loyalty

The result on the above table 6. shows that relationship marketing is found significantly related to customer loyalty.

The standardized coefficient beta value indicated shown above indicates the unit change in independent variable would change dependent variable by that amount. The value of ‘Beta’ result revealed that unit change in relationship marketing has 0.764 changes in customer loyalty.

**5. CONCLUSION AND RECOMMENDATIONS**

This study has met the challenge to advance knowledge about OTA. A number of studies had appealed the importance of OTA in the era of information technology. Relationship marketing works on financial, social and structural aspects. Financial factor describes variety of discounts offered, better deals, coupons and presents for first purchase then additional rebates, discounts and cumulative points programs on additional purchase; and discounts and rebates for being member of OTA service. Social factor covers greetings or gifts on special occasion, paying attention to individual needs and problems, due consideration on opinions, providing personalized information to regular customers, serving as virtual friend; and special treatment for being member

of OTA. This gives more input and direction in making social bond with service provider. Third is structural factor which talks about providing accurate travel information as well as full knowledge about the services, more convenient and user-friendly web interface and online booking system, secure and different payment options, confirmation and prompt after sale services, immediate responses and explanations for complain and problem; and integrating product or service with allied services.

Customer loyalty is defined as continued intention to purchase in future, strong relation with service provider, being first choice in the purchase decision, continuing the purchase with same service provider even if it is expensive as compared to others and if better product is available; and inclined to maintain long term relationship.

It is concluded that sustainable relationship marketing will increase customer loyalty in online travels. For survival in a competitive business environment, the relationship marketing is essential marketing strategy for success and getting right perception of customers towards product of the company. Company can introduce strategies and practices in order to serve in a structured and effective way for of providing better customer loyalty.

### **RECOMMENDATIONS**

The findings reinforce the notion that managers responsible for relationship marketing are crucial for organizations to be effective in getting customer loyalty and spreading of positivity which can be harnessed by organization in long run. Managers are recommended to offer variety of discounts, better deals, coupons and presents for first purchase then additional rebates, discounts and cumulative points programs on additional purchase for better financial bond with customers.

Managers are advised to serve themselves as virtual friend to the customer by sending greetings or gifts on special occasion, paying attention to individual needs and problems, due consideration on opinions, providing personalized information to regular customers, and special treatment for being member of OTA. This will improve social bond of customer towards service provider.

It is suggested that managers must provide accurate travel information as well as full knowledge about the services, more convenient and user-friendly web interface and online booking system, secure and different payment options, confirmation and prompt after sale services, immediate responses and explanations for complain and problem; and integrating product or service with allied services.

Industry should focus on customer relationship management because attributes of customer relationship management lead to better customer satisfaction and loyalty.

### **6. FUTURE SCOPE OF STUDY**

It is suggested to conduct a combined quantitative and qualitative study might provide further insight to the understanding of the relationships marketing with other possible variables. The present study could be duplicated with larger sample from different locations across industry, which would improve the generality of the findings. This opens up a future scope of testing causality with longitudinal data.

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**FACTORS AFFECTING THE EMPOWERMENT OF WOMEN EMPLOYEES IN NON INDUSTRIAL SECTOR AND ROLE OF HRD****Dr. D. K. Pandey**

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**ABSTRACT**

*Without the participation of women in national activities, the social, economic or political progress of a country will be stagnated. However, the ground realities are very different. The patriarchal mind-sets continue to exclude women from most decision-making positions and the gender disparities further manifest in socio-economic status. Non- industrial workers are divided by profession into several major groups: administrative and managerial personnel, engineering and technical workers, other groups of specialists with higher degrees (scientific workers, teachers in higher and secondary schools, and doctors), and trade and office employees. After very rigorous research it was found that women empowerment is a very critical issue which is an urgent need to look upon with reference to various strategies. After making a critical analysis with various research tools and techniques various hidden aspects emerged which could be concluded that HRD programme initiated by the government have made women self-reliant.*

**INTRODUCTION**

In the history of human development, woman has been as important as man. In fact, the status, employment and work performed by women in society is the indicator of a nation's overall progress. Without the participation of women in national activities, the social, economical or political progress of a country will be stagnated.

The status of women in a society is a significant reflection of the level of social justice in that society. Women's status is often described in terms of their level of income, employment, education, health and fertility as well as their roles within the family, the community and society.

For the accelerated socio-economic development of any community, the active participation of women is essential. In a social set up like India's, their participation has to be ensured through tangible measures, taken at various levels, which result in their Empowerment in the real sense. Empowerment of women is one of the concepts that have developed in connection with improving their status. Empowerment includes higher literacy levels, education, better healthcare, equal ownership of productive resources, increased participation in economic and commercial sectors, awareness of rights and responsibilities, improved standards of living, self-reliance, self-esteem and self-confidence.

Raising the status of women is not just a moral imperative but also a strategic one. Within the framework of a democratic policy, our laws, development policies, plans and programs have aimed at women's advancement in different spheres. In recent years, the Empowerment of women has been recognized as a central issue in determining their status.

India has given a constitutional mandate providing equality to men and women in all walks of life. However the ground realities are very different. The patriarchal mind-sets continue to exclude women from most decision-making positions and the gender disparities further manifest in socio-economic status. This is seen clearly through various discriminatory indicators. Often women's concerns and issues do not receive the attention they deserve due to their lack of access to positions of power. In certain areas such as education and employment there has been some headway, though ingrained societal and gender norms continue to hamper development.

**In nutshell, women empowerment is:**

Self-decision regarding education, participation, mobility, economic independency, public speaking, awareness and exercise of rights, political participation and many more factors ensure women Empowerment. In short women empowerment is the breaking of personal limitation.

**The success of any strategy of women empowerment depends upon the following factors:**

- Level of education, hard work
- Social custom
- Family planning, small family
- Health, medical services, cleanliness
- Environment, tree growing, kitchen gardening etc.

**Goals and Objectives of Government**

The goal of government is to bring about the advancement, development and Empowerment of women. The Plans and policies made by government will be widely disseminated so as to encourage active participation of all stakeholders for achieving its goals. Specifically, the objectives of this Policy include

- (i) Creating an environment through positive economic and social policies for full development of women to enable them to realize their full potential
- (ii) The de-jure and de-facto enjoyment of all human rights and fundamental freedom by women on equal basis with men in all spheres – political, economic, social, cultural and civil
- (iii) Equal access to participation and decision making of women in social, political and economic life of the nation
- (iv) Equal access to women to healthcare, quality education at all levels, career and vocational guidance, employment, equal remuneration, occupational health and safety, social security and public office etc.
- (v) Strengthening legal systems aimed at elimination of all forms of discrimination against women
- (vi) Changing societal attitudes and community practices by active participation and involvement of both men and women.
- (vii) Mainstreaming a gender perspective in the development process.
- (viii) Elimination of discrimination and all forms of violence against women and the girl child; and
- (ix) Building and strengthening partnerships with civil society, particularly women's organizations.

**Women Empowerment: Issues and Challenges**

- Participation in decision making
- Sexual harassment
- Dowry
- Family planning
- Education
- Social evils
- Physical needs

Non- industrial workers are divided by profession into several major groups: administrative and managerial personnel, engineering and technical workers, other groups of specialists with higher degrees (scientific workers, teachers in higher and secondary schools, and doctors), and trade and office employees.

A significant proportion of the intelligentsia belongs to the category of nonindustrial workers. As a result of the increased division of social labor and the gradual transfer of managerial functions from the capitalists to hired employees, the non-manual professions have assumed mass proportions since the last third of the 19th century, during the stage of mature industrial capitalism. The factors contributing to the increase in nonindustrial workers include the growth of transportation, communications, commerce, and credit; the expansion of the educational system and health services; and the growth of the service sector in general. The most important factor in the increase has been the growth of the bureaucracy in the bourgeois state and the

development of state-monopoly capitalism.

**LITERATURE REVIEW**

**Dr. Sunil Deshpande and Ms. Sunita Sethi** conducted a research and found that women Empowerment is most vital system to strengthen the future of women in India. It is a systematic approach which needs to develop more seriously in India. The Government of India came up in the new millennium by declaring the year 2001 as 'Women's Empowerment Year' to focus on a vision 'where women are equal partners like men'.

**Swete Mishra (2003)** studied in land reforms and women's empowerment in the most parts of the country. And particularly among marginal and landless agriculturists earning a livelihood is still a family endeavours. Various studies conducted have clearly pointed out that there are larger numbers of women who primarily derive their livelihood, for working sometimes on a regular basic and often on a seasonal basis or attached labours

**Srilekha Basu (2000)** status that the developing countries are characterized by low income, illiteracy, unemployment and low standard of living. In these countries extra income eared by women is vital to cross the poverty line.

**Pretty Sigh and Saran Kasha (1999)** discussed the role of rural women in decision making for credit procurement rural women are an important segment of our society because of their active participation in home and farm affairs. The participation in the decision making reflects the status of any individual which increase with the growing participation unto final decision.

**Deepti Agarwal (1998)**discussed from developing countries as well as western development planners look upon education as one of the most important instruments for social and economic development and modernization.

**Girija khanna and Mariamma A. Varghese (1997)** in their study found that when women were more educated and employed. They were allowed to play a greater part in decision making in the family.

**OBJECTIVE OF STUDY**

1. To study the factors affecting the empowerment of women employees in non industrial sector of Sultanpur district
2. To study the role of HRD in empowering the women employees

**RESEARCH METHODOLOGY:**

The research design adopted in this study is expost-facto design. The researcher has used both the primary as well as secondary data. The primary data was collected using a structured questionnaire and secondary data from financial websites, business magazines, newspapers and journals. The data was analyzed using Percentage analysis, weighted average and Chi square test. The sample size was 300 and the sampling techniques adopted were simple purposive sampling.

**RESULT AND DISCUSSION:**

The following hypothesis has been formulated to conduct this study:

**Hypothesis1:** Various HRD approaches/strategies are helpful / effective in Empowerment of Women employees in Sultanpur District.

**H<sub>0</sub>1:** Women Empowerment is independent of Women Involvement.

**H<sub>1</sub>1:** Women Empowerment is dependent on Women Involvement.

Level of women involvement * Level of Women empowerment Crosstabulation						
			Level of Women empowerment			Total
			Low	Medium	High	
Level of women involvement	Low	Count	21	22	3	46
		% within Level of women involvement	45.7%	47.8%	6.5%	100.0%
	Medium	Count	0	38	0	38
		% within Level of women involvement	0.0%	100.0%	0.0%	100.0%
	High	Count	0	27	39	66
		% within Level of women involvement	0.0%	40.9%	59.1%	100.0%
Total		Count	21	87	42	150
		% within Level of women involvement	14.0%	58.0%	28.0%	100.0%

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	104.184 <sup>a</sup>	4	.000
Likelihood Ratio	113.219	4	.000

Linear-by-Linear Association	66.657	1	.000
N of Valid Cases	150		

To test H<sub>02</sub>, we calculated Pearson chi-square value which is 104.184 for which p value is .000 (table-11) which is less than 0.05(level of significance). So, we can reject null hypothesis H<sub>02</sub> in favour of alternate hypothesis H<sub>12</sub> and can conclude that Women Empowerment is dependent on his involvement. Further, the analysis shows that the Empowerment of Women is significant (59.1%) in case of women whose levels of involvement are high as compared with women employees whose involvement is low (45.7%). Thus we can say that Empowerment of Women employees are dependent on their involvement.

**H<sub>02</sub>:** Women Empowerment is independent of Training imparted to Women.

**H<sub>12</sub>:** Women Empowerment is dependent on Training imparted to Women.

			Level of Women empowerment			Total
			Low	Medium	High	
Level of women training	Low	Count	21	9	0	30
		% within Level of women training	70.0%	30.0%	0.0%	100.0%
	Medium	Count	0	45	1	46
		% within Level of women training	0.0%	97.8%	2.2%	100.0%
	High	Count	0	33	41	74
		% within Level of women training	0.0%	44.6%	55.4%	100.0%
Total		Count	21	87	42	150
		% within Level of women training	14.0%	58.0%	28.0%	100.0%

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	142.134 <sup>a</sup>	4	.000
Likelihood Ratio	136.282	4	.000
Linear-by-Linear Association	84.919	1	.000
N of Valid Cases	150		

To test H<sub>03</sub>, we calculated Pearson chi-square value which is 142.134 for which p value is .000 (table-12) which is less than 0.05(level of significance). So, we can reject null hypothesis H<sub>03</sub> in favour of alternate hypothesis H<sub>13</sub> and can conclude that Women Empowerment is dependent on trainings imparted to women employees. Further, the analysis shows that the empowerment of women is low (70.0%) in case of women who have received low level of training as compared to women who have received high level of training where level of empowerment is significant (55.4%). Thus we can say that Empowerment of Women employees are dependent on training imparted to them.

**H<sub>03</sub>:** Women Empowerment is independent of Decision Making power of Women.

**H<sub>13</sub>:** Women Empowerment is dependent on Decision Making power of Women.

			Level of Women empowerment			Total
			Low	Medium	High	
Level of women decision making	Low	Count	7	19	21	47
		% within Level of women decision making	14.9%	40.4%	44.7%	100.0%

	Medium	Count	0	68	0	68
		% within Level of women decision making	0.0%	100.0%	0.0%	100.0%
	High	Count	14	0	21	35
		% within Level of women decision making	40.0%	0.0%	60.0%	100.0%
Total		Count	21	87	42	150
		% within Level of women decision making	14.0%	58.0%	28.0%	100.0%

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	106.442 <sup>a</sup>	4	.000
Likelihood Ratio	142.265	4	.000
Linear-by-Linear Association	.866	1	.352
N of Valid Cases	150		

**Table-13**

To test H<sub>04</sub>, we calculated Pearson chi-square value which is 106.442 for which p value is .001 (table-13) which is less than 0.05(level of significance). So, we can reject null hypothesis H<sub>04</sub> in favour of alternate hypothesis H<sub>14</sub> and can conclude that Women Empowerment is dependent Decision Making power of Women. Further, the analysis shows that the empowerment of women is low (44.7%) in case of women having low level of decision making power as compared to women who have high level of decision making power whose empowerment level is significant (60.0%). Thus we can say that Empowerment of Women employees are dependent on decision making power.

The researcher compared the independent variables; marital status, women involvement, training imparted and decision making with the dependent variable; women empowerment and found that women empowerment is dependent on these variables. Thus researcher concluded that HRD strategies are effective in empowerment of women employees in Sultanpur district except in case of unmarried women.

**Hypothesis: 2** HRD programmes initiated by the government have made the women’s self reliant.

**H<sub>01</sub>:** Women’s Self Reliance is independent of women control over income.

**H<sub>11</sub>:** Women’s Self Reliance is dependent on women control over income.

<b>Level of women control over income * Level of women self reliant Crosstabulation</b>						
			Level of women self reliant			Total
			Low	Medium	High	
Level of women control over income	Low	Count	18	3	3	24
		% within Level of women control over income	75.0%	12.5%	12.5%	100.0%
	Medium	Count	10	91	0	101
		% within Level of women control over income	9.9%	90.1%	0.0%	100.0%
	High	Count	0	0	25	25
		% within Level of women control over income	0.0%	0.0%	100.0%	100.0%
Total		Count	28	94	28	150
		% within Level of women control over income	18.7%	62.7%	18.7%	100.0%

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	194.997 <sup>a</sup>	4	.000
Likelihood Ratio	175.308	4	.000

Linear-by-Linear Association	86.892	1	.000
N of Valid Cases	150		

Table-16

To test H<sub>01</sub>, we calculated Pearson chi-square value which is 194.997 for which p value is .000 (table-16) which is less than 0.05(level of significance). So, we can reject null hypothesis H<sub>01</sub> in favour of alternate hypothesis H<sub>11</sub> and can conclude that Women’s Self Reliance is dependent on women control over income. Further, the analysis shows that the women with high level of control over income have high level of self reliant (100.0%) compared women who have low level of control over income have low of self reliant (75.0%). Thus we can say that Self Reliance of Women employees are dependent on women control over income.

H<sub>02</sub>: Women’s Self Reliance is independent of Women Ownership.

H<sub>12</sub>: Women’s Self Reliance is dependent on Women Ownership.

Level of women ownership * Level of women self reliant Crosstabulation						
			Level of women self reliant			Total
			Low	Medium	High	
Level of women ownership	Low	Count	24	51	0	75
		% within Level of women ownership	32.0%	68.0%	0.0%	100.0%
	Medium	Count	4	22	4	30
		% within Level of women ownership	13.3%	73.3%	13.3%	100.0%
	High	Count	0	21	24	45
		% within Level of women ownership	0.0%	46.7%	53.3%	100.0%
Total		Count	28	94	28	150
		% within Level of women ownership	18.7%	62.7%	18.7%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	62.152 <sup>a</sup>	4	.000
Likelihood Ratio	73.745	4	.000
Linear-by-Linear Association	53.774	1	.000
N of Valid Cases	150		

Table-18

To test H<sub>03</sub>, we calculated Pearson chi-square value which is 62.152 for which p value is .000 (table-18) which is less than 0.05(level of significance). So, we can reject null hypothesis H<sub>03</sub> in favour of alternate hypothesis H<sub>13</sub> and can conclude that Women’s Self Reliance is dependent on women ownership. Further, the analysis shows that the Self Reliance of women is high (53.3%) in case of women who have high level of ownership as compared to women who have low level of ownership. Thus we can say that Self Reliance of Women employees are dependent on their ownership.

The researcher compared the independent variables; women control over income, material possession over householding and women ownership with the dependent variable; women self reliance and found that women self reliance is dependent on these variables. Thus researcher concluded that HRD programmes initiated by the government have made women self reliant.

**CONCLUSION**

After very rigorous research it was found that women empowerment is a very critical issue which is an urgent need to look upon with reference to various strategies. After making a critical analysis with various research tools and techniques various hidden aspects emerged which could be concluded as:

- HRD strategies are effective in empowerment of women employees in industrial and non industrial sector of Sultanpur district.
- The fact that women have held the most senior positions in government, including that of Prime Minister and Chief Minister, has no direct impact on women in India apart from the realization that women can reach certain heights and do certain things.
- Studies of various female leaders in Sultanpur show that generally, they were not particularly gender-sensitive. They were more bound by political affiliations and party policies.
- In the some of the areas of Sultanpur District, there is a lot of dependence on government with unemployment being a particular problem.
- Most women surveyed were aware of new economic policies, but awareness of political developments was lower. This was particularly so in urban areas of District where education rates are high, but other adverse indicators such as female infanticide are also high.
- Just sensitizing women and building up their capacity through training was not enough to promote women empowerment in the district. The bureaucracy also needs to be sensitized.
- Most of the women in the study considered the state to be synonymous with government. Their aggregated vision of what the state should be was that of a gender-sensitive, secular, participatory, democratic body. They thought that it should be an efficient provider of services; work for the empowerment of weaker sections of the community: promote a society free from exploitation; and move to a system of governance that was 'transformed and transformational'. The experience of the state is that of a large, complex, contradictory entity, unfriendly and even hostile at times.
- HRD programmes initiated by the government have made women self reliant in non industrial sector of Sultanpur district.

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**E- BANKING: A TRANSFORMATION & FINANCIAL STABILITY IN INDIAN BANKS AND FINANCIAL INSTITUTIONS****Ms. Chandni Bisht**

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**ABSTRACT**

Internet technology can transform banks and the banking industry as a whole. Indian banks and financial institutions have found success by using the Internet in their whole business plans. Indian banks and financial institutions are usually good at making enough money on investments to cover costs like interest on loans through electronic banking (Sullivan, 2000). By generating hypotheses, this study investigates the impact of several indices of financial stability, financial performance, and technological innovation on the expansion of Indian banks and financial institutions. To begin with, excessive borrowing is a source of concern for Indian banks and financial institutions, because better financial planning aids in boosting the value of net profits while also maintaining financial stability, which helps in overcoming the crisis problem. Second, every Indian bank and financial institution must adopt technological innovation and invest in it to improve their financial performance year after year. The overall goal of this research is to see how e-banking may help Indian banks boost their efficiency in the workplace while also satisfying customers and achieving financial stability (Aduda & Kingoo, 2012).

Researchers should evaluate the generality of their empirical findings, as with any research in the field of management and IT adoption. Future studies on the Indian banking sector and financial institutions, such as Indiabulls Housing Finance Limited, Muthoot Finance Limited, Housing Development Finance Corporation Limited, and ICICI Bank Limited, could improve generalization. As the last step, the results of statistical methods like ANOVA and Multiple Regression Analysis are used to backup the findings of the current study (Nupur, 2010).

**Keywords:** Net Profit, Financial Stability, E-Banking, Long-Term Borrowings and Total Investment.

**INTRODUCTION**

Finance is the most crucial part of any corporation or financial institution. Finance decisions have an impact on the operations of every organization, whether they are made for short-term or long-term goals. As their major job, banks and financial institutions deal with the financial needs of various individuals and organizations on a regular basis. As a result, financial decisions in banks and financial institutions are crucial (A. Shukla et al., 2018).

Any organization's primary goal is to make money and please its consumers; in order to accomplish this, modifications must be made in response to the needs of the moment or changes in the environment. Finance is the most basic need of every organization in order to survive for a longer length of time. Previous year's profits are one of the sources of finance for banks and financial institutions, but if profits are insufficient, banks and financial institutions might use long-term borrowings, which lower net profits through regular interest payments. The objectives of the suggested research areas follow: 1. To investigate rising profit trends and their

implications for the Indian banking system and financial institutions' financial stability, 2. To look into how technology investment affects India's banking and financial sectors and how important it is, 3. Investigating how an increase in long-term borrowings at a specific level affects the profit margins of Indian banks and financial institutions, 4. To assess the critical components of e-banking that would propel the Indian banking system forward.

**Net Profit**

Profit is the main goal of an organization, and it can be affected by a lot of things, like how much money an organization invests, how many opportunities it has, how big it is, how much capital it has, and so on. Electronic banking advancements have given rise to new ways of managing daily banking transactions, particularly through the online banking channel. The adoption of online banking services has been rapid in many areas of the world, with the number of e-banking contracts exceeding 50% in the leading e-banking countries which helps in sustaining profits (Pikkarainen et al., 2004). Financial planning, regarding them, needs to be made, in order to increase or sustain profits. Net profit is the dependent variable of the proposed study.

**Long-Term Borrowings**

An organization can raise funds in a variety of ways, including equity share capital, debentures, preference share capital, and so on, but one of the variables is total debt, which is the least expensive form of capital. Debentures

increase earnings since they are a tax-deductible source of capital. Whether it's a decision on cash raised through debentures or not, all financial decisions must be made with extreme caution. Every firm is concerned about how much long-term borrowings should be included in its capital structure. The proposed research is based on determining the level of long-term borrowing that would result in increased profits, but keep in mind that too much debt will put a strain on the company's finances. One of our independent variables is long-term borrowing (Rixteletal.,2017).

### **Total Investments**

In order to make a profit, a company must invest its cash in profitable prospects, much like banks and financial institutions do by offering loans to their customers and purchasing government securities, among other things. They engage in both short-term and long-term investments to retain liquidity in the company. Another independent variable is the total investment (Ahmed et al.,2021).

Financial Stability's primary goal is to absorb shocks and protect banks from financial crises by implementing self-correcting systems. Furthermore, financial stability fosters the habit of saving from earnings by maintaining provisions, creating a monthly budget by evaluating all expenses, obtaining credit while keeping your repayment capacity in mind, purchasing assets that generate

income, and focusing on investment at attractive prices, among other things. To emphasize the importance of the concept, the Indian government established the Financial Stability Committee in 2010, which is chaired by the country's successive Finance Ministers. Its main goal is to help people learn more about money and the economy, as well as improve efficiency and coordination between different parts of the economy (Uhde & Heimeshoff, 2009).

### **E-banking**

We are in the era of the internet, and its use has grown over time. Technological advancements have also aided us in completing tasks on time and with less effort. The internet has aided a large segment of society, from individuals to organizations. Banking and financial institutions are one of the industries that have benefited from the use of ICT tools. Banks and other financial institutions have helped both the banks and the people who use them. People can transfer money from one account to another, check their account information, apply for an ATM card, invest in FDs and RDs, and so on, all without having to go to a bank branch (Kumbhar, 2011).

The remainder of this work is arranged in the following manner: The first section explains how the independent factors affect e-banking financial stability and objectives, while the second section covers the associated literature on e-banking transformation contributions. Section three presents the findings of our regression, which explains the study's importance. Section four brings the essay to a close by synthesizing the findings of the quantitative and qualitative analyses and outlining future research directions. The study's limitations are discussed in section five.

### **REVIEW OF SELECTED LITERATURE**

To assess the study's certainty, I researched and observed literatures with the goal of determining the current study's reliability. The Reserve Bank of India examined the various indicators of financial stability of the various banks operating in India and conducted a comparative analysis. The first basis for differentiation is asset quality; Housing Development Finance Corporation Limited bank has the best asset quality of any bank in India; second, IDBI Bank, ICICI Bank, and Housing Development Finance Corporation Limited bank have more stable earnings than others; third, ICICI Bank Limited and Housing Development Finance Corporation Limited bank have better management quality than any other bank in India; and fourth, ICICI Bank Limited has a better liquidity ratio than any other bank in India; and finally, ICICI Bank Limited has a better liquidity ratio than Every year, a ranking from top to bottom is determined based on various financial stability indicators so that banks operating in India can keep their operating technological systems up-to-date while maintaining a sound financial structure. According to Jolly 2016, internet banking is advantageous to customers because it is cost-effective, financially feasible, and available at all times. Furthermore, e-banking lowers costs and saves time for both customers and banks. Even though there was always a security concern when people used the internet to do their banking, the RBI took a lot of steps to address these concerns quickly (S. S. Shukla, 2015).

Regular returns are the most important factor for any bank to survive in the long run and maintain financial stability. Furthermore, banks must have a stable capital base to strengthen their operations and generate higher returns. In the last four years, Kotak Mahindra Bank Limited has had strong financial performance, and it appears that the bank was more focused on understanding and following the concept of financial stability. But, just like Kotak Mahindra Bank Limited, there has always been room for improvement in some financial indicators, such as returns per employee, business efficiency, debt-

equity ratio, current assets, and annual income margin. Meanwhile, Kotak Mahindra Bank Limited requires improvement as a result of its merger with ING Vysya, which resulted in the bank incurring higher costs than before. Kotak Mahindra Bank Limited must understand economies of scale, which allows them to earn at the lowest possible cost while still keeping their finances safe (Varghese & Thaha, 2017).

In the past, banks followed a competition-decreasing model because major banks wanted to reduce market competition so that they could increase profits by taking high risks. Meanwhile, in the case of a stable competition policy, banks have more capacity to provide loans to customers at high-interest rates, causing their customers to be unable to repay their loans and creating unfavorable loan market conditions. Both policies have opposing viewpoints since one may get an advantage while the other may assume a greater risk. To get to a point where the loan market isn't burdened by higher-risk portfolios and accepts competition through franchising or else, banks should apply risk-mitigation techniques, a compact portfolio, and greater equity capital. By taking into account all of the important factors, we can say that the banks in our countries can avoid all risks and keep the economy stable (Berger et al., 2017).

In the previous few years, ICICI Bank Limited and HDFC Bank Limited, which have exhibited efficient and effective performance. ICICI Bank Limited and Housing Development Finance Corporation Limited have been able to continue their good performance because they have grasped the concept of financial stability through year-on-year profit increase. However, Housing Development Finance Corporation Limited bank is performing better than ICICI Bank Limited bank because Housing Development Finance Corporation Limited bank has more branches than ICICI Bank Limited bank, but ICICI Bank Limited bank appears to be much better at managing Automated Teller Machines than Housing Development Finance Corporation Limited bank. So, both banks need to break through their own rules and keep up with the rate of growth by making sure they have strong financial performance and financial stability (Pranab Kumar Bhattacharya, 2017).

The banking sector has struggled to stay afloat in the long run, with less growth due to physical labor and dissatisfied clients. Because technological innovation benefits every sector of the economy, the banking industry is improving its working system by providing services online and providing the best deals to its consumers, ensuring that the banking sector's future is secure. The utilization of technology innovation in the working structure while dealing with customers would deliver different services to clients instantaneously with simple instructions, satisfying their needs and increasing the bank's efficiency. Timely technological reforms will enable the banking system to improve services such as trading systems, internet transactions, and so on, resulting in the Indian banking system being superior to that of other nations' banks. Meanwhile, the Indian banking sector will flourish with the help of technology by offering the greatest services to the public and contributing to the country's economic progress (Anbalagan, 2017).

Technology advancement is the reason for every economy's success in this century, and the history of ICICI Bank Limited shows that they have always tried to adopt every positive change in their banking system, such as Finacle, which makes their operating system faster and allows the bank to carry out large transactions in a day because ICICI Bank Limited has a long chain of customers. As a result of technological advancements, ICICI Bank Limited has adopted an e-banking system, which facilitates banking transactions using mobile applications or the ICICI Bank Limited website, and clients are benefiting from this online banking system as opposed to the prior manual approach. Meanwhile, Indian banks accept and adopt all technological changes, such as ICICI Bank's restricted updating of their operating system by accepting technology upgrades on a regular basis, which helps them remain competitive. Furthermore, ICICI Bank Limited's principal goal is to meet the needs of its customers and to make their services as convenient as possible (Cooper et al., 2007).

E-banking will have a bright future in India in the coming years, because Indian citizens are becoming more cognizant of technology innovation. As the country adopts digitalization in every sector of the economy, citizens are becoming more interested in cashless transactions, e-banking, and other low-cost services that save time and increase efficiency in the Indian banking system, such as Housing Development Finance Corporation Limited, ICICI, and others. Meanwhile, Indian bank clients are increasingly interested in e-banking as a result of demonetization in 2016, which sparked anxieties in customers' minds that having more money in their hands is dangerous. The majority of the country's youth have already accepted this virtual shift in the banking industry (Kaur, 2017).

The Banking Structure has altered as a result of the use of technology into their overall working system. Banks look after their clients by offering the best services possible via flexible processes and product developments. Because banks recognize that their clients embrace change and innovation in their daily lives, they have adjusted their working system to reflect this. Customers

tomers of the Housing Development Finance Corporation Limited bank can now access services from their homes by using the bank's mobile applications, ATM banking, and NetBanking. Instant Solution is available to consumers so that they can simply transact while paying a little fee to the bank. For example, electronic payments can be made quickly using adapted systems such as NEFT, RTGS, and others. Housing Development Finance Corporation Limited Bank is implementing and marketing an e-banking system in order to provide their customers with a hassle-free banking experience (Katoch, 2017).

The financial crisis teaches the economy important lessons, such as how to maintain financial stability at the micro and macroeconomic levels, because bearing the cost of financial instability is difficult for any economy, and if this cost continues to rise day after day, it will lead to a financial crisis. As we all know, monetary policy is the most important policy for every country, and elements such as market interest rate risk, credit, and liquidity have a good or negative impact on the economy. Financial stability and unambiguous articles of monetary policy are also affected by other factors like asset purchases, reserve requirements, and so on. Furthermore, bank financial performance is influenced by credibility, and it is one of the characteristics of financial stability since the more credible you are, the more credit you will receive. In other words, if banks are able to pay their bills on time and preserve financial stability, they will keep their credibility in the Reserve Bank of India's list as well as with their clients. Monetary policy, on the other hand, plays a significant role in preserving price stability, which decreases various sorts of credit market risks and helps to maintain financial stability (Smets, 2014).

The Housing Development Finance Corporation Limited, one of India's largest commercial banks, has switched from a manual to a digital operating system. Because Indian banks are aware of technological innovation and e-banking norms, they have abandoned the traditional system in favor of the digital world in order to satisfy their customers. For example, Housing Development Finance Corporation Limited provides a variety of digital product services to their customers. However, Indian residents still trust government banks more than private banks and other financial institutions, and India's government banks have now implemented digitization in their operations. However, not everyone of any age group understands the necessity for and usefulness of e-banking. Furthermore, in India, young people generally readily accept and grasp the e-banking system, mobile transaction, e-wallets, and other similar technologies, which help customers and saves them time. Meanwhile, the Housing Development Finance Corporation Limited bank released various other smart payment mobile applications for consumers, such as chillr, smart purchase, and others, although the majority of the population is unaware of them. Banks should promote their ideas and products to clients using direct e-mail, pop-up commercials, television advertisements, and other methods to increase public awareness. Customers no longer need to visit a bank branch to view their account details or make transactions because they can do so using the bank's mobile applications, which are also available on the bank's website. The only barrier standing in the way of customers adopting e-banking is security concerns when conducting transactions over the internet or through mobile applications. However, banks now provide clear instructions, knowledge, and guidelines to bank customers so that they can understand the benefits and drawbacks of e-banking, allowing Indian banks to protect their customers from fraud (JINDAL & JASPAL, 2019).

Maintaining robust competition is one of the components of the idea of financial stability in India's banks, according to a study conducted in 2019-20. However, recent trends in several indexes reveal that competition among Indian banks is dwindling, which is a cause for concern, and the Reserve Bank of India must keep this in mind. The Reserve Bank of India should prioritize this issue and develop policies that promote competition among Indian banks and a well-organized banking system. According to the findings of the study, credit risk and solvency risk may affect competition among various Indian private and nationalised banks. Furthermore, some characteristics, such as market size, interest rate, and so on, have a favourable impact on credit risk and solvency risk, while others, such as GDP, WPI inflation, and so on, have a substantial impact. As a result, it is critical to maintain robust competition within the Indian banking system in order to maintain financial stability (Parida & Padhi, 2019).

The banks are no longer limited to providing credit to their customers; instead, with the help of technology innovations such as Artificial Intelligence and private companies that deal in it, banks are now providing a variety of services to their customers for their start-ups, credit ratings, and other purposes. Artificial Intelligence provides banks' customers with comprehensive credit information, allowing them to make informed decisions and improve their creditworthiness. Artificial Intelligence is one of the most significant pieces of software for every company sector in the country today in order to improve financial assistance, particularly for banks and financial institutions. Furthermore, we may argue that Artificial Intelligence is the present and future

of the banking and financial industry because it aids in the collection and dissemination of information about a customer's creditworthiness and requirements, which both banks and customers are aware of. However, technical advancements such as Artificial Intelligence necessitate huge investments, which are carried by many businesses in order to boost the efficiency of each area of the economy's operation. Companies obtain information through technological innovation, which saves money, time, and recruitment costs by reducing the human workforce, which decreases errors and ensures that clients are satisfied with banking and financial institutions services (S.S.Shukla, 2015).

The idea of financial stability isn't clear, and researchers and policymakers are looking through the literature for different ways to explain why the financial structure has changed.

**RESEARCH HYPOTHESIS AND METHODOLOGY**

The study examines the primary aspects that influence financial performance and stability, including the company's net profit, total investment, and long-term borrowings, which are critical for the growth of Indian banks and the performance of financial institutions. As we have seen, the study's independent variables can affect a company's net profit, and the current paper is discussing the positive possibilities. It is possible that long-term borrowings are rising at a certain limit (as debt is a cheaper source of finance), resulting in an increase in total investment by Indian banks and financial institutions' performance. People who read this research article might want to do this kind of research. It would look into the following hypothesis:

- H-1: At some point, an increase in long-term borrowings will benefit the Indian banking sector and financial institutions.
- H-2: Increased investment in technology innovation will benefit the Indian banking sector and financial institutions.

To prove the study's validity, I gathered data from top Indian banks and financial institutions such as Indiabulls Housing Finance Limited, Muthoot Finance Limited, Housing Development Finance Corporation Limited, Life Insurance Company Housing Finance Limited, ICICI Bank Limited, AXIS Bank Limited, Shriram City Union Finance Limited, Indusind Bank Limited, and Kotak Mahindra Bank Limited, as well as their financial performances in monetary terms of net profits, long-term borrowings, and return on investment. To test study objectives,

a sample of leading Indian banks and financial institutions functioning across the country (via various branches operating in India) was evaluated. According to their financial performance, the top Indian banks and financial institutions were chosen at random from several internet sources such as Indian Companies.IN, Dion Global Solutions Limited, and the Economic Times list issued by the Economic Times Group in 2020. It was only those Indian banks and businesses that met the following criteria that were chosen for the final sample:

- Long-Term Borrowings and Total Investment
- Net Profits
- The accounting year runs from April 1st to March 31st, as is customary.

**DATA AND INTERPRETATION**

**DATA FROM 2016-2020**

Years	CRORE ('000')		
	Profit/Loss For The Period	Total Investment	Long Term Borrowings
2016	10.39	53.94	51.51
2017	11.86	60.06	54.82
2018	13.41	72.83	76.11
2019	15.13	83.45	73.43
2020	17.42	95.79	76.25

As you can see in the table above, data has been provided for the years 2016 to 2020 for a group of Indian banks and financial institutions that were chosen at random. This group includes Indiabulls Housing Finance, Muthoot Finance, Housing Development Finance Corporation, and ICICI Bank.

**REGRESSION ANALYSIS**

<b>R<sup>2</sup></b>	0.995
<b>Adjusted R<sup>2</sup></b>	0.991
<b>R</b>	0.998
<b>Std. Error</b>	0.264

<b>N</b>	5
<b>K</b>	2
<b>Dep.Var.</b>	<b>Profit/LossForThePeriod</b>

□ The coefficient of correlation (R) between variables is 0.905, or 90.5 percent, according to the table above, indicating that there is a strong link between variables. The analysis' coefficient of determination (R<sup>2</sup>) is 0.995, or 99.5 percent, which is good and sufficient to indicate the impact of changes in equity share capital and long-term borrowings on Indian industries' net profits. The study's adjusted R square is 0.991, or 99.1%, which shows that it is well-founded and has a good chance of working (Uyanık & Güler, 2013).

**ANOVATABLE**

Source	SS	Df	MS	F	p-value
<b>Regression</b>	30.1529	2	15.0765	216.38	.0046
<b>Residual</b>	0.1394	2	0.0697		
<b>Total</b>	2,381.9086	9			

□ As per the above mentioned table, Calculated value of F is 216.38 and the table value or critical value of the study is 4.737 (F(2,7,0.05)). As it is visible that the calculated value of F is excessive than that of the critical value, so the alternate hypothesis will be accepted and we will reject the null hypothesis of the study. The P-value of the study is 0.0046, which is much lower than the level of significance (0.05 or 5%) and is in favor of our decision of rejecting the null hypothesis and accepting the alternative hypothesis (Cuevas et al., 2004).

**REGRESSION OUTPUT**

Variables	Coefficients	Std.Error	T (Df=2)	P-Value
<b>Intercept</b>	2.3089	0.7391	3.124	.0890
<b>Total Investment</b>	0.1754	0.0162	10.838	.0084
<b>Long Term Borrowings</b>	-0.0227	0.0226	-1.007	.4200

- Regression Model of the study:
- $Y = 2.3089 + 0.1754 * TI - 0.0227 * L$
- Where,
- Y = Net Profit,
- TI = Total Investment
- And L = Long-Term Borrowings

Secondary data was gathered from multiple web sources as part of the study, and both of the study's hypotheses were tested. The study found that the analysis had a positive effect on the profitability of the Indian banks and financial institutions it looked at.

Various stochastic and statistical tools are used in the methodology. Data tabulation, frequency distribution, simple percentages, correlation, and cross tabulation were used to examine the frequency and trends of profit decisions. As a result, MegaStat tools such as multiple regression and ANOVA were used to examine net profit, total investment in technology innovation, and long-term borrowings of randomly selected Indian banks and financial institutions during a six-year period (2016–2021).

**CONCLUSION**

The study has revealed the importance of the concept of Financial Stability for Indian banks and financial institutions, as well as the concept of E- Banking, as a key revolution in the Indian banking system that has entirely transformed its functioning structure. Previously, Indian banks and financial institutions operated manually, causing sluggishness and a lack of trust in banking and financial services, but E-Banking has altered everything. On a daily basis, banks and financial institutions accept deposits and lend money; as a result, they require a sufficient quantity of capital to live and continue to work. Long-Term borrowings were chosen as an independent variable of the study since they are the cheapest form of credit due to their tax deductibility (Karimzadeh et al., 2013). Banks and financial institutions invest their funds to earn profits, so I included Total Investment as another study variable. Muthoot Finance Limited, Housing Development Finance Corporation Limited, and Life Insurance Company Housing Finance Limited, ICICI Bank Limited, AXIS Bank Limited, Shriram City Union Finance Limited, and other

prominent Indian banks and financial institutions were studied. Long-Term Borrowings and Total Investments are very important and have a considerable impact on the profitability of Indian banks and financial institutions, according to ANOVA and Multiple Regression Analysis.

Furthermore, financial stability is the most important concept for every sector of an economy because it ensures that your financial portfolio is balanced with the best asset allocation approach that suits your financial objectives, aids in the maintenance of a good credit score, eliminates relative price movements of real or financial assets that will affect monetary stability or employment levels, and so on. Maintaining financial stability in Indian banks is difficult due to challenges such as increased competition as Fin Tech and other financial institutions have begun to provide instant solutions to customers, regulatory compliance as policies related to credit rates and inflation control are constantly changing, threatening banking financial stability, customer retention through round-the-clock solutions, security breaches, and others. As a result, Indian banks can maintain good profits by adhering to the Financial Stability and Development Council of India's financial stability norms, and banks should have a good understanding of the technology innovation required in the operational structure so that they can invest in technology upgrades that benefit their customers for a longer period of time (Uhde & Heimeshoff, 2009). The above-mentioned paragraphs have been finalized by referencing all of the reviews cited in this overview.

### **LIMITATIONS AND FUTURE DIRECTIONS**

It should be highlighted that the study has limitations in the proposed publication. To begin, the study examined facts related to e-banking in Indian banks and financial institution performance (i.e., increasing net profit, increasing Long-Term borrowings at a certain level, and total investment), but there are a few other factors to consider that are also related to e-banking in Indian banks and financial institution performance. Second, in addition to interest payments on long-term borrowings and investments in technical innovation, maintaining financial stability across different banks poses a number of challenges. Finally, while preserving profits year after year is a hazy idea, understanding the concept of financial stability can help reduce this constraint to a greater extent, owing to the fact that it is a broad field of study.

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**OTHER RELEVANT DATA**

S. No.	Banking And Financial Institution	2016 ('000')(CRORE)		
		Profit/Loss For The Period	Total Investment	Long Term Borrowings
1	Indiabulls Housing Finance	2294	9791	35138
2	Muthoot Finance	809	98	5276
3	Reliance Home Finance	87	80	4619
4	Lic Housing Finance	1661	358	90658
5	Shriram City Union Finance	529	335	9267
6	Icici Bank	26987	160411	174807

7	HdfcBank	30924	163885	53018
8	AxisBank	25847	122006	99226
9	Kotak MahindraBank	8859	51260	20975
10	IndusindBank	5950	31214	22155
	Total	103947	539438	515139

S. No.	Banking And Financial Institution	2017 ('000')(CRORE)		
		Profit/Loss For The Period	Total Investment	Long Term Borrowings
1	Indiabulls Housing Finance	2842	12634	52988
2	Muthoot Finance	1179	209	4231
3	Reliance Home Finance	173	507	7277
4	Lic Housing Finance	1931	527	103738
5	Shriram City Union Finance	556	229	9814
6	Icici Bank	26933	161506	147556
7	HdfcBank	38077	214463	74028
8	AxisBank	27445	128793	105030
9	Kotak MahindraBank	11625	45074	21095
10	IndusindBank	7881	36702	22453
	Total	118642	600644	548210

S.No.	Banking And Financial Institution	2018 ('000')(CRORE)		
		Profit/Loss For The Period	Total Investment	Long Term Borrowings
1	Indiabulls Housing Finance	3566	11485	65357
2	Muthoot Finance	1777	395	21167
3	Reliance Home Finance	167	54	6979
4	Lic Housing Finance	2002	1972	128792
5	Shriram City Union Finance	711	735	21401
6	Icici Bank	25522	202994	182858
7	HdfcBank	50155	242200	123105
8	AxisBank	24724	153876	148016
9	Kotak MahindraBank	14840	64562	25154
10	IndusindBank	10724	50076	38289
	Total	134188	728349	761118

S. No.	Banking And Financial Institution	2019 ('000')(CRORE)		
		Profit/Loss For The Period	Total Investment	Long Term Borrowings
1	Indiabulls Housing Finance	3729	25296	52517

2	Muthoot Finance	1972	982	8416
3	RelianceHome Finance	67	93	6879
4	LicHousing Finance	2431	3595	144283
5	ShriramCity UnionFinance	989	870	7460
6	Icici Bank	21858	207733	165319
7	HdfcBank	61531	290588	117085
8	AxisBank	27719	174969	152775
9	Kotak MahindraBank	18469	71189	32248
10	Indusind Bank	12612	59266	47321
	Total	151377	834581	734303

S.No.	Banking AndFinancialInstitution	2020 ('000')(CRORE)		
		Profit/LossForThe Period	TotalInvestment	Long TermBorrowings
1	Indiabulls HousingFinance	2160	16167	36430
2	Muthoot Finance	3018	1438	10259
3	RelianceHome Finance	-375	951	6713
4	LicHousing Finance	2401	5496	146191
5	ShriramCity UnionFinance	1000	734	8719
6	Icici Bank	25810	249531	162896
7	HdfcBank	75480	391826	144628
8	AxisBank	25950	156734	147954
9	Kotak MahindraBank	22866	75051	37993
10	IndusindBank	15968	59979	60753
	Total	174278	957907	762536

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**A THEORETICAL FRAMEWORK FOR ACCEPTANCE OF AUGMENTED AND VIRTUAL REALITY BY USER EXPERIENCE****Dr. Surendra Tiwari<sup>1</sup>, Dr. Puneet Kumar<sup>2</sup> and Dr. Kavita Tiwari<sup>3</sup>**<sup>1,2</sup>Associate Professor, Institute of Technology and Science, Ghaziabad<sup>3</sup>Associate Professor, Institute of Applied Management and Research, Ghaziabad**ABSTRACT**

This article explores the present day and achievable impact Augmented Reality and Virtual Reality have on consumer markets by way of inspecting adoption patterns, distinctive makes use of and unique purposes in the commercial field.

The authors endorse a conceptual framework from which the business implications linked to the introduction of high-impact applied sciences into the market will be analyzed. In growing this conceptual framework, it will cite and classify the key gamers by figuring out the client industries in which a foremost disruption in patron habits can also be caused. The authors additionally assessment the relevance of technology-based marketing, emphasizing the important factors to be taken into consideration to consider its growth conceivable from the viewpoint of each the employer and users.

Augmented Reality and Virtual Reality can enrich consumers' perceptions of brands and transform commercial enterprise processes. Using these technologies makes it feasible to convey the consumer trip to a new stage of convergence and immersion via close interplay between the real and the virtual world. When combined with different technological traits like IoT, Social media etc, it is possible to take buyers to a new sensory dimension (Immersive Media) and open a new era for creativity and innovation in strengthening the consumer-brand relationship.

This lookup mission hopes to stimulate reflection on adoption patterns and technological elements to be taken into account in designing enterprise strategies and in managing patron experiences based on Augmented and Virtual Reality.

**INTRODUCTION**

Augmented fact (AR) and Virtual Reality (VR) are the spearhead of a revolution in the digital verbal exchange ecosystem in the direction of a virtually immersive media. They can enrich consumers' perceptions of brands and have the conceivable to seriously change customer experiences and commercial enterprise processes.

Many brands in exceptional sectors are scrambling to discern out how they would possibly strive AR/VR in the market, as the technological know-how is still in the early days. However, there are adoption barriers to take into consideration from the viewpoint of customers and the company. Having a better appreciation of the scope of these immersive systems will be of resource in making the most out of these rising conversation channels.

This article explores the modern and conceivable influence AR and VR have on purchaser markets via inspecting the adoption patterns, different uses and specific applications in the industrial field.

In this first stage of this research, we will evaluate the relevance of technology- primarily based marketing, emphasizing the principal elements to evaluate its increase manageable from the viewpoint of stop consumers and companies.

**EVOLUTION REVIEW**

The origins of virtual and augmented actuality can be found in the 1960s when images director Morton Heilig created the first motorbike simulator referred to as the Sensorama. This simulator allowed users to trip a whole sensory immersion with images, sounds, smells, and vibrations (1962). Later computer scientist Ivan Sutherland, who advised that "A display connected to a digital PC gives us a risk to obtain familiarity with standards now not realizable in the bodily world. It is a searching glass into a mathematical wonderland."

David C. Evans from Utha created the virtual fact machine called the Head Mounted Display (1966). This helmet-shaped device used to be the first to permit 3-dimensional immersive visualization. Computers at that time being too archaic to produce applicable results but in following years, drastic reduction in the size of computers and an increase in their calculating potential sparked the growth of interesting projects

**The two key tendencies that sparked the revival:**

On VR aspect the Oculus Rift developed by Palmer Luckey in 2014, the Oculus Rift tested that the technical barrier that had before frustrated creators had in the end been overcome. Multiple businesses have accompanied and created a thriving ecosystem.

On other hand Google Glass at AR side Augmented fact glasses that have produced perhaps the biggest enterprise milestone to date. Although this product did not have all the predicted Use of AR technology with the GPS and digital camera features of various clever devices provided the huge success to gaming and AR industry. These games characters appear in augmented actuality superimposed on the device's map, allowing users to capture them. Unexpected success of Pokémon Go illustrates the achievable for Augmented Reality to become a sport changing technology, with its potential to appeal to mass pastime and engagement.

On the other hand, "Henry," – an animated virtual reality ride available for the Oculus Rift platform and developed by using Oculus VR's film division, Story Studio – received an Emmy award in the Outstanding Original Interactive Program category.

In this article, we have focused on a literature evaluate of articles, case studies, blogs and books related to virtual, augmented and diminished realities. We have also conducted few interviews with executives, who are already making use of these technologies. This article targets to contribute with Challenge assessment and developing a conceptual framework to make clear constructs on adoption framework and future research.

**THEORETICAL FRAMEWORK**

This conceptual framework encompasses three principal blocks. The first phase defines and compares three sorts of realities: Virtual, Augmented and Diminished. The second part clarifies the variations and interrelation between Mixed Reality and Immersive Media. Finally, the 1/3 and ultimate section of this framework explores adoption limitations from two perspectives: The Consumer and the Company.

**VIRTUAL REALITY (VR)**

Virtual Reality is a technology that permits for the advent of a new dimension in which it is feasible to interact with any different man or woman or object. This computer-generated surroundings makes the user experience as if they are bodily in this digital world by means of supplying actual time simulations and interactions the use of distinct auditory, visual, tactile, and olfactory sensory channels (Burdea, 1993). Large industries, including healthcare, media and entertainment, are displaying exquisite interest in VR, which in flip has driven the layout of severa structures to assemble virtual landscapes that recreate normal situations. Currently, there are varieties of digital reality:

- i) Immersive Virtual Reality (IVR): The customer enters this virtual, three- dimensional, stereoscopic, interactive environment through ultra-modern hardware. This form of device is usually connected to the user's body, giving her or him feeling that he/she is in a actual environment wherein he/she will walk around, fight, or attain objectives
- ii) Non-Immersive Virtual Reality (NIVR): This is a artificial surroundings imparting computer-generated images with the cappotential to create three-dimensional digital spaces. The novelty is withinside the opportunity of including interactive objectives, videos, sounds, or even hyperlinks with exclusive digital worlds. This is much like what's furnished through manner of immersive digital reality, but proper right here the area is limited to a screen, which offers an ride of limited immersion.

**AUGMENTED REALITY (AR)**

AR is a aggregate of physical and intangible, giving users the capability to create beings, images, objects, or texts through a computer. In augmented reality, users can superimpose digital elements onto the actual world by providing extra applicable statistics to the surroundings he or she is genuinely seeing. To date, AR has already verified useful to large no. of industries like Medical, entertainment, engineering, defense, (Azuma et al., 2001; Bimber & Raskar, 2004).

There are extensive differences between Virtual and Augmented Reality. One critical distinction is the diploma of immersion experienced via the user. VR surrounds the consumer totally in a virtual world, whilst augmented reality lets in users to stay in the "real world." In sum, if virtual truth seeks to exchange reality, augmented truth seeks to complement it.

**DIMINISHED REALITY (DR)**

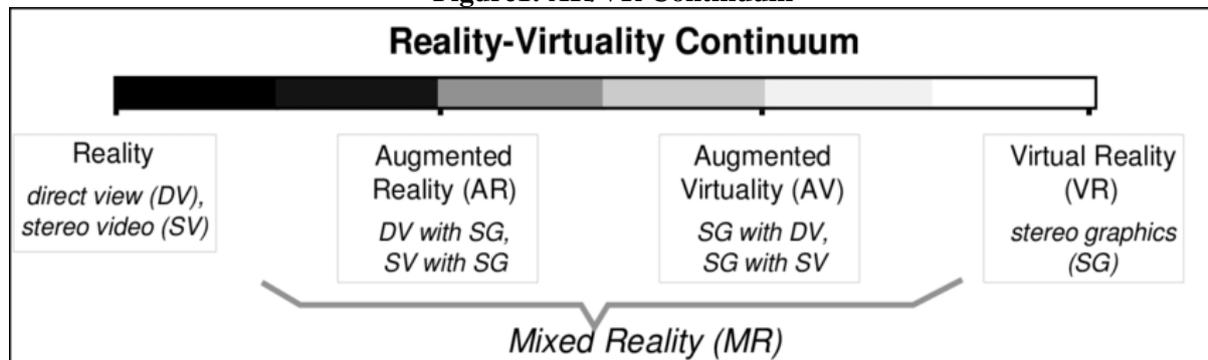
In essence, diminished fact consists of the utilization of methods taken from augmented reality, but with the opposite goal: where one adds factors to the real world, the different lets in users to subtract or remove actual objects (Azuma, 1997).

Steve Mann (University of Toronto's, 2001) proposed the concept of diminished reality. Scientists Jan Herling and Wolfgang Broll (Ilmenau Technical University in Germany) took up this line of research and became their focal point to identifying and choosing objects in order to eliminate them. Some examples are: Hearing aids, Touch-screen, Security cameras etc.

**IMMERSION ASPECT & MIXED REALITY**

Augmented Reality and Virtual Reality are distinct constructs, but are deeply interrelated: similar imaging strategies of 3D are applied, many of the technical and storytelling challenges are common, and each overlap in terms of the kinds of problem they can help to solve. When VR headsets are equipped with cameras to “pass-through” actual world snap shots and overlay objects on them, they create experiences bordering those of an AR experience. Similarly, an AR trip shows a virtual object and it lets in its exploration, it comes very close to being a VR experience. Milgram and colleagues (1994) highlighted the interrelation of these constructs and proposed the thought of a continuum between AR and VR called ‘Mixed Reality.’

It is interesting to notice that what seemed like separate worlds and techniques are indeed converging, and this convergence starts to be used in content material creation under the thought of Immersive Media (Rose, 2015). Our proposed framework is consequently an enlargement on the Mixed Reality notion, highlighting the reality that AR and VR are no longer alone in this mix anymore. Several new traits and methods ought to be mixed in order to reap the phenomenon of immersive media. This kind of media lets in the user to immerse him/ her in a story from each feasible standpoint and sensorial dimension, interacting with each digital and actual planes simultaneously. This interplay affects the inner trip sphere and the external surroundings elements.

**Figure1: AR/VR Continuum**

New developments like IoT, Wearables and social media expands into the continuum and adds the possibility of attractive, real and digital environments. The developing capability to combine these techniques is what permits the development of alternate worlds that are so appealing to consumers and brands.

**FEW APPLICATIONS OF AR AND VR****AR applications: Examples**

**Marketing:** Use AR to simulate what an item will look like in an existing environment.

**Auto industry:** AR / holographic showing navigation, warnings, traffic safety highlights and more.

**Medicine:** Enhances the sight of doctors / nurses by overlaying relevant body parts to assist in performing certain medical procedures.

**Operation:** Overlaid instructions sent to workers to complete complex construction / assembly work.

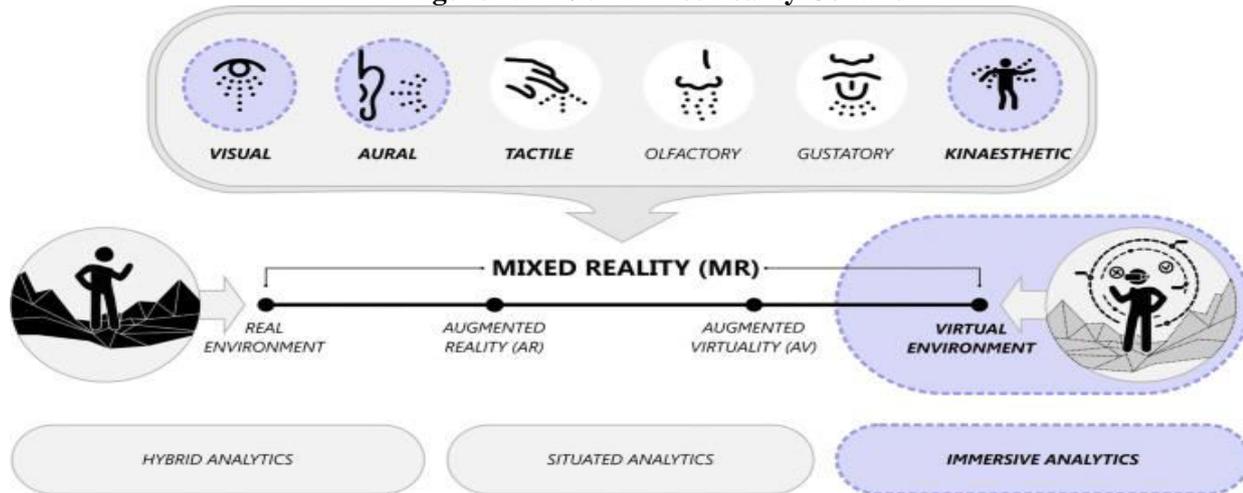
**VR applications: Examples**

**Entertainment:** Studio-quality content with narratives carefully created for VR viewing. **Procedure / Training:** Combine visualization and gesture interface to simulate a real working environment.

**Education:** Educational content that leverages new visualizations and experiences in VR and AR.

**Analysis:** Applies to both general information visualization and VR-specific analysis (interaction / visualization heatmaps, etc.).

Figure 2: AR/VR Mixed reality Continuum



**VR AND AR ACCEPTANCE CHALLENGES**

It is important to observe that AR/VR can also now not fit every business. A well-considered AR/ VR trip can be a transformative ride for customers, and may additionally set organizations on the way to income from this platform as it continues to develop (Riley, 2016). A case-by-case evaluation reveals diverse purpose-driven situations. Let us seem to be at some of the primary barriers stopping a greater significant proliferation.

**AR/VR ACCEPTANCE CHALLENGES FOR CONSUMERS**

**Experience:** Preventing nausea is vital for each kind of experiences, but represents a higher undertaking in the VR side. For VR experiences even the most advanced gadgets nonetheless require wired tethering, which impacts the exceptional of the exploration journey. This can also reason discomfort. Development of un-tethered or wireless-tethered experiences will indicate significant growth in making experiences better.

Many User Interface (UI) and User Experience (UX) elements nevertheless want to be optimized, with most of the experiences taking inherited elements from preceding structures (PC, Smartphone). However, this new medium can considerably benefit from new UI/ UX paradigms supported with the aid of novel consumer input interfaces such as: gaze-tracking and specifically, hand gestures. The growing maturity of these methods will enlarge the immersion gap with other kinds of media.

**Esthetical perspective:** One undesired effect of one of the pioneers in the new wave, Google Glass, was the rejection of the gadget among sure segments due to the way its users seemed and behaved. This is called the “Glass hole effect”, and the danger of rejection is nonetheless something that need to be addressed to see growth, mainly for AR applications. Currently, units have very restricted aesthetics customizations (if at all). Improvements in this route will make it viable to mix AR/VR gear with private style.

**Price:** The whole expenditure needed to attain a respectable trip should be within attained for average consumer. A key component supporting to destroy this barrier is that “entry-level” experiences can be achieved with an already current device: smart phones. This skill that for those customers who own a high-end phone, the only barrier is obtaining the headset. The sharing financial system has demonstrated to be an fantastic way to decrease what in any other case would be giant spend/investment boundaries for day-to-day users.

**Gadget Comfort:** The Device have to no longer be cumbersome, painful or in any other case uncomfortable to put on for lengthy periods of time. In the case of VR, the important variable nevertheless affecting this is the weight of gadget, which can purpose fatigue and injury if no longer used properly.

In the case of AR, the discipline of view (FOV) is the major limiting factor, technology need to evolve to obtain FOV values shut to their VR counterparts.

**Content Availability:** Any platform is vain without content. In the case of AR/VR, grant of this content remains a challenge. In general, when companies each in leisure and non- amusement industries enforce VR/AR experiences as section of their enterprise models, this barrier will begin to come to be much less relevant. In VR, one factor helping to alleviate this is the growing availability of consumer-grade 360° cameras to feed User-Generated Content (UGC) communities.

Monetization of this Content is an open question in this regard as well. Currently, there is a divide between wondering of AR/ VR as extraordinarily premium content material (and as a result problem to sturdy

monetization) and making the buy of AR/VR tools something eye-catching (which asks for substantial free content to revel in the experience).

#### **AR/VR ADOPTION CHALLENGES FOR ORGANIZATIONS**

**Tactical coalition:** Many groups in several consumer and industrial sectors are experimenting with AR/ VR simply for the sake of experimenting. This could lead to abandonment until agencies actively work on discovering purposes that match and improve their standard commercial enterprise and marketing strategy. A way of doing this is to assume of paradigm-breaking use instances the place AR/VR cans speed-up processes or do away with boundaries in each and every day work.

**Profitable/ sizeable Market:** Depending on the form of purchaser perspective, businesses that are aware of the developments in AR/ VR ought to also develop their grasp of rising person segments. These segments, and their relationship with the company's personal purchaser segmentation strategy, should be understood to exhibit a clear photograph of which will be the most applicable platforms/media. It is in these platforms the place relevant customers should be reached.

**Key Performance Indicators (KPIs):** As applied sciences mature, some aspects are in all likelihood to attain lower fee points throughout the entire value chain. Being capable to set up concrete KPIs linking AR/VR activities with productiveness gains, conversation improvements, Sales increase and other business goals will help in justifying providing funding for extra bold AR/VR projects. This will help in decreasing the funding barrier and shortening the payback intervals of undertaking involving AR/VR content.

**Market disintegration:** In the contemporary boom section of AR/VR, the trend is for non-stop emergence of new platforms. This creates a sizable trouble for content material creators, as incompatibility between these structures is a barrier to reap cost- wonderful reach. Being capable to attain a preferred number of users besides having to re-develop content will make content material in AR/VR less difficult to turn out to be financially viable. This should be finished both by creating or adopting open requirements to secure interoperability between the platforms.

**Human Resource:** The skill set wished to produce AR/VR content material is unique: 3-D, video, interaction design, mobile, storytelling, etc. This mixture of technical and non-technical abilities is proving challenging to acquire. On the other hand, it is additionally a skill set that would possibly not fit well with the average company's profile (depending heavily on industry), which would in turn out to be a retention problem.

#### **ENVIRONMENT ANALYSIS OF OPPORTUNITIES & CHALLENGES**

Virtual, augmented, and diminished reality sciences have attracted interest from massive tech gamers. in the destiny, diverse of those businesses may additionally have a conflict of hobby of their quest to grow this new environment.

The use of transportable (wearable) technological know-how incorporating digital, augmented, and faded fact will extensively improve our each day lives. Tasks like reading a product's commands, or issues associated with language boundaries will give up to exist or at least, to be diminished.

The various sectors that will get hold of a brilliant raise will truly be lecturers. these carried out sciences also have the capacity to revolutionize advertising, hospitality, and entertainment by means of taking sensory reports to a brand new degree of immersion. There are additionally exquisite possibilities for the proliferation of those innovations in the Healthcare quarter.

The most important boundaries or limitations for the adoption and diffusion of those gadget are related with purchaser training, cultural change, and innovation recognition. Technical / Technological problems and adoption barriers related to rate are transient (Grossmann, 2015).

Desk two summarizes the AR and VR adoption boundaries for purchasers and groups analyzed in the conceptual framework. removing these barriers will require modifications to foster their adoption and diffusion worldwide.

We are expecting that enhancements in altered realities might be all of sudden adopted because of the truth they have got the potential to purpose disruption in various categories. understanding, big-scale implementation will require robust funding at the phase of women and men and institutions. this means the threat of creating an get proper of entry to hole among different socio-not pricey segments and nations.

**FUTURE**

Our goal through this study used to be to stimulate reflection on adoption patterns and technological factors to be regarded in the graph of enterprise and branding strategies, as nicely as the administration of client experiences based on virtual, augmented and diminished realities in exceptional sectors and categories.

This paper affords a conceptual framework constructed from an massive literature review, case study analysis and intended to clarify concepts and challenges associated with choice client realities (VR/AR/DR). Through this we can be sure of bright future and problem eradications through VR/AR/DR.

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**NEURAL NETWORK BASED ASSISTANT FOR AN ORGANIZATION USING CLOUD PLATFORM****Akshay Ashish****ABSTRACT**

Many people adopting Smart Assistant Devices such as Beta Home. Now a days of solely engaging with a service through a keyboard are over. The new modes of user interaction are aided in part by this research will investigate how advancements in Artificial Intelligence and Machine Learning technology are being used to improve many services. In particular, it will look at the development of assistants as a channel for information distribution. This project is aimed to implement an android-based chatbot to assist with Organization basic processes, using Beta tools such as Dialogflow that uses Natural language processing NLP, Actions on Beta and Beta Cloud Platform that expose artificial intelligence and Machine Learning methods such as natural language understanding. Allowing users to interact with the assistant using natural language as input and to train the chatbot i.e. assistant using Dialogflow Machine learning tool and some appropriate methods so it will be able to generate a dynamic response. The chatbot will allow users to view all their personal academic information, schedule meetings with higher officials, automating the organization process and organization resources information all from within the chatbot i.e. Assistant. This project uses the OAuth authentication for security purpose. The Dialogflow helps to understand the users query by using machine learning algorithms. By using this assistant we are going to use the Cloud Vision API for advancement. We will use Dialogflow as key part to develop the Beta assistant.

*Keywords: Cloud Platform, Natural Language Processing, Actions on Beta, Smart Assistants.*

**I. INTRODUCTION**

This Beta assistant helps users to interact with our product and services in any organization using in form of text-based and conversational interfaces such as voice by using the Dialogflow tool, that have the inbuilt machine learning algorithms to understand the users prompt and based on the users query our chatbot will understand the training phrases and generates the dynamic response to user. In this paper we are going to study on Dialogflow, Actions on Beta and Firebase Realtime Database. The academic organizations and other tech industries were one of the first Industries to adopt new technologies. This integration has grown massively, helping organizations reach a wider customer base enabling them to perform their conveniently educational organizations are becoming ever more competitive with each other to adopt the newest advancements in technology to provide an improved delivery service to satisfy users. The Organizations are now enabling the use of technology so, customers can perform more tasks online using the voice based and conversational such as getting results, attendance, personal and academic information remotely and intelligent chatbots to increase customer service and assist employees & users. Generally, chatbots are a simple software programs that can respond to customer prompts. The focus of this project is to implement these new technologies to create an intelligent chatbot Beta assistant to enable organizations to appeal to millennial and potentially gain a lifelong user.

The proposed system takes an educational institution as a reference.

**II. METHODOLOGY**

This proposed system is used to create a Beta assistant to simulate a human conversation to assist users with not only educational needs it can be applied to any organization, and to provide a more personal experience. In today's world there are so many advancements in artificial Intelligence, machine learning techniques, improved aptitude for decision making, larger availability of domains and corpus, have increased the practicality of integrating a chat bot into applications we can integrate the chatbot. Users will be able to ask any institution related queries in natural language that they are comfortable using such as view account information, grades,

transactions and check balance, Subjects enrolled etc. details using the assistant. The chatbot will identify and understand what the user is asking and generate an appropriate response based on the conversational context. Immediate responses will be provided by the chatbot to redeem the need for the user to have to call or visit their college branch and wait in queue in order to get through to an advisor for assistance. In order to make the application more secure OAuth Authentication protocol will be integrated and provides high security ensuring only registered users can gain access to their account preventing the risk of fraud.

We can use the Google Cloud API's for this project and we can develop many various features.

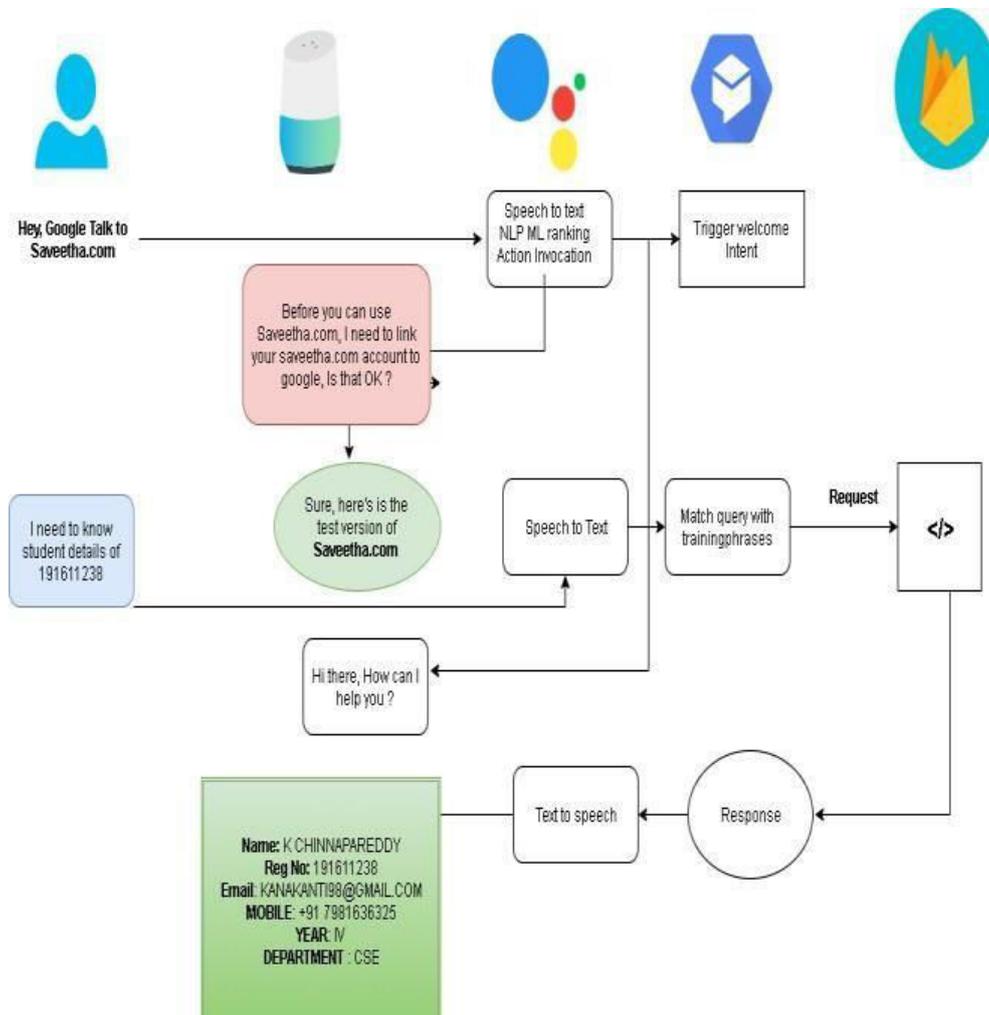
This system uses Firebase Real time Database we can build rich, collaborative applications by allowing secure access to the database directly from client-side code. Data is persisted locally, and even while offline, real time events continue to fire, giving the end user a responsive experience.

This system also uses the advanced technologies like Cloud Platform, Dialog flow, Actions on Google and Google Cloud vision API i.e. Cloud Vision API allows developers to easily integrate detection features within applications, including image labelling, face and landmark detection, optical character recognition (OCR), and tagging of explicit content. Google Cloud Auto ML Vision API enables you to create a custom machine learning model for image labeling.

The system is linked with Beta Assistant to provide wonderful experience to user, this project is available to every user where ever the Beta is there. The users of this project are no need to install app in their device, Only users need to call the project by using the invocations like "Talk to saveetha.com", When we call the invocation this app asks to you sign in to app using various methods like Sign in with Beta, Facebook, LinkedIn and manual username and password method.

**III. SYSTEM ARCHITECTURE**

The system architecture consists of Java Script programming language, Actions on Beta, Dialogflow, Firebase Realtime database. The Dialogflow which is an integrated development environment from Beta is used to develop chatbots using various programming languages.



**SYSTEM ARCHITECTURE**

**IV. RESULTS AND DISCUSSION**  
**AUTHENTICATION**

In this project, we are going to create an OAuth authentication for accessing the Beta assistant. The OAuth authentication is a standard protocol helps to provide the secure delegated access to client applications. This OAuth works over http protocol and authorizes devices, API's, servers and applications with access tokens rather than credentials. In this project, we have integrated the Sign In with Beta, Microsoft and LinkedIn and also provided the normal username and password. We need to create the authorization URL and token URL for setting up OAuth authentication.

**STUDENT**

The student modules can help the students for accessing their academic data over the voice and conversational based system, for example when a user says "I want to know my grades or result" It will generate response based on the trained phrases and uses the machine learning strategies. This module will be shown when user logs in with the college User Id and college Mail Id like in similar way it gets do all the basic process.

The basic process of this project is shown in the below diagrams so, we can visualize the working process of the project.

**ADMIN**

Admin page in this project enables for easy supervision of all administrative activities of the institution. All the information and functions of the management can be operated from the admin panel, it provides access to new users of the organization, and also take care of account roles and privileges, and their logging activity, etc. features.

We can also notify the users with the notification option like Assignment deadlines, Fee dues and various tasks in any organization. Admin can manage all the profiles of organization users.

**FACULTY**

The Faculty module can help the teachers to do basic processes such as getting student details using Register number, Mobile number and also, they can give the assignment status and provide grades for students and when faculties says over voice it can be automated such as scheduling meetings with HOD and department head.

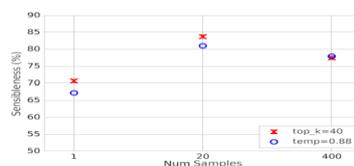


Figure : Static sensibleness over number of sampled responses for top-k and sampling with temperature.

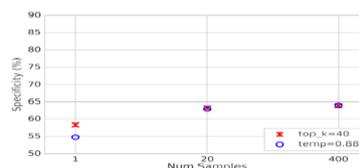


Figure : Static specificity over number of sampled responses for top-k and sampling with temperature.

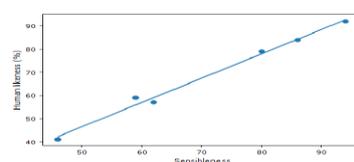


Figure : Sensibleness vs human likeness. Each point is a different chatbot, except for the top right one, which is human. A regression line is plotted, for which the coefficient of determination ( $R^2$ ) is 0.99, an indication of strong correlation between sensibleness and human likeness.



**CLOUD VISION API**

Cloud Vision API is a Pre-Trained Machine Learning model that helps to derive insights from pictures and videos. You can get insights including image labelling, face detecting and landmark detection, optical character recognition (OCR), and tagging of explicit content. In this project we can detect the faces of students and take their details within seconds of processing the data. We can also take the attendance by recognizing the faces of students and their activity. The CloudVision API is the best features and we will be utilizing this feature in this project.

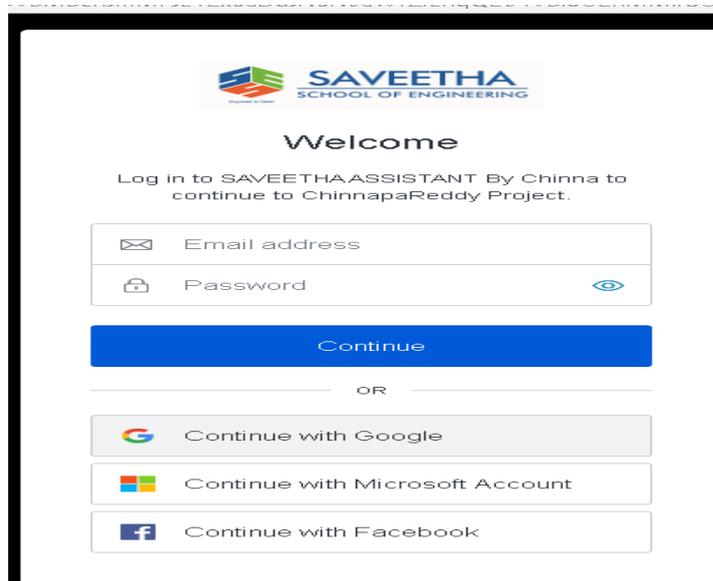
**ACTIONS ON BETA:**

Actions on Beta could be a development platform for the Beta Assistant. It permits the third-party development of "actions"—applets for the Beta Assistant, that give extended functionality. The actions platform supports "direct" actions, still as "conversational" actions for a lot of advanced applications. We can build the extrardentary applications using the actions on Beta console. The Actions on Beta enables us to seamlessly integrate our services with Beta Assistant and we can reach users across 500M+ devices, including smart speakers like Beta Home, phones, cars, TVs, headphones and more.

**V. WORKING**

Open Android mobile or Beta home or smart devices that has Beta assistant i.e. Open Beta assistant and just say “Talk to saveetha.com”. Then it will be asked you to link your account to saveetha.com organization if you are okay with that proceed for OAuth authentication.

After successful authentication it will be redirected to app and It will say greetings to user and asks how can I help you with organization resources. Then the user will interact with this Beta assistant project and for example if a faculty asks like this “I need to get student details “, then app asks you enter the register number of the student after entering it will fetch and give the dynamic response to user. Like this in similar way it can do all tasks.



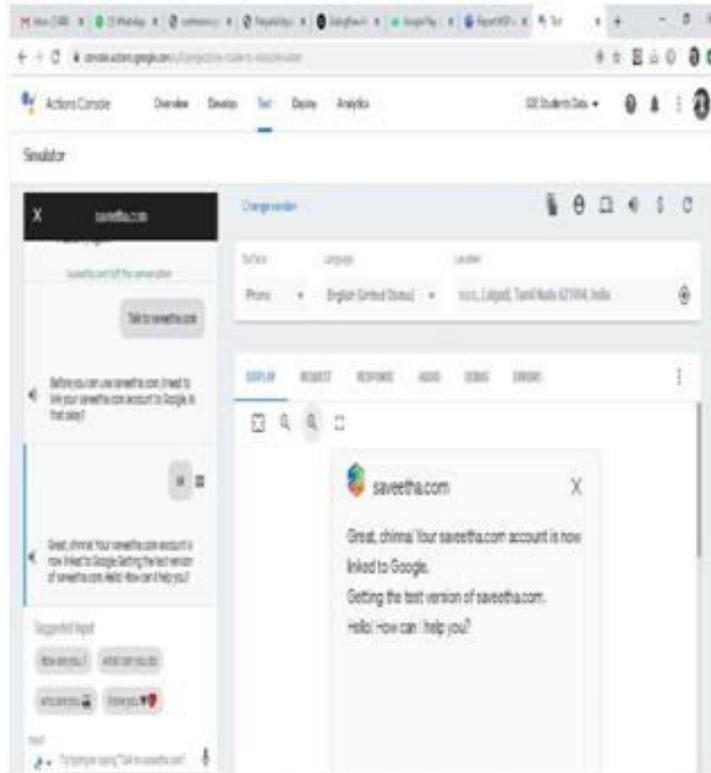
**OAuth Authentication**

Whenever if we say over voice to the app i.e. Dialogflow will convert the speech into text and understand and compare the trained phrases with help of Intents and Agents and if in case we enable the webhook the query will be sent to database, here I have used Firebase Realtime Database will send response to user by converting the text in to speech by the Beta Assistant. With help of Beta Cloud Vision API, we can detect faces of students and take any organization to next level of the advanced technology.

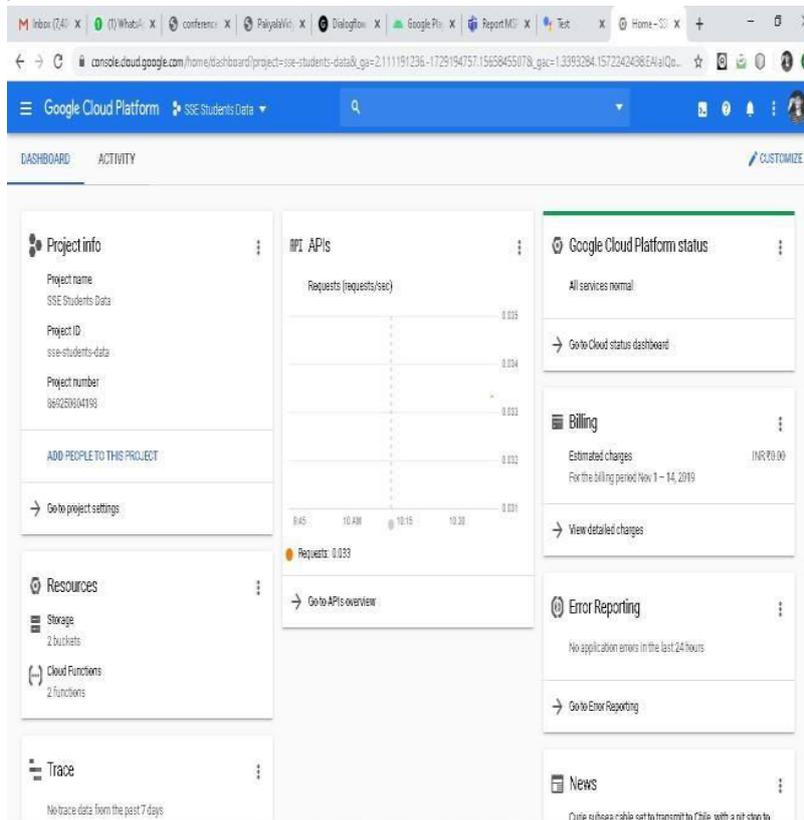
For using the Beta API library scopes, we need to <https://console.cloud.google.com/apis/credentials?project>

= Project name , We need to fill the Consent screen for verification by Beta Security team, If they approve only we need to use their scopes such as Scheduling meetings with some libraries, Contacts i.e. People API and there

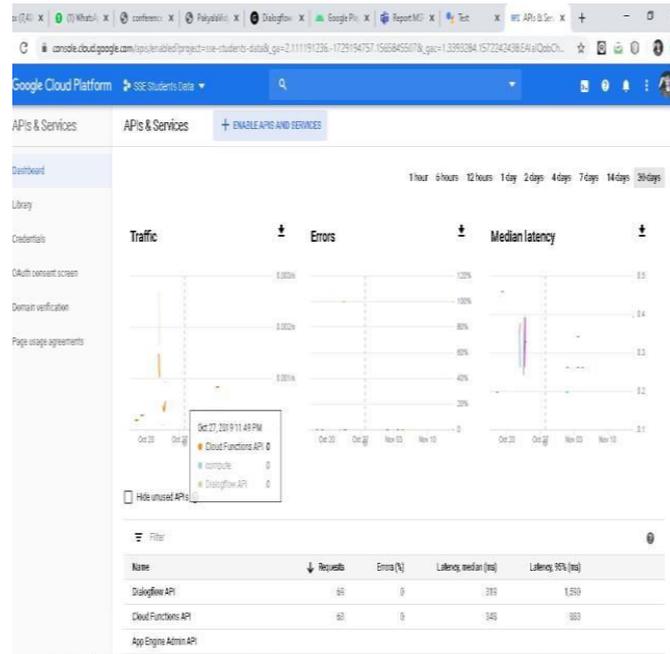
are lot of API's are available to use. With that API's we can create a super AI & Machine Learning Model and do lot more with technology. For approving our Beta Assistant project, we also need to host a Privacy Policy for that App in our own Domain. Like I have hosted it on my domain. In Beta Cloud Platform we can manage all the application insights such as API requests, responses and errors etc. In Actions on Beta Console we can test the app in simulator over the voice and text based and also, we can use our app in our mobile before publishing it. For that we need to Sign In with same account in our mobile for Beta Assistant.



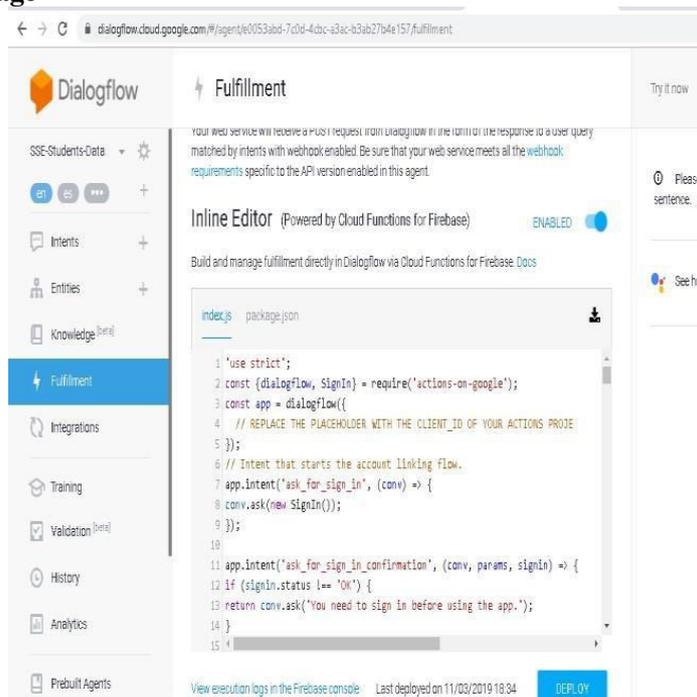
Beta Actions Console



Project Overview Details



Project API & Traffic page



Dialog flow Fulfillment & Webhook page

V. CONCLUSION

Therefore, in this way we can create an Artificial Intelligence & Machine Learning based Beta assistant for any organization. This process is easier when compared to other procedures. That can automate the basic and complex tasks and reduces the employee intervention of organization to solve the customer queries. As the above stated methodology, we can improve the Machine Learning techniques in Dialogflow and Firebase real-time database provides various features and with OAuth authentication our application becomes more secure and responsive and Beta cloud or any other cloud services we can use like Microsoft Azure, Google Cloud etc.

Thanks for reading my journal paper. I think this paper will help you in creating new technology.

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He having knowledge on various domains like AI, ML, Cyber Security, GCP, Microsoft Azure, Edge Computing and Programming and holding IT Professional Certification and lot of various certifications.

His research interests include Cloud, Networking, Network Security, Neural Network, Virtual Reality and Cyber Security. Connect with me on social media platforms.

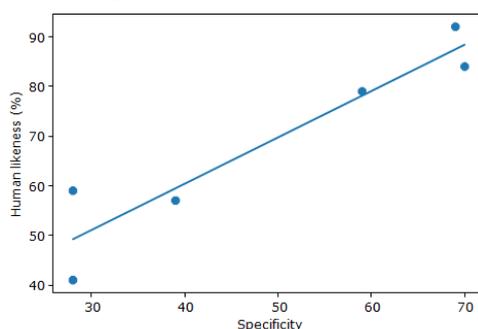


Figure : Specificity vs human likeness. Each point is a different chatbot, except for the top right one, which is human. A regression line is plotted, for which the coefficient of determination ( $R^2$ ) is 0.89, an indication of strong correlation between specificity and human likeness.

## ANALYSIS OF THOMAS COOK (INDIA) LTD. FINANCIAL DISTRESS LEVEL THROUGH ALTMAN'S Z SCORE MODEL

**Bhuvaneshwar Sharma**

### ABSTRACT

*In the era of this competition every business wants to know its financial strength and every investor want to know Financial health of the company in which he or she is going to invest his hard earned money. Altman's Z score model is a numerical measurement that is used to predict the chances of a business I'm going bankrupt in the next two years.*

*This model shows accuracy of 72 - 80% Accuracy in predicting bankruptcy two years before which makes it trustworthy model for investors and owners of the business. This paper will analyse the financial distress status of Thomas Cook (India) ltd so that it become easier to predict the bankruptcy level in the next two years.*

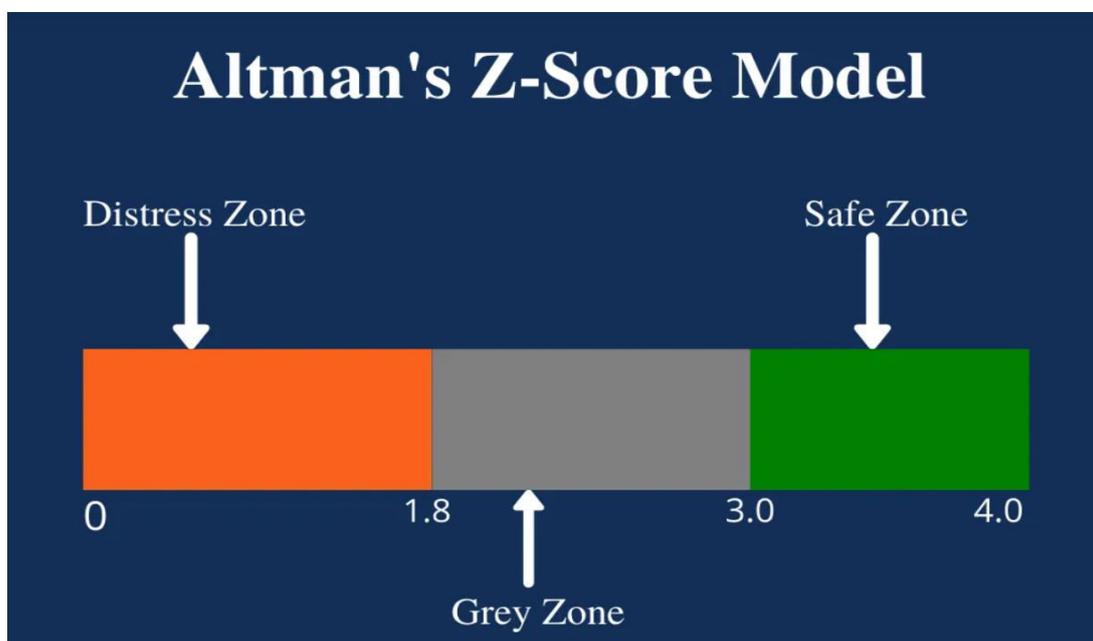
*Keywords: Z score, financial health, bankrupt.*

### INTRODUCTION

The **Z-score formula for predicting bankruptcy** was published in 1968 by Edward I. Altman, who was, at the time, an Assistant Professor of Finance at New York University. The formula may be used to predict the probability that a firm will go into bankruptcy within two years. Z-scores are used to predict corporate defaults and an easy-to-calculate control measure for the financial distress status of companies in academic studies. The Z-score uses multiple corporate income and balance sheet values to measure the financial health of a company.

#### What is Altman's Z-Score Model?

Altman's Z-Score model is a numerical measurement that is used to predict the chances of a business going bankrupt in the next two years. The model was developed by American finance professor Edward Altman in 1968 as a measure of the financial stability of companies.



Altman's Z-score model is considered an effective method of predicting the state of financial distress of any organization by using multiple balance sheet values and corporate income. Altman's idea of developing a formula for predicting bankruptcy started at the time of the Great Depression, when businesses experienced a sharp rise in incidences of default.

- Altman's Z-score Model is a numerical measurement that is used to predict the chances of bankruptcy.
- American Edward Altman published the Z-score Model in 1968 as a measure of the probability of a company going bankrupt.
- Altman's Z-score model combines five financial ratios to predict the probability of a company becoming insolvent in the next two years.

## LITERATURE REVIEW

The ratio is a measurement tool that is used to analyze a company's financial statements. The ratio describes a relationship between a consideration or a certain amount by the number of the other. According to BambangArwana (2001:329), financial ratio analysis is the process of determining important operating and financial characteristics of a company's accounting data and financial statements. The purpose of this analysis is to determine the performance efficiency of the managers of the company that realized in financial records and financial statements. Ratio-the ratio used in this method of Altman can be grouped in three major groups namely liquidity ratios, profitability ratios, solvency ratio and activity ratios. 2.2 Financial Distress Brigham and Gapenski (1997) split the definition of financial distress into several types, namely economic failure, business failure, technical insolvency, insolvency in bankruptcy, bankruptcy and legal. Financial distress occurs before the bankruptcy. Bankruptcy itself is usually defined as a State or situation where companies fail or no longer able to meet the obligations of the debtor because the company is experiencing a shortage and the insufficiency of funds.

## OBJECTIVES

1. Calculate Altman's Z score of Thomas Cook India Ltd. For the financial year 2021
2. Analyse the results of Altman's Z score of Thomas cook India ltd.

## RESEARCH METHODOLOGY

### Altman's Z-Score Model Explained

The Z-score model was introduced as a way of predicting the probability that a company would collapse in the next two years. The model proved to be an accurate method for predicting bankruptcy on several occasions. According to studies, the model showed an accuracy of 72% in predicting bankruptcy two years before it occurred, and it returned a false positive of 6%. The false-positive level was lower compared to the 15% to 20% false-positive returned when the model was used to predict bankruptcy one year before it occurred.

When creating the Z-score model, Altman used a weighting system alongside other ratios that predicted the chances of a company going bankrupt. In total, Altman created three different Z-scores for different types of businesses. The original model was released in 1968, and it was specifically designed for public manufacturing companies with assets in excess of \$1 million. The original model excluded private companies and non-manufacturing companies with assets less than \$1 million.

Later in 1983, Altman developed two other models for use with smaller private manufacturing companies. Model A Z-score was developed specifically for private manufacturing companies, while Model B was created for non-publicly traded companies. The 1983 Z-score models comprised varied weighting, predictability scoring systems, and variables.

### Altman's Z-Score Model Formula

The Z-score model is based on five key financial ratios. It increases the model's accuracy when measuring the financial health of a company and its probability of going bankrupt.

The Altman's Z-score formula is written as follows:

$$\zeta = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E$$

Where:

- **Zeta** ( $\zeta$ ) is the Altman's Z-score
- **A** is the Working Capital/Total Assets ratio
- **B** is the Retained Earnings/Total Assets ratio
- **C** is the Earnings Before Interest and Tax/Total Assets ratio
- **D** is the Market Value of Equity/Total Liabilities ratio
- **E** is the Total Sales/Total Assets ratio

### What Z-Scores Mean

Usually, the lower the Z-score, the higher the odds that a company is heading for bankruptcy. A Z-score that is lower than 1.8 means that the company is in financial distress and with a high probability of going bankrupt. On the other hand, a score of 3 and above means that the company is in a safe zone and is unlikely to file for

bankruptcy. A score of between 1.8 and 3 means that the company is in a grey area and with a moderate chance of filing for bankruptcy.

Investors use Altman's Z-score to make a decision on whether to buy or sell a company's stock, depending on the assessed financial strength. If a company shows a Z-score closer to 3, investors may consider purchasing the company's stock since there is minimal risk of the business going bankrupt in the next two years.

However, if a company shows a Z-score closer to 1.8, the investors may consider selling the company's stock to avoid losing their investments since the score implies a high probability of going bankrupt.

### THE FIVE FINANCIAL RATIOS IN Z-SCORE

The following are the key financial ratios that make up the Z-score model:

#### 1. Working Capital/Total Assets

Working capital is the difference between the current assets of a company and its current liabilities. The value of a company's working capital determines its short-term financial health. A positive working capital means that a company can meet its short-term financial obligations and still make funds available to invest and grow.

In contrast, negative working capital means that a company will struggle to meet its short-term financial obligations because there are inadequate current assets.

Working Capital/Total Assets = 0.1391

#### 2. Retained Earnings/Total Assets

The retained earnings/total assets ratio shows the amount of retained earnings or losses in a company. If a company reports low retained earnings to total assets ratio, it means that it is financing its expenditure using borrowed funds rather than funds from its retained earnings. It increases the probability of a company going bankrupt.

On the other hand, a high retained earnings to total assets ratio shows that a company uses its retained earnings to fund capital expenditure. It shows that the company achieved profitability over the years, and it does not need to rely on borrowings.

#### 3. Earnings Before Interest and Tax/Total Assets

EBIT, a measure of a company's profitability, refers to the ability of a company to generate profits solely from its operations. The EBIT/Total Assets ratio demonstrates a company's ability to generate enough revenues to stay profitable and fund ongoing operations and make debt payments.

#### 4. Market Value of Equity/Total Liabilities

The market value, also known as market capitalization, is the value of a company's equity. It is obtained by multiplying the number of outstanding shares by the current price of stocks.

The market value of the equity/total liabilities ratio shows the degree to which a company's market value would decline when it declares bankruptcy before the value of liabilities exceeds the value of assets on the balance sheet. A high market value of equity to total liabilities ratio can be interpreted to mean high investor confidence in the company's financial strength.

Market Value of Equity/Total Liabilities = 0.0137

#### 5. Sales/Total Assets

The sales to total assets ratio shows how efficiently the management uses assets to generate revenues vis-à-vis the competition. A high sale to total assets ratio is translated to mean that the management requires a small investment to generate sales, which increases the overall profitability of the company.

In contrast, a low or falling sales to total assets ratio means that the management will need to use more resources to generate enough sales, which will reduce the company's profitability.

Sales/Total Assets = 0.1154

Original Z-score component definitions

$X_1$  = working capital / total assets

$X_2$  = retained earnings / total assets

$X_3$  = earnings before interest and taxes / total assets

$X_4$  = market value of equity / total liabilities

$X_5$  = sales / total assets

**Z-score bankruptcy model:**

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1X_5$$

**Zones of discrimination:**

$Z > 2.99$  – "safe" zone

$1.81 < Z < 2.99$  – "grey" zone

$Z < 1.81$  – "distress" zone

Z-score estimated for non-manufacturers and emerging markets

$X_1$  = (current assets – current liabilities) / total assets

$X_2$  = retained earnings / total assets

$X_3$  = earnings before interest and taxes / total assets

$X_4$  = book value of equity / total liabilities

**Z-score bankruptcy model (non-manufacturers):**

$$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4^{[5]}$$

**Z-score bankruptcy model (emerging markets):**

$$Z = 3.25 + 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

**Zones of discrimination:**

$Z > 2.6$  – "safe" zone

$1.1 < Z < 2.6$  – "grey" zone

$Z < 1.1$  – "distress" zone

**ANALYSIS**

**Thomas Cook India has a Altman Z-Score of 1.83, indicating it is in Distress Zones. This implies bankruptcy possibility in the next two years.**

The zones of discrimination were as such:

When Altman Z-Score  $\leq 1.8$ , it is in Distress Zones.

When Altman Z-Score  $\geq 3$ , it is in Safe Zones.

When Altman Z-Score is between 1.8 and 3, it is in Grey Zones.

The historical rank and industry rank for Thomas Cook India's Altman Z-Score or its related term are showing as below:

During the **past 13 years**, Thomas Cook India's **highest** Altman Z-Score was **4.01**. The **lowest** was **-0.09**. And the **median** was **1.81**.

**Thomas Cook India Altman Z-Score Historical Data**

The historical data trend for Thomas Cook India's Altman Z-Score can be seen below:

\* For Operating Data section: All numbers are indicated by the unit behind each term and all currency related amount are in USD.

\* For other sections: All numbers are in millions except for per share data, ratio, and percentage. All currency related amount are indicated in the company's associated stock exchange currency.

**CONCLUSION**

Here we can see that the Altman's z score Of Thomas Cook India limited is 1.83 which is showing its financial position in grey zone it indicates the company is near 2 distress zone and the company is occurring loss in third quarter of 2021 rupees 24.59 crores. The company should implement Effective policies for generating profits.

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## ANNEXURES

<b>Finance &gt;&gt;Balance Sheet IND&gt;&gt;Thomas Cook (India) Ltd</b>	
<b>Year</b>	<b>March 2021</b>
<b>ASSETS</b>	
Non-Current Assets:	
Fixed Assets	25,910.90
Property, Plant and Equipment	207.44
Capital Work in Progress	0
Intangible Assets	26.76
Intangible Assets under Development	0
Fixed Assets Held For Sale	0
Lease Adjustment	0
Biological Assets other than Bearer Plants	0
Non-current Investments	
Investment Properties	0
Investments in Subsidiaries, Associates and Joint venture	932.17
Financial Assets :	
Investments of Life Insurance Business	0
Investments - Long-term	94.48
Loans - Long - Term	34.37
Others Financial Assets - Long-term	1.94
Non Current Tax Assets - Long - Term	91.1
Insurance Related Assets	0
Other Non-current Assets	4.51
Deferred Tax Assets (Net)	145.97
<b>Total Reported Non-current Assets</b>	<b>1,563.66</b>
Current Assets:	
Inventories	0
Biological Assets other than Bearer Plants	0
Financial Assets :	
Current Investments	0
Trade Receivables	63.97
Cash and Cash Equivalent	563.98
Bank Balances Other Than Cash and Cash Equivalent	124.9
Loans - Short-term	221.6
Others Financial Assets - Short-term	40.04
Current Tax Assets - Short-term	0
Insurance Related Assets	0
Other Current Assets	180.79
Assets Classified as Held for Sale	0
<b>Total Current Assets</b>	<b>1,195.29</b>
Foreign Currency Monetary Item Translation Difference Account	0
Regulatory Deferral Account - Debit Balance	0
Other Assets Excluding Non-Current and Current Assets	0
<b>Total Non-Current and Other Assets</b>	<b>1,563.66</b>

<b>Total Assets</b>	2,758.95
<b>EQUITY AND LIABILITIES</b>	
Share Capital	37.83
Number of Equity Shares - Bought Back during the Current period	0
Number of Total Bonus Shares Issued upto Current period	13.88
Number of Equity Shares - Paid Up	37.83
Paid Up Capital	37.83
Treasury Shares	0
Number of Bonus Shares Issued During the Current Period.	0
Number of Shares Splitted During the Current Period.	0
Other Equity	1,444.34
Money Received Against Share Warrants	0
Employee Stock Options / Others	-49.98
Share Application Money Pending Allotment	435.66
Total Stockholders' Equity	1,867.84
Total Equity	1,867.84
Non-Current Liabilities:	
Long Term Borrowings	0
Others Financial Liabilities - Long-term	0.21
Non Current Tax Liabilities - Long-term	0
Long-term Provisions	43.48
Deferred Tax Liabilities (Net)	0
Insurance Related Liabilities	0
Other Non-Current Liabilities	14.72
Total Reported Non-current Liabilities	79.62
Current Liabilities:	
Short Term Borrowings	111.44
Trade Payables	432.84
Others Financial Liabilities - Short-term	34.52
Current Tax Liabilities - Short-term	31.97
Provisions	10.36
Insurance Related Liabilities	0
Other Current Liabilities	183.9
Liabilities Directly Associated with Assets Classified as Held for Sale	0
<b>Total Current Liabilities</b>	811.48
Foreign Currency Monetary Item Translation Difference Account	0
Hybrid Perpetual Securities	0
Regulatory Deferral Account - Credit Balance	0
Other Liabilities Excluding Equity, Non-Current and Current Liabilities	0
<b>Total Equity and Liabilities</b>	2,758.95
Contingent Liabilities and Commitments (to the Extent Not Provided for)	628.24
Book Value of Share	39.18

## PERFORMANCE ANALYSIS USING CAMEL MODEL- A STUDY OF FEDERAL BANK

Shailesh Goyal and Tushar Gupta

**ABSTRACT**

*As a country's financial system depends upon the financial soundness of banking industry, it is very much essential to measure it. The main objective of this study is to analyze the financial performance of federal banks and compare them using CAMEL Model.*

*The study is related to a period of five years from financial year 2017-2018 to 2020 – 2021. The CAMEL model helped to measure the performance of banks from each of the important parameter like Capital Adequacy, Assets Quality, Management Efficiency, Earning Quality and Liquidity.*

**INTRODUCTION**

The performance evaluation in a Banking sector, for sustainable growth and development has been recognized since long it still requires a system that first measures all aspects of banks and then brings out the strengths and weaknesses of the banks to ensure further improvement. Performance evaluation systems have evolved over a period of time from single aspect systems to more comprehensive systems covering all aspects of banks. CAMEL Model is one such rating system that proved to be better for performance measurement, evaluation and strategic planning for future growth and development of the Indian banks or any commercial bank in the light of changing requirements of this sector.

**REVIEW OF LITERATURE**

CAMEL model as a tool is very effective, efficient and accurate to be used for evaluating the performance in banking industries and to anticipate the future and relative risk. CAMEL, as a rating system for judging the soundness of Bank is a quite useful tool that can help in mitigating the conditions and risks that lead to Bank failures.

**PURPOSE OF THE STUDY**

Although many studies based on the CAMEL model revealed performance of the bank, it is always necessary to evaluate the bank continuously, so as to monitor the effectiveness and ensure the true financial position.

**RESEARCH METHODOLOGY:****OBJECTIVES OF THE STUDY**

1. To study the performance analysis of federal bank by using CAMEL model.
2. To assess the financial growth of the bank.
3. To better understand that the efficiency of federal Bank.

**SCOPE OF THE STUDY**

The study covers only private bank and CAMEL ratios are used to evaluate the bank's performance and efficiency to come to a conclusion that which bank is leading position in performance and efficiency.

**SOURCES OF DATA**

Data is collected from the secondary sources, which include Annual Reports, Data published on bank websites, Journals.

**TOOLS FOR ANALYSIS: CAMEL MODEL**

C- Capital Adequacy

A- Assets Quality

M- Management

E- Earning and Profitability

L-liquidity (also called asset liability management)

**Balance Sheet of the Federal Bank**

Year	201703	201803	201903	202003	202103
<b>SOURCES OF FUNDS:</b>					
<b>Capital</b>	344.81	394.43	397.01	398.53	399.23
<b>Reserves Total</b>	8,597.57	11,815.81	12,876.03	14,119.08	15,724.38

Equity Share Warrants	0	0	0	0	0
Equity Application Money	0	0	0	0	0
Deposits	97,664.56	1,11,992.49	1,34,954.34	1,52,290.08	1,72,644.48
Borrowings	5,897.32	11,533.50	7,781.32	10,372.43	9,068.50
Other Liabilities & Provisions	2,704.64	2,796.93	3,644.49	3,752.04	3,860.15
Others	0	0	0	0	0
<b>TOTAL LIABILITIES</b>	<b>1,15,208.90</b>	<b>1,38,533.16</b>	<b>1,59,653.19</b>	<b>1,80,932.16</b>	<b>2,01,696.74</b>
<b>APPLICATION OF FUNDS:</b>					
Cash & Balances with RBI	4,576.56	5,132.76	6,419.17	6,174.91	7,647.04
Balances with Banks & money at Call	2,875.61	4,070.65	3,647.63	6,399.67	11,944.35
Investments	28,196.09	30,781.07	31,824.47	35,892.68	37,186.21
Advances	73,336.27	91,957.47	1,10,222.95	1,22,267.91	1,31,878.60
Fixed Assets	489.47	457.37	472.04	479.99	491.13
Other Assets	5,734.90	6,133.82	7,066.93	9,717.00	12,549.41
Miscellaneous Expenditure not written off	0	0	0	0	0
Others	0	0	0	0	0
<b>TOTAL ASSETS</b>	<b>1,15,208.90</b>	<b>1,38,533.14</b>	<b>1,59,653.19</b>	<b>1,80,932.16</b>	<b>2,01,696.74</b>
Contingent Liability	23,235.13	26,815.17	29,344.67	34,460.07	36,417.35
Bills for collection	2,568.35	3,123.36	3,542.81	3,767.65	3,977.22

### C - CAPITAL ADEQUACY RATIOS FOR SELECT BANKS

#### Debt Equity Ratios (Der) & Capital Adequacy Ratios (Car) Of Federal Bank

Ratio/Year	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21
Capital Adequacy Ratios	12	15	14	14	14.62
Debt/Equity Ratio	11.9	10.3	11	11.47	11.5

#### INTERPRETATIONS

**Debt-to-Equity Ratio:** - It shows the percentage of company financing that comes from creditors and investors. A higher debt to equity ratio indicates that more bank loans is used than shareholders.

So, it is observed that Debt-to-equity ratio decreased in 2018 as compare to 2017 and DER is increasing continuously from 2018 to 2021.

The Bank Loan of Federal Bank has been increasing since 2018.

**Capital Adequacy Ratio:** - It is a measure of how much capital a bank has available, reported as a percentage of a bank's risk-weighted credit exposures. Higher value of CAR ratio indicates better solvency and financial strength of the banks and lower value indicates poor solvency and financial strength of the banks.

CAR of Federal Bank is fluctuated over previous 5 years.

It increased by 3 from 2017 to 2018. After 2018, it decreased by 1 and remained constant in 2020, and increased in 2021 by .62.

The Federal Bank has improved their solvency and financial strength over previous 5 years.

### A- ASSET QUALITY RATIOS FOR SELECT BANKS

#### Net Npa To Total Assets(Nnta) & Net Npa To Total Advances (Nntad) Ratio Of Federal Bank

Ratio/Year	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21
Net NPA to Total Advances Ratio	3.92%	4.43%	3.31%	5.23%	9.06%
Net NPA to Total Assets Ratio	2.50%	2.94%	2.28%	3.54%	5.92%

#### INTERPRETATIONS

**Net NPA to Total Asset:** -This Ratio indicates the efficiency of the bank in assessing credit risk and, to an extent, recovering the debts. Lower the ratio better is the performance of the bank.

According to our interpretation, we can say that the federal bank’s performance is not getting better but is worse than previous year (increased by 3.83%).

Credit Risk Management System of Federal Bank is not working well.

**Net NPA to Total Advances Ratio:** -This ratio is a measure of quality of assets and advances of the bank. The lower the Net NPA level, the better is the quality of the assets of the bank.

This ratio of Federal Bank has been increasing since 2017. This depicts that the assets quality of the federal bank is not performing well.

**M- MANAGEMENT QUALITY RATIOS FOR SELECT BANKS**

**Credit Deposit (Cdr) & Return On Networth (Rnr) Ratios for Select Banks**

Ratio/Year	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21
<b>Credit Deposit Ratio</b>	74.32	78.84	81.87	80.94	78.21
<b>Return on Net Worth (%)</b>	9.29	7.2	9.37	10.63	9.86

**INTERPRETATIONS**

**Credit Deposit Ratio:** - This indicates the total advances as a proportion of total deposits. It shows the management’s aggressiveness to improve income by higher lending operations. The ratio of 60 percent is considered as a norm for banks. If CD ratio is higher a larger percentage of deposits mobilized are lent to different sectors and it will lead to an improvement in profitability of banks.

The federal Bank has satisfied the norm for maintaining the 60 % Credit Deposit. The management’s aggressiveness to improve income has increased from 2017 to 2019 but after 2019 improvement of income has been decreasing.

**Return on Net Worth Ratio:** - This ratio is a profitability ratio that measures the ability of a firm to generate profits from its shareholders investments in the company. The higher the ratio the better efficiency of generating the profit from shareholder.

The Federal Bank was performing less effectively in 2018 compare to 2017. After 2018, the Bank has been performing effectively till 2020, but in 2021 the bank has performed less effectively in 2021 as compared to previous year.

**E - EARNINGS CAPACITY RATIOS FOR SELECT BANKS**

**Interest Income to Total Assets (Iita) & Return On Assets (Roa) Ratios For Select Banks**

Ratio/Year	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21
<b>Net Interest Income to Total Assets</b>	2.96	2.83	2.81	2.73	2.9
<b>Return on Assets Excluding Revaluations</b>	51.84	61.89	66.84	72.83	80.75

**INTERPRETATIONS**

**IITA:** -This is the ratio of net interest income to total asset. A positive net interest margin means the investment strategy pays more interest than it costs. Conversely, if net interest margin is negative, it means the investment strategy costs more than it makes interest.

IITA of the Federal Bank has been declining from 2017 to 2020. But in 2021, it has increased.

**Return on Assets:** -This measure the bank profits per currency units of assets. It is an indicator of assets management’s efficiency of an organization. Higher value of this ratio indicates better financial productivity and profitability of banks and lower value indicates lower productivity of banks.

ROA of Federal Bank has been increasing since 2017 which indicates that efficiency of assets management has been continuously improving since 2017.

**L - LIQUIDITY RATIOS FOR SELECT BANKS**

**Table-5: Liquid Assets To Total Assets (Lata) & Liquid Assets To Total Deposits (Latd) Ratios For Select Banks**

Ratio/Year	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21
<b>Liquid Assets to Total Assets</b>	4.00%	3.70%	4.00%	3.40%	3.80%
<b>Liquid Assets to Total Deposits</b>	4.69%	4.58%	4.76%	4.05%	4.43%

**INTERPRETATIONS**

**Liquid Assets to Total Assets:** -This indicates that what percent of total assets are held as liquid assets. This liquidity can be considered to be adequate enough to meet the immediate liabilities of the banks. This ratio shows the degree of liquidity preference adopted by the Bank. Higher value of this ratio indicates higher liquidity of banks and lower value indicates lower liquidity of banks.

In 2018, LATA ratio has decreased from 2017. Then increased in 2019, then decreased in 2020 and then increased in 2021.

**Liquid Assets to Total Deposits:** -This ratio indicates that percent of total deposits are held as liquid Assets. Higher value of this ratio indicates higher liquidity of bank and lower value of the ratio indicates lower liquidity of bank.

In 2018, LATD has decreased from 2017. Then, increased in 2019, then decreased in 2020 and then increased in 2021.

Overall Ratios of Federal Bank at the Financial Year of 31 March 2017 to 31 March 2021

Ratio/Year	Mar-21	Mar-20	Mar-19	Mar-18	Mar-17
<b>Capital Adequacy Ratios</b>	<b>14.62</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>12</b>
<b>Debt/Equity Ratio</b>	11.5	11.47	11	10.3	11.9
<b>Net NPA to Total Advances Ratio</b>	9.06%	5.23%	3.31%	4.43%	3.92%
<b>Net NPA to Total Assets Ratio</b>	5.92%	3.54%	2.28%	2.94%	2.50%
<b>Credit Deposit Ratio</b>	78.21	80.94	81.87	78.84	74.32
<b>Return on Net Worth (%)</b>	9.86	10.63	9.37	7.2	9.29
<b>Net Interest Income / Total Assets</b>	2.9	2.73	2.81	2.83	2.96
<b>Return on Assets Excluding Revaluations</b>	80.75	72.83	66.84	61.89	51.84
<b>Liquid Assets to Total Assets</b>	3.80%	3.40%	4.00%	3.70%	4.00%
<b>Liquid Assets to Total Deposits</b>	4.43%	4.05%	4.76%	4.58%	4.69%

**CONCLUSION**

The Conclusion of the project is Assets are increasing it means that is future financial position of the company is good, for a bank a high level of NPA's suggests high probability of a large number of credit defaults that affect the profitability and net-worth of bank here the same thing is happening, the Net NPA to total advance and net NPA to total asset ratio both are increasing year by year,

Credit deposit ratio has been decreased but not as much it shows that earning of the bank as compared to previous year has been decreased, Declining ROE suggests the company is becoming less efficient at creating profits and increasing shareholder value.

As after seeing the ration analysis, we can say that the company is earning profit but as compare to previous year it is not earning that much and the condition of the company is fine, not that much good but it may be possible in the nearest future the bank is grow up & increase their profitability as well as their efficiency power.

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**GAP ANALYSIS OF E-GOVERNANCE MODAL OF INDIA WITH E-GOVERNANCE MODAL OF UNITED STATES****<sup>1</sup>Saurav Kumar and <sup>2</sup>Prof. Sunil Upadhyay (Guide)**<sup>1</sup>ITS Ghaziabad, Mohan Nagar India<sup>2</sup>MBA 2<sup>nd</sup>Semester (2021-2023), I.T.S Mohan Nagar, Ghaziabad**ABSTRACT**

*Information technology (IT) has had a significant impact on the way various Indian government departments operate in recent years. Governments all over the world are becoming more interested in using the internet to deliver government services. Some sectors in some countries have made significant progress toward electronic service delivery, but most government services have not. Despite numerous policies and optimistic deadlines imposed by governments at all levels, the failure to transition from manual to e-service provision is most notable in the local government sector at the District Collectorate office at district level. This paper presents the research based on Indian government current situation IT field.*

*As we know in today's world everything is on internet so to comply with the trend So, we are here examining the IT involvement in Indian governance.*

**INTRODUCTION**

When government websites first appeared in the late 1990s, the term "e-Government" was coined. The use of Information and Communication Technologies (ICTs) to provide citizens and organisations with more convenient access to government services and information is referred to as e-Governance, or "electronic Governance." To put it another way, e-Governance is the use of information and communication technologies, particularly the internet, to improve the delivery of government services to citizens, businesses, and government agencies. It does not only apply to the public sector; it also applies to the private sector's management and administration of policies and procedures. The use of the internet not only speeds up the delivery of services, but it also increases transparency between the government and its citizens. However, in developing countries like India, where literacy is low and most of the population lives in poverty, it is extremely difficult for the government to provide services to such citizens via the internet. India's e-Readiness Rank is also very low. The ability to use information and communication technologies to develop one's economy and welfare is defined as e-readiness. According to the Global Information Technology Report 2012, India's e-Readiness rank is 69, with a score of 3.89 out of ten, indicating that the country's use of ICTs is very limited. Many other factors, such as user privacy and security, the digital divide, and so on, pose significant obstacles to the implementation of eGovernment in India.

**LITERATURE REVIEW****1. Anupa Sarah IInd Year NALSAR University of Law, Shamirpet**

The author has given detailed account about that E-governance is not a panacea for India's rapid development. Governance is a process, and the 'electronic' is merely a tool for improving the efficiency and effectiveness of the governance process. E-governance is about transformation, which assists citizens and businesses in exploring new, efficient, and effective ways of getting things done in the evolving global knowledge society and economy, as well as in responding to globalization's challenges and opportunities.

**2. Nikita Yadav, V B Singh(E-governance: Past, Present, Future in India)**

In this paper researcher has discussed about the demand E-governance has exponentially increased due to increasing size of data. Author also mentioned about new technologies like Open-source solutions and cloud computing need to be incorporated and the latest trend technology the most of government of most of the country has adopted is also discussed.

By reading this research paper I concluded that E-Governance has made the working of government more efficient and more transparent to its citizens.

**3. Kiran Yadav and SanatanTiwari (E-Governance in India: Opportunities and Challenges)**

The discussion is generally based on the challenges for the implementation of e-government in India and those challenges were low literacy, lack awareness, low broadband penetration, lack of system integration within a department and many more. To implement e-government in India, a vision is required. To achieve the vision, challenges in e-government implementation must be overcome. Then, the environment for the effective implementation of e-government in India must be created. Despite these challenges, India has several award-winning e-governance projects. As a result, we can say that e-Governance is the key to "Good Governance" for

developing countries like India to reduce corruption and provide efficient, effective, and high-quality services to their citizens.

**4. 1 Vinay Kumar Professor, Vivekananda School of IT, VIPS, GGSIPU, New Delhi 110 088, India. 2 Arpana Chaturvedi Asst.Professor, Jagannath International Management School, JIMS, GGSIPU, New Delhi 110070, India. 3 Poonam Verma Asst.Professor, Jagannath International Management School, JIMS, GGSIPU, New Delhi 110070, India.**

This paper describes that we have entered in an era of BIG DATA. Better analysis of the large volumes of data that are becoming available has the potential to accelerate progress in many scientific disciplines while also improving the profitability and success of many businesses and the governance of a country.

**5. Ishaq Ahmad Dar Mittal School of Business Lovely Professional University, Punjab Reena Lakha University School of Management Studies RayatBahra University, Mohali, Punjab** (Digital marketing in India: An overview)

This research paper concludes that on analysing various data India is moving toward digitalization very rapidly year by year and the Indian Government is also focusing on the complete digitization of the nation by initiative like Digital India. So by this this paper concluded that there is a need of change in the marketing strategy from traditional marketing to digital marketing.

## **CURRENT MODEL OF DIGITAL INDIA**

### **DIGITAL INDIA INITIATIVE**

Technology transforms people's lives. It empowers and connects. From mitigating poverty to simplifying processes, ending corruption to providing better services, vitality of technology is everywhere. It is an important instrument of human progress. [Narendra Modi (Prime Minister)]

**Digital India** is a government of India initiative aimed at bringing together government departments and the Indian people. Its goal is to ensure that citizens can access government services electronically by reducing paperwork. A plan to connect rural areas to high-speed internet networks is also part of the initiative. There are three main components to Digital India.

#### **These Components are: -**

- The creation of digital infrastructure.
- Delivering services digitally.
- Digital literacy.

The Digital India Advisory Group, which will be chaired by the Ministry of Communications and IT, will monitor, and control the scheme. It will be an inter-ministerial initiative in which all ministries and departments will offer public services such as healthcare, education, and judicial services. The public-private partnership model will be used on a case-by-case basis. The initiative is admirable and deserves the full support of all stakeholders. However, the initiative lacks many critical components, such as a legal framework, privacy and data protection laws, civil liberties abuse possibilities, parliamentary oversight for e-surveillance in India, intelligence-related reforms in India, insecure Indian cyberspace, and so on. These issues must be addressed before launching the Digital India initiative in India. Despite flaws that can be fixed before implementation, the Digital India project is worth investigating and implementing.

### **Major Sector under Digital India Programme**

#### **❖ Communication Infrastructure and Services**

- BharatNet
- BSNL Next Generation Network
- BSNL Wi-Fi Services.

#### **❖ Products**

- Digital Locker
- National Scholarships Portal
- e-Hospital/ORS
- e-Sign
- Digitize India Platform (DIP)

❖ **Portals / Apps**

- Digital India Portal, Mobile App & Book
- MyGov Mobile App
- Swachh Bharat Mission App

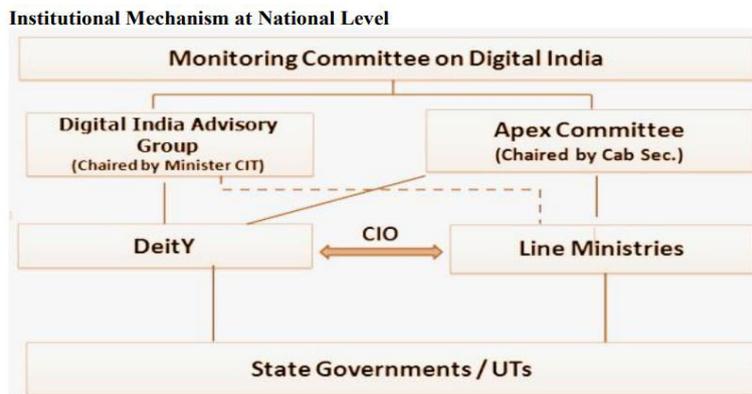
❖ **Institutions and Policies**

- National Centre for Flexible Electronics
- Centre of Excellence for Internet of Things (IoT)
- e-Governance Policy Initiatives Under Digital India
- Electronics Development Fund (EDP) Policy

❖ **Indian Railway**

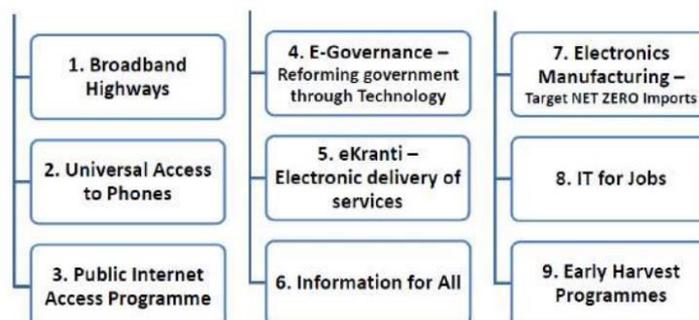
- E Ticket
- SMS Service
- E Catering Online Reservation System
- State Transport Service
- Cab Service
- BUS Ticket
- Mobile Recharge etc.

Digital India is innovative and technological, as the country develops and becomes a world leader in a variety of fields. Our Prime Minister desired that it be made digital. The development of a nation's digital infrastructure. Providing digital services to all citizens of the country. Developing digital literacy. The goal is to build a digitally empowered society, digital infrastructure, broadband highways, e-government, e-Kranti, electronic development fun, and so on. Every Indian's dream is for his or her country to become powerful in all aspects. This is the dream of India's first person, Mr. Narendra Modi, and all citizens of the country. It is a digital platform for the growth and development of the nation and its people.



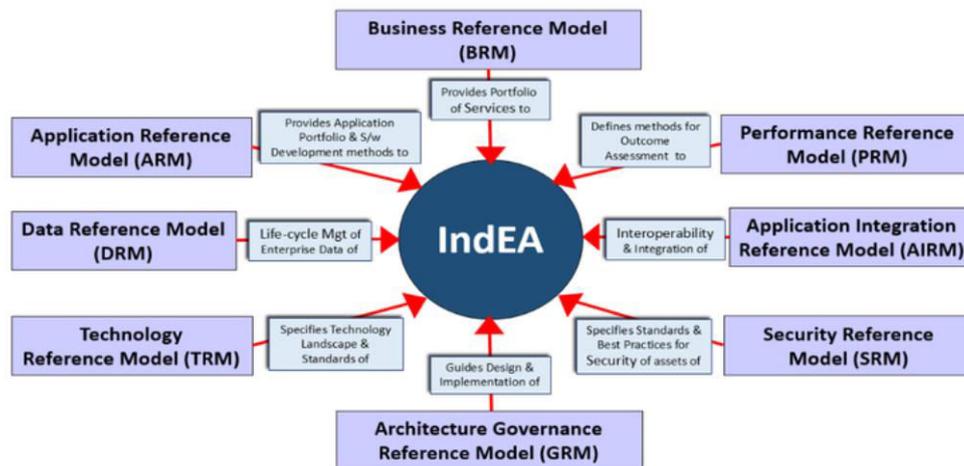
**DIGITAL INDIA**

**Nine Pillars of Digital India**



### ARCHITACTURE OF DIGITAL INDIA

India Digital Ecosystem Architecture 2.0, or InDEA 2.0, is a framework that allows governments and private-sector enterprises to design IT architectures that extend beyond organisational boundaries and enable the delivery of holistic and integrated services to customers.



### E-GOVERNANCE MODAL OF INDIA

E-governance is the use of Information and Communication Technologies (ICTs) in government operations to achieve public goals by introducing digital means across various stand-alone systems between Government-to-Citizens (G2C), Government-to-Business (G2B), and Government-to-Government (G2G) and facilitating their integration for the delivery of public services.

**The objectives of e-governance can be listed down as given below:**

- To support and simplify governance for government, citizens, and businesses.
- To make government administration more transparent and accountable while addressing the society's needs and
- Expectations through efficient public services and effective interaction between the people, businesses, and government.
- To reduce corruption in the government.
- To ensure speedy administration of services and information.
- To reduce difficulties for business, provide immediate information and enable digital communication by e-business.

**Depending on the particular conditions and governance requirements, Professor Arie Halachmi suggested five important models of e-governance**

1. The Broadcasting Model of dissemination of useful governance information to have informed citizenry.
2. The Critical Flow Model of routing information of critical value to the targeted audience.
3. The Comparative Analysis Model of assimilation of best practices in the field of governance for developing countries to empower their people
4. The E-Advocacy/Mobilisation and Lobbying Model of adding the opinions of virtual communities so that the global civil society can have an impact on global decision-making processes; and
5. The Interactive-Service Model of individuals' direct participation in governance processes to bring in greater objectivity and transparency in decision-making processes.

### UNITED STATES E-GOVERNANCE

In the United States, electronic governance (e-governance) refers to the systems that use information and communication technology to allow citizens, businesses, and other government agencies to access state and federal government services online.

**Three models of interaction in e-government**

1. The managerial model emphasises a vertical flow of information from government to citizens. This model is concerned with efficiency, particularly with increasing the speed with which information and services are delivered, as well as with lowering costs. The government and its citizens will have a client-like relationship under this model.
2. The consultative model emphasises vertical information flow as well, but it is more concerned with responding to societal needs expressed electronically by citizens. This includes online elections and other voter input, and it necessitates a massive amount of citizen participation.
3. The participatory model is the most interactive of the three major models of citizen-government involvement. The participatory model, in contrast to the other two, strives for a horizontal and multidirectional flow of information, resulting in a cyber society that is more effective for the public. When universal access and widespread use of technology become the norm in terms of government-citizen interaction, this model becomes relevant.

Although at any given time these models of interaction can stand alone as the ideal form of involvement between the parties, often they overlap and provide multiple forms of interaction. These three models show potential ways for citizen and government interaction, there are advantages and disadvantages to the implementation of e-government and how it can affect people involved in the political process in the United States

**GAP ANALYSIS**

<b>Sr.No</b>	<b>Subject</b>	<b>E-Governance of India</b>	<b>E-Governance of United States</b>
1	<b>Models</b>	here are five models of e-governance associated with dissemination of information with citizen, information of critical value of targeted audience, best practices in the field of governance to empower their people, adding the opinions of virtual communities so that the global civil society can have an impact on global decision-making processes, direct participation in governance processes to bring in greater objectivity and transparency in decision-making processes.	There are three major models of interaction associated with e-government, the managerial, the consultative and the participatory.
2	<b>Architecture</b>	IndEA provides a generic framework (based on The Open Group Architecture Framework - TOGAF) with a set of architecture reference models that can be converted into a Whole-of-Government Architecture for India, Ministries, States, Government Agencies, and so on. The IndEA framework is built on a federated architecture approach that recognises the need to support both greenfield (new) and brownfield (existing / legacy) e-Governance initiatives.	The architecture of UNITED STATES e-governance is more citizen and business centric, and they have achieved to provide solution of various problem which can impact the governance model like cyber security. They are more concerned about their data preservation. Their framework mostly focussed on the citizen.

3	<b>Futuristic Goal</b>	To provide high speed internet connection for every gram panchayat, easy access to common service centre with there locality and safe and secure cyber space, single window access all the person by integrating departments of jurisdiction viability of government services in online mobile platform, all digital services should be universally accessible all government document and certificate to be available on the cloud, one major expectation is to move from cash-based transaction to digital transaction.	The majority of government applications are currently focused on increasing efficiency and information and communication technologies. This pattern will continue in the future. Recently, there has been a greater emphasis placed on democratic participation. E-government in the United States wishes to advance the demand for more sophisticated technological solutions in the future for encryption, information sharing, and interactive communication.
4	<b>Infrastructure</b>	Various policy initiatives and projects have been undertaken to develop core and support infrastructure to promote e-Governance holistically. State Data Centres (SDCs), State Wide Area Networks (S.W.A.N), Common Services Centres (CSCs), and middleware gateways (National e-Governance Service Delivery Gateway (NSDG), State e-Governance Service Delivery Gateway (SSDG), and Mobile e-Governance Service Delivery Gateway) are the major core infrastructure components (MSDG).	In USA infrastructure of e-governance consist of Government-to-Government, Government-to-Business and Government-to-Consumer / Citizen
5	<b>Digital literacy</b>	Digital literacy is not up to its optimum level.	Digital literacy is high as compared to India.
6	<b>Cyber security</b>	Several ministries in the central government and organisation in the state governments are witnessing increased traffic to their citizen-service portals, so there is need of precautionary measures to counter cyber-attacks.	Because cyber security controls are effective, cyberspace is regarded as a dependable and trustworthy digital infrastructure. The area where cyber security access controls are insufficient, absent, or poorly designed is referred to as the "wild west" of the digital age. United states are very focused on the cyber security because they know the power of data confidentiality.

**CONCLUSION**

As per the data we studied I get to know that the main drawback in our e-governance is digital illiteracy and lack of cyber security. United States has its advancement in its technology now they switched to cloud computing and AI based model of e-governance, its not that we can't implement here that advancement but there is lack of awareness and digital literacy. So final conclusion is that we should more focus on the root cause of the reason which is responsible for putting us behind from other countries.

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**MODERNIZATION AND EXPANSION OF BUSINESS MODEL WITH POTENTIAL ANALYSIS****<sup>1</sup>Dr. Gaurav Bansal, <sup>2</sup>Dr. Neeraj Sanghi and <sup>3</sup>Pankaj Pandey**<sup>1</sup>Associate Professor and <sup>3</sup>Research Scholar, R.D. Engineering College, Ghaziabad<sup>2</sup>Professor, I.T.S School of Management, Ghaziabad**ABSTRACT**

*The paper provides a broad and multifaceted review of the received literature on business models in which we examine the business model concept through multiple subject-matter lenses. The review reveals that scholars do not agree on what a business model is, and that the literature is developing largely in silos, according to the phenomena of interest to the respective researchers. However, we also found emerging common themes among scholars of business models and its innovation specifically, 1) The business model is emerging as a new unit of analysis 2) Business models emphasize a system-level, holistic approach towards explaining “how firms do business” 3) Firm’s activities play an important role in the various conceptualizations of business models that have been proposed and 4) Business models seek to explain how value is created, not just how it is captured. These emerging themes could serve as catalysts towards a more unified study of business models.*

*Our intended contributions in this article are two-fold: first, to provide the most comprehensive and up-to-date literature review on business models, as well as to document carefully the discrepancies and dissonances in that literature; and second, to structure the literature along its main fault lines and begin to bridge the seemingly wide gaps between the various approaches. This should facilitate future cumulative research on the topic. The remainder of this review is structured as follows: we begin by briefly reviewing the emergence of the business model concept and proceed to a methods section where we discuss the way this review has been carried out. We then review the business model literature by examining it through multiple lenses.*

*Keywords: Business Models, Innovation, Value Creation and Technology Management*

**INTRODUCTION**

In this comprehensive review of the academic literature, we have attempted to explore the origin of the business model concept and to examine it through multiple disciplinary and subject-matter lenses. This broad and multifaceted review revealed several insights, including:

- Despite the overall surge in the literature on business models, scholars do not agree on what a business model is. We observe that researchers frequently adopt idiosyncratic definitions that fit the purposes of their studies, but that are difficult to reconcile with each other. As a result, cumulative progress is hampered.
- The literature is developing largely in silos, according to the phenomena of interest to the respective researchers. The main interest areas identified are: 1) e-business and the use of information technology in organizations; 2) strategic issues, such as value creation, competitive advantage, and firm performance; and 3) innovation and technology management.
- Despite conceptual differences among researchers in different silos (and within the same silo), there are some emerging themes, notably:
  - 1) There is widespread acknowledgement—implicit and explicit—that the business model is a new unit of analysis that is distinct from the product, firm, industry, or network; it is centered on a Business focal firm, but its boundaries are wider than those of the firm.
  - 2) Business models emphasize a system-level, holistic approach towards explaining how firms “do business.
  - 3) The activities of a focal firm and its partners play an important role in the various conceptualizations of business models that have been proposed; and
  - 4) Business models seek to explain both value creation and value capture. These emerging themes could serve as important catalysts towards a more unified study of business models.

Our intended contributions in this article are two-fold: first, to provide the most comprehensive and up-to-date literature review on business models, as well as to document carefully the discrepancies and dissonances in that literature; and second, to structure the literature along its main fault lines and begin to bridge the seemingly wide gaps between the various approaches. This should facilitate future cumulative research on the topic.

**METHOD**

Moreover, as we highlight below in our discussion section, our analysis of these publications suggested some common themes, such as:

- 1) The business model as a new unit of analysis;
- 2) A holistic perspective on how firms do business;
- 3) An emphasis on activities; and
- 4) An acknowledgement of the importance of value creation.

These themes lead us to review adjacent literatures that might be relevant for the study of business models but do not directly refer to the concept—namely the literatures on new organizational forms, ecosystems, activity systems, and value chains and value networks. Drawing on these literatures could help put future research on business models on a more solid conceptual footing. Given space and scope considerations for this paper, however, we present our brief reviews of these adjacent literatures in an Appendix that is available upon request from the authors.

**BUSINESS MODEL LITERATURE****Emergence of the Business Model Concept and Definitions**

We performed a similar search using the database, distinguishing between academic and journalistic outlets, and extending the analysis to 2019. We found that up to December 2019, the term “business model” had been included in 1,582 articles in academic journals. Non-academic articles followed a similar trend. From 1975 to December 2019 the term had been mentioned in 15,582 documents. As Figure 1 suggests, interest in the concept virtually exploded in the 15-year period between 2004 and 2019, which is consistent with Ghaziani and Ventresca’s (2015) findings. The figure also indicates that academic research on business models seems to lag behind practice.

Some scholars surmise that the emergence of the business model concept, and the extensive usage of the concept since the mid-1990s, may have been driven by the advent of the Internet (e.g., Amit & Zott, 2001), rapid growth in emerging markets and interest in “bottom-of-the-pyramid” issues (Prahalad & Hart, 2002; Seelos & Mair, 2007; Thompson & MacMillan, 2010), as well as expanding industries and organizations dependent on post-industrial technologies (Perkmann & Spicer, 2010).

**Business Model Definitions**

However, the business model is often studied without explicitly defining the concept. Of the 203 business model publications reviewed, more than one-third (37%) do not define the concept at all, taking its meaning more or less for granted. Less than half (44%) explicitly define or conceptualize the business model, for example, by enumerating its main components. The remaining publications (19%) refer to the work of other scholars in defining the concept. Moreover, existing definitions only partially overlap, giving rise to a multitude of possible interpretations.

This lack of definitional clarity represents a potential source of confusion, promoting dispersion rather than convergence of perspectives, and obstructing cumulative research progress on business models. Table 1 summarizes some of the most prevalent definitions suggested for the business model, and shows which papers have adopted these definitions

Timmers, 2008, The business model is “an architecture of the product, service and information flows, including a description of the various business actors and their roles; a description of the potential benefits for the various business actors; a description of the sources of revenues”

Amit & Zott, 2010; Zott & Amit, 2018, The business model depicts “the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities” Based on the fact that transactions connect activities, the authors further evolved this definition to conceptualize a firm’s business model as “a system of interdependent activities that transcends the focal firm and spans its boundaries”

Chesbrough & Rosenbloom, 2012, The business model is “the heuristic logic that connects technical potential with the realization of economic value”

Teece, 2018, “A business model articulates the logic, the data and other evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering that value”

Our review further revealed that the business model has been mainly employed in trying to address or explain three phenomena:

- 1) E-business and the use of information technology in organizations;
- 2) Strategic issues, such as value creation, competitive advantage, and firm performance; and
- 3) Innovation and technology management.

Although we do not wish to claim mutual exclusivity among these categories, we believe that they allow us to broadly classify the business model literature. Therefore, we use them as organizing principles for this review.

### **Components of E-Business Models**

In addition to developing typologies that enlist and describe various generic e-business models, scholars of e-business have also attempted to distinguish first- and second-order themes among the components of e-business models. Table 2 presents a summary of these efforts.

### **Business Model Representations**

Several authors have attempted to represent business models through a mixture of informal textual, verbal, and ad hoc graphical representations (e.g., Amit & Zott, 2012) introduce a set of simple schematics intended to provide tools for the analysis and design of e-business initiatives. Their “e-business model schematics” are based on three classes of objects: participants (firm of interest, customers, suppliers, and allies), relationships, and flows (money, information, product, or service flows). We suggest a value map for depicting how a business web operates. This depicts all key classes of participants (partners, customers, suppliers) and value exchanges between the tangible and intangible benefits and knowledge.

### **Business Models and Strategy: Value Creation and Value Capture Through Activities**

The business model has received increasing attention from scholars and business strategists interested in explaining firms’ value creation, performance, and competitive advantage.

### **Value Creation in Networked Markets**

The digital economy has provided firms with the potential to experiment with novel forms of value creation mechanisms, which are networked in the sense that value is created in concert by a firm and a plethora of partners, for multiple users. This redefinition of value has attracted the attention of management scholars, who have employed the concept of the business model in their attempt to explain value creation in networked markets (e.g., Zott & Amit, 2019).

### **Business Model and Firm Performance**

Business models can play a central role in explaining firm performance. Afuah and Tucci propose the business model as a unifying construct for explaining competitive advantage and firm performance and define it as “the method by which a firm builds and uses its resources to offer its customer better value and to make money in doing so”. Afuah (2014) focuses on firms’ profitability and introduces a strategic framework in which the business model is conceptualized by means of a set of components that corresponds to the determinants of firm profitability. They identify two design themes around which the business model can be orchestrated: efficiency and novelty. In their empirical work, Zott and Amit see the business model as the independent variable, and link it to firm performance, moderated by the environment. They find that:

- 1) Business models that emphasize novelty and are coupled with either differentiation or cost leadership can have a positive impact on the firm’s performance, and
- 2) Novelty-centered business models together with early entry into a market have a positive effect on performance.

### **Strategy and the Business Model**

The business model extends central ideas in business strategy and its associated theoretical traditions. Scholars contend that the business model can be a source of competitive advantage that is distinct from the firm’s product-market position (Christensen, 2011). Firms that address the same customer need and pursue similar product-market strategies can do so with very different business models; business model design and product-market strategy are complements, not substitutes (Zott & Amit, 2018).

### **Business Models, Innovation, and Technology Management**

The business model concept has also been addressed in the domains of innovation and technology management. Two complementary ideas seem to characterize the research.

The first is that companies commercialize innovative ideas and technologies through their business models.

The second is that the business model represents a new subject of innovation, which complements the traditional subjects of process, product, and organizational innovation, and involves new forms of cooperation and collaboration.

One important role of the business model could consist of unlocking the value potential embedded in new technologies and converting it into market outcomes. Chesbrough and Rosenbloom (2012) detail an extensive case study, in which they show how the Xerox Corporation grew in part by employing an effective business model to commercialize a technology rejected by other leading companies. The study also compares successful and unsuccessful technology spin-offs with comparable market potential, and finds that in successful ventures the search and learning for an effective business model was significantly higher than in failed ventures.

**Business Model Innovation**

In addition to adopting business models to facilitate technological innovation and the management of technology, firms can also view the business model itself as a subject of innovation (Mitchell & Coles, 2013). Chesbrough (2013) introduced the notion of *open innovation* as a mode of innovation in which firms, rather than relying on internal ideas to advance business, look outside their boundaries in order to leverage internal and external sources of ideas. A concept similar to open innovation is *collaborative entrepreneurship*, which is “the creation of something of economic value based on new jointly generated ideas that emerge from the sharing of information and knowledge”. Open innovation requires the adoption of new, open business models designed for sharing or licensing technologies (Chesbrough, 2017). The business model itself can become part of intellectual property (Rivette & Kline, 2010; Rappa, 2011). Open business models, apart from being a subject of innovation, may prompt additional business model innovation in complementary markets as a consequence of the reconfiguration of downstream activities and capabilities (Gambardella & McGahan, 2019).

**DISCUSSION**

Throughout our review, we have shown that the business model concept has been used to address different research questions in different contexts and in different management areas. Scholars have used the same term (i.e., business model) to explain and address different phenomena such as e-business types, value creation or value capture by firms, and how technology innovation works. Research about the role of business models has proceeded in largely isolated fashion within these “silos.” There has also been a range of conceptualizations of business models within each silo. This multitude of (sometimes ad hoc) conceptualizations has prevented, or at least significantly slowed, cumulative research.

Given that interest in the concept has only recently emerged, it is not surprising that the literature is currently characterized by a lack of clarity about the meaning of the business model concept. Definitional and conceptual disagreement is to be expected during an emergent phase of any new potentially big idea of general usefulness (Gladwin, Kennelly, & Krause, 2005).

We use the opportunity that this emergent phase offers to review the various developments by

- (1) Comparing and contrasting the various approaches to business models in each of three literature streams (see Table 01), and
- (2) Suggesting possibilities for moving forward.

**Table 01**

	<b>E-commerce</b>	<b>Strategy</b>	<b>Technology &amp; Innovation Management</b>
<b>Main Purpose (Why the business model concept is offered)</b>	To describe new “gestalts” and Internet-based ways of “doing business” To offer typologies or taxonomies (to which class does an observed business model belong to?)	To explain new network- and activity system-based value creation mechanisms and sources of competitive advantage	To understand how technology is converted into market outcomes To understand new networked modes of innovation
<b>What a Business Model Is Not</b>	Components in isolation, e.g.: <input type="checkbox"/> Marketing model or strategy (Timmers, 2008)	<input type="checkbox"/> Business processes (Shafer et al., 2015) <input type="checkbox"/> Market adoption strategy (Ojala &	<input type="checkbox"/> Technology (Chesbrough & Rosenbloom, 2012) <input type="checkbox"/> Open innovation,

	<ul style="list-style-type: none"> <li>□ Network structure (Tapscott et al., 2010)</li> <li>□ Pricing model/strategy (Rappa, 2011)</li> <li>□ Revenue model/Cost Structure (Dubosson-Torbay et al., 2012)</li> <li>□ Value proposition (Dubosson-Torbay et al., 2012)</li> </ul>	<p>Tyrväinen, 2016)</p> <ul style="list-style-type: none"> <li>□ Corporate Strategy (Richardson, 2018)</li> <li>□ Product market strategy (Zott &amp; Amit, 2018)</li> <li>□ Senior leadership team processes and structures (Smith et al., 2018)</li> </ul>	<p>collaborative entrepreneurship (Chesbrough, 2013; Miles et al., 2016)</p> <ul style="list-style-type: none"> <li>□ Management teams (Patzelt et al., 2018)</li> <li>□ Policy (Johnson &amp; Suskewicz, 2019)</li> </ul>
<b>Antecedents of Business Models</b>	<ul style="list-style-type: none"> <li>□ New information and communication technologies (Timmers, 2008; Dubosson-Torbay et al., 2012)</li> </ul>	<ul style="list-style-type: none"> <li>□ Value drivers (Amit &amp; Zott, 2011)</li> <li>□ Choices (e.g., Shafer et al., 2015; Casadesus-Masanell &amp; Ricart, 2018)</li> <li>□ External pressures, regulation (Tankiwale, 2019)</li> <li>□ Discovery-driven experimentation (McGrath, 2019)</li> </ul>	<ul style="list-style-type: none"> <li>□ Technology (Chesbrough, &amp; Rosenbloom, 2012; Chesbrough 2017a)</li> <li>□ Technological development, innovation (Calia et al., 2017; Björkdahl, 2019)</li> </ul>
<b>Mechanisms Through Which Business Models Influence Outcomes</b>	<ul style="list-style-type: none"> <li>□ Value chain deconstruction and re-construction (Timmers, 2008)</li> <li>□ Pricing systems (Rappa, 2011; Tapscott et al., 2010)</li> <li>□ Revenue mechanisms (Rappa, 2011)</li> <li>□ Control activities, transaction governance structure (Weill &amp; Vitale, 2011)</li> <li>□ Interaction patterns (Mahadevan, 2010; Dubosson-Torbay et al., 2012)</li> </ul>	<ul style="list-style-type: none"> <li>□ Competitive advantage, unique value propositions (Teece, 2017)</li> <li>□ Total value creation and distribution of bargaining power through business model design themes (Zott &amp; Amit, 2017, 2018)</li> <li>□ Advantageous cost structures (Teece, 2017)</li> <li>□ Schumpeterian innovation (Teece, 2018)</li> </ul>	<ul style="list-style-type: none"> <li>□ Connection of technology with customers (Chesbrough, &amp; Rosenbloom, 2012)</li> <li>□ Network plays (Calia et al., 2017; Björkdahl, 2019)</li> </ul>
<b>Outcomes / Consequences of Business Models</b>	<ul style="list-style-type: none"> <li>□ Industry structure (Applegate, 2011; McPhillips &amp; Merlo, 2018)</li> <li>□ Rules of competition (Applegate, 2011; Tapscott et al., 2010)</li> <li>□ Value capture (Pauwels &amp; Weiss, 2018; Clemons, 2019)</li> </ul>	<ul style="list-style-type: none"> <li>□ Total value creation (Amit &amp; Zott, 2011)</li> <li>□ Competitive advantage (Christensen, 2011)</li> <li>□ Firm performance, e.g., measured as stock market value (e.g., Zott &amp; Amit, 2017, 2018; Casadesus Masanell &amp; Ricart, 2019)</li> </ul>	<ul style="list-style-type: none"> <li>□ Creation and appropriation of value from technology (Chesbrough &amp; Rosenbloom, 2012)</li> <li>□ Value creation (Hedman &amp; Kalling, 2013)</li> <li>□ Innovation network dynamics (Calia et al., 2017)</li> <li>□ Relationship infrastructure (Björkdahl, 2019)</li> </ul>

Our literature review reveals that scholars in different fields use the same term to explain different phenomena. In other words, “business model” in its current use is not one concept; it is many concepts. Hence, the adoption of more precise concepts and terminology that indicate the researcher’s main analytical focus will greatly

enhance clarity. Examples of such concepts could be “e-business model archetype” (for studies on e-business model types), “business model as activity system” (for strategy studies focusing on boundary-spanning activities), or “business model as cost/revenue architecture” (for technology management and innovation scholars interested in explaining the economic mechanisms that allow a firm to commercialize technological innovations).

Our literature review offers a second possible avenue for advancing research on business models by suggesting the emergence of some common ground among various business model researchers, despite the disparity of their approaches in terms of concepts used and phenomena explained. It is our hope that the following four common themes identified in this review will pave the way for future conceptual convergence and breakthroughs.

First, the business model is—explicitly or implicitly—considered as a new unit of analysis (see Tables 1 and 2), which spans or bridges traditional units of analysis, such as the firm or the network. Some researchers view the business model closer to the firm (e.g., Casadesus-Masanell & Ricart, 2015; Hurt, 2018), others place it closer to the network (e.g., Tapscott et al., 2010), and for others still it is nested between the firm and the network (e.g., Amit & Zott, 2011). Most business model scholars would agree, however, that it is a new, distinct concept, worthwhile of academic study and relevant in practice.

Second, as evidenced by the large number of studies attempting to provide business model typologies, business model researchers generally adopt a holistic and systemic (as opposed to particularistic and functional) perspective, not just on *what* businesses do (e.g., what products and services they produce to serve needs in addressable market spaces), but also on *how* they do it (e.g., how they bridge factor and product markets in serving the needs of customers). The business model perspective thus involves simultaneous consideration of content and process of “doing business,” which explains part of the challenge in defining and operationalizing the construct.

Third, many scholars include activities, performed either by a focal firm or by any of its suppliers, partners, or customers, as part of their conceptualization (McGrath, 2017; Teece, 2017; Zott & Amit, 2017). In many business model definitions the activity perspective is recurrent, either implicitly or explicitly. Some point directly to activities (e.g., Afuah, 2014; Hedman & Kalling, 2013; Seddon et al., 2014), others imply them indirectly, for example by pointing to processes (e.g., Alt & Zimmerman, 2011; Johnson et al., 2018; Morris et al., 2015), functionalities (e.g., Van Der Vorst, Van Dongen, Nougier, & Hilhorst, 2012), or transactions (Amit & Zott, 2011). All these concepts are related to the notion of activities.

Combined with the first and second emerging common themes identified above (i.e., business models are a new unit of analysis and represent a system-level concept), this suggests a view of the business model as a firm-centric, yet boundary-spanning, activity system. This view is consistent with the representational nature that is often attributed to the business model (e.g., Applegate, 2010; Morris et al., 2015; Shafer et al., 2015; Stewart & Zhao, 2010; Weill & Vitale, 2011) as well as its systemic nature (e.g., Dubosson-Torbay et al., 2012; Timmers, 2008). A business model can be viewed as a “system that is made up of components, linkages and dynamics” (Afuah & Tucci, 2010: 4). And many of the modeling tools that have been proposed with the aim of representing the business model can be conceptualized as systems of activities. In a nutshell, the received literature on business models seems to support an activity system perspective.

A fourth insight that emerges from our review of the literature is that business model scholars have shifted emphasis from value capture to value creation, highlighting the latter without ignoring the former. Indeed, the business model promotes a dual focus on value creation and value capture. The centrality of the notion of value within the business model literature is apparent from the various conceptualizations of the business model which have been proposed (see Tables 1 and 2).

For example, an analysis of the business model components shown in Table 2 as first- and second-order themes reveals that the most prevalent component is related to the concept of value. The customer value proposition, for instance, is a recurrent component in the various definitions which have been provided. The centrality of the concept of value in the business model literature is evident in all three areas around which we have organized our review: e-business, strategy, and innovation. Even those business model scholars who tend to focus on how value is appropriated by the focal firm recognize that value is created through the focal firm in concert with its exchange partners.

Taken together, these four emerging themes—the business model as a new unit of analysis, a system-level concept, centered on activities, and focusing on value—could serve as important catalysts towards a more

unified study of business models.

### **LIMITATIONS AND FUTURE RESEARCH**

Despite our attempt to rigorously and objectively analyze the received literature on business models, this review comes with several limitations. First, much of the reviewed literature is quite recent, dating back only a decade or so. Second, only a few contributions have appeared in top journals. Third, the literature is widely divergent; making sense of it is therefore challenging. Fourth, the business model remains a theoretically underdeveloped (and sometimes overloaded) concept, which may raise doubts concerning its usefulness for empirical research and theory building. Future research on business models should seek to overcome these limitations. Scholars need to develop the theoretical foundations of the business model, and shed light on its conceptual distinction from other related concepts such as new organizational forms, ecosystems, activity systems, and value chains or value networks. In particular, scholars need to articulate and define precisely which business model concept they propose to use as a basis of study (e.g., archetype, activity system, or cost/revenue architecture). We need more clarity about the theoretical building blocks of the business model, its antecedents and consequences, as well as the mechanisms through which it works.

### **CONCLUSION**

The burgeoning literature on business models is young, and quite dispersed. It is just starting to make inroads into the top management journals. The conceptual base is still thin, but our review of the literature suggests two ways to advance the study of business models.

First, employing more precise concepts would allow other researchers to better understand what the business model in the respective study is meant to denote (and what it is not). Our review suggests at least three concepts that might warrant distinct consideration:

- 1) E-business model archetypes
- 2) Business model as activity system
- 3) Business model as cost/revenue architecture.

These distinct concepts could all be fruitfully investigated—individually, as well as in relation to each other—under the umbrella theme of the business model.

Second, we found that four important themes are forming, primarily around the notions of the business model as a new unit of analysis, offering a systemic perspective on how to “do business,” encompassing boundary-spanning activities (performed by a focal firm or others), and focusing on value creation as well as value capture. These themes are interconnecting and mutually reinforcing. This all suggests that the field is moving towards conceptual consolidation, which we believe is necessary to cover the way for more cumulative research and innovation on business models.

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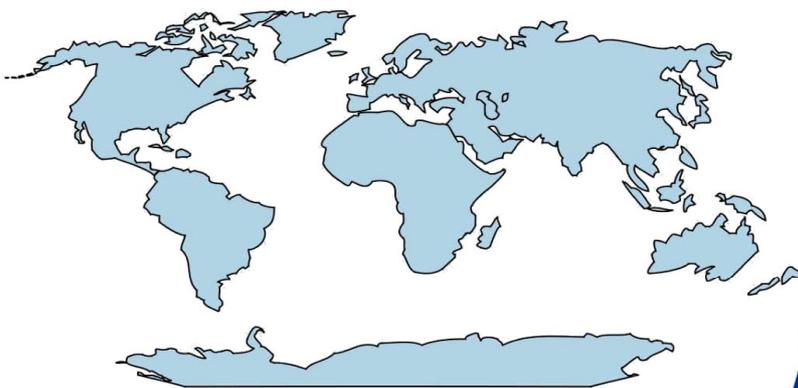
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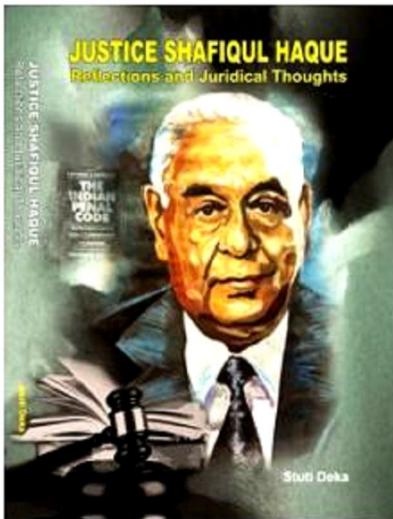


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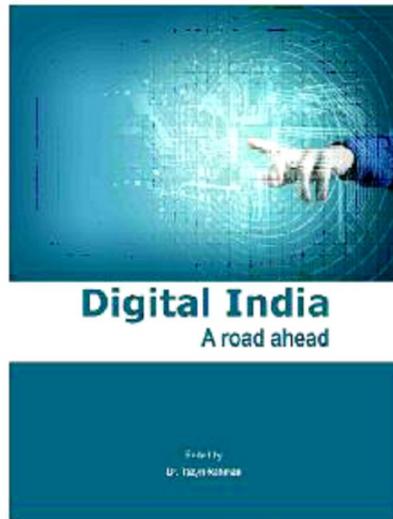
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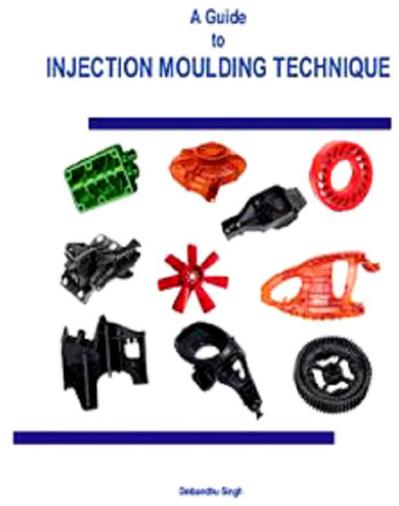
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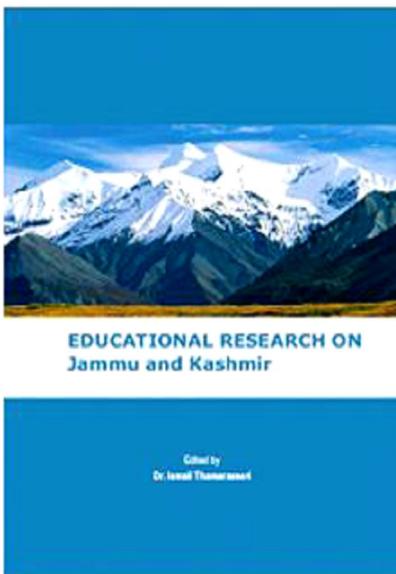
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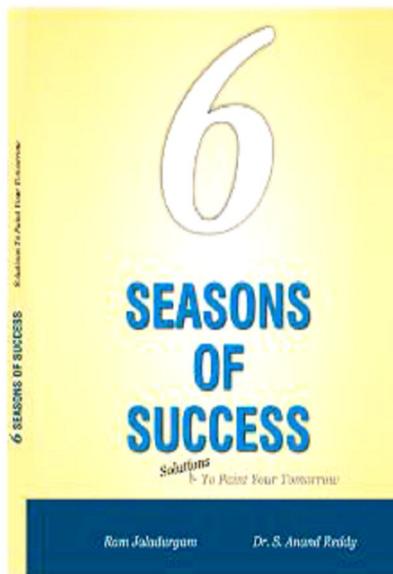
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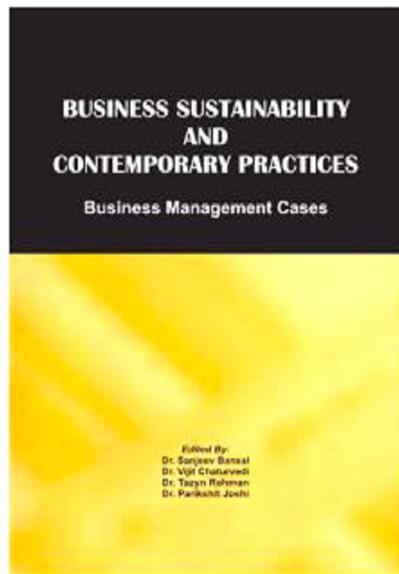
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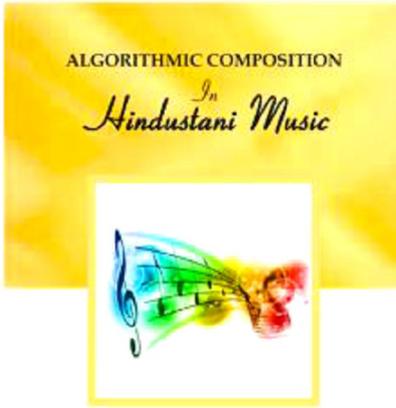
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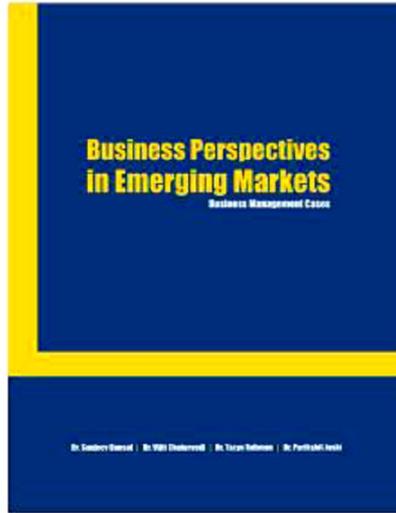
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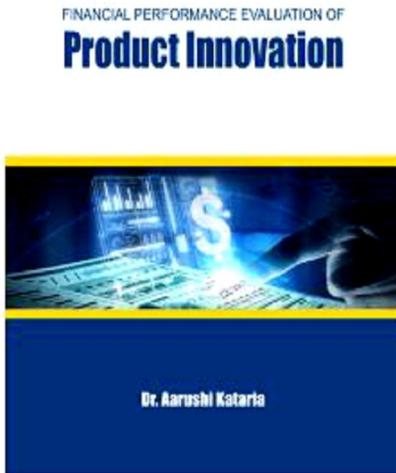


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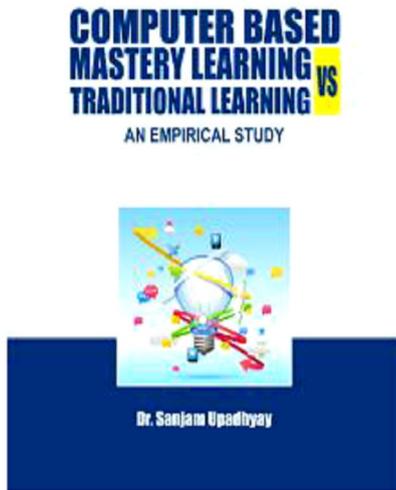
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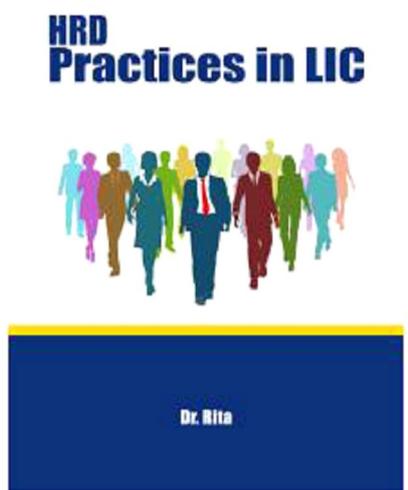
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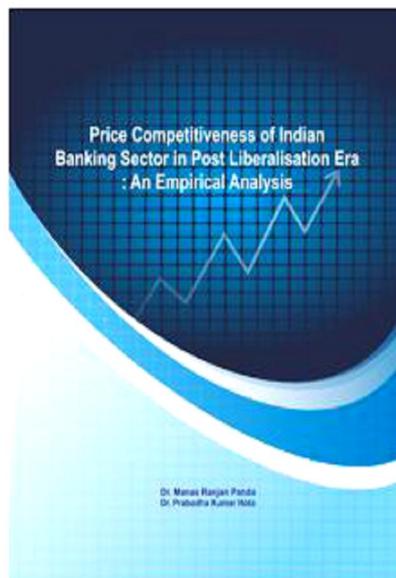
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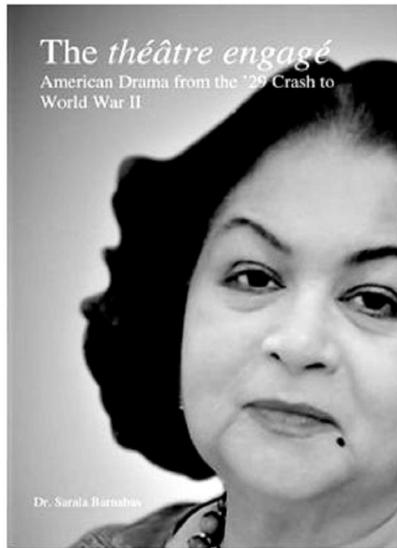
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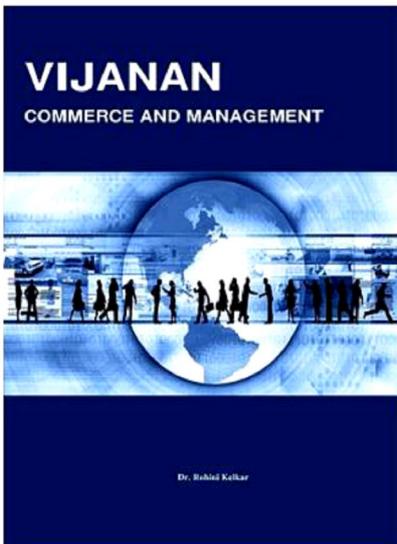


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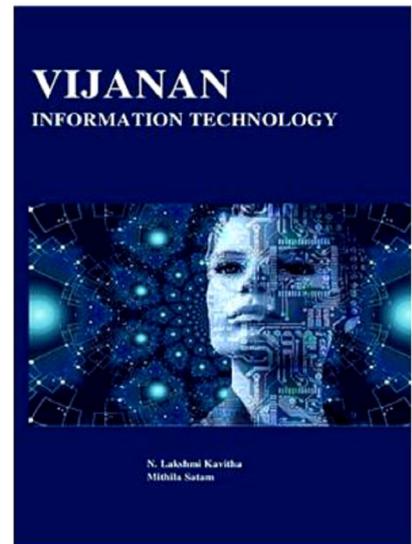
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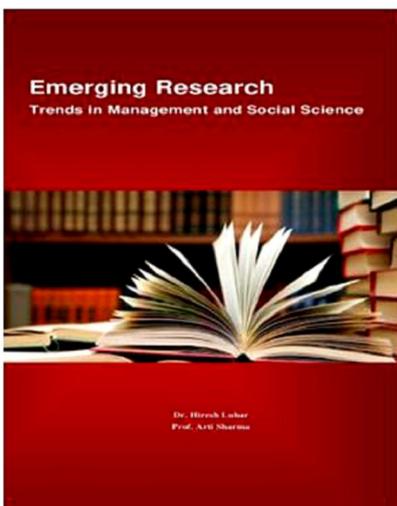
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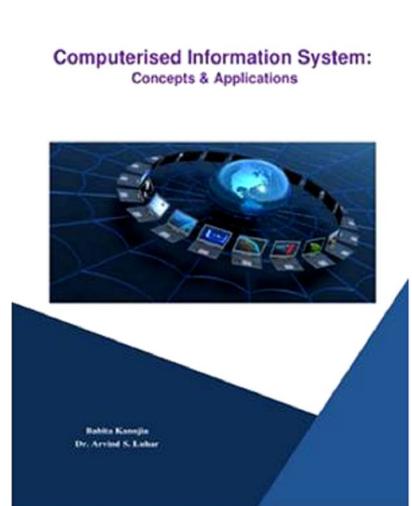
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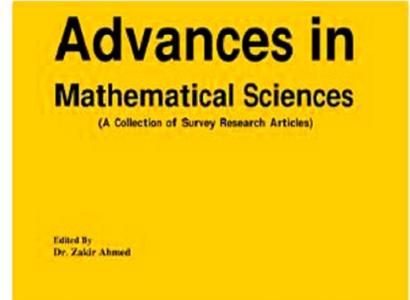
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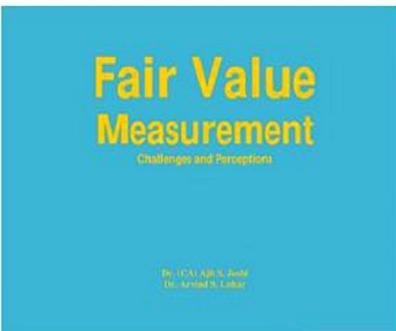
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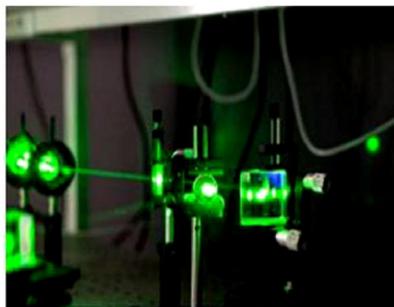
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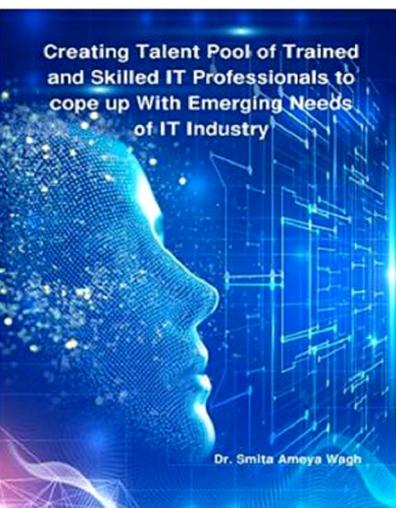


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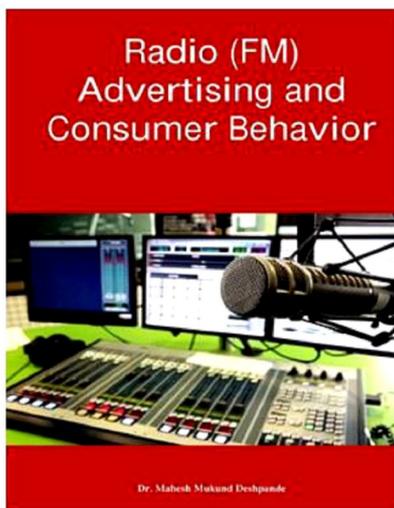
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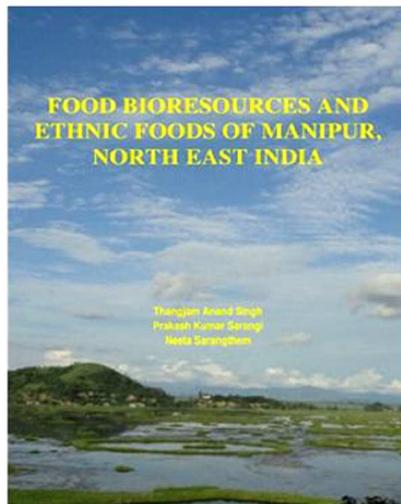
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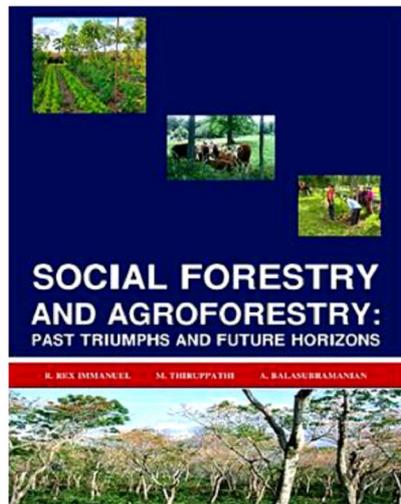
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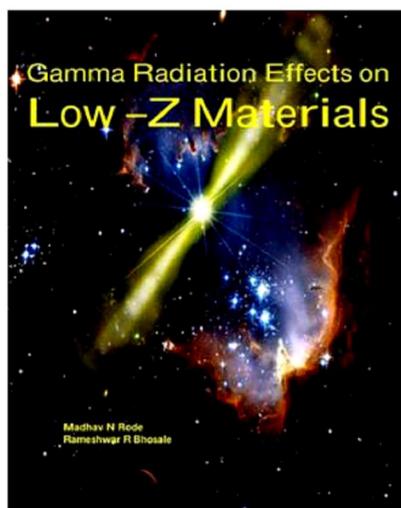
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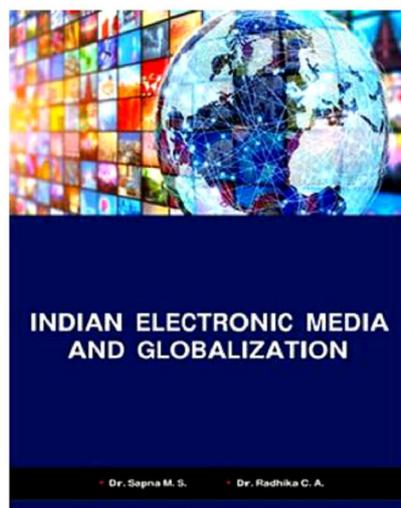
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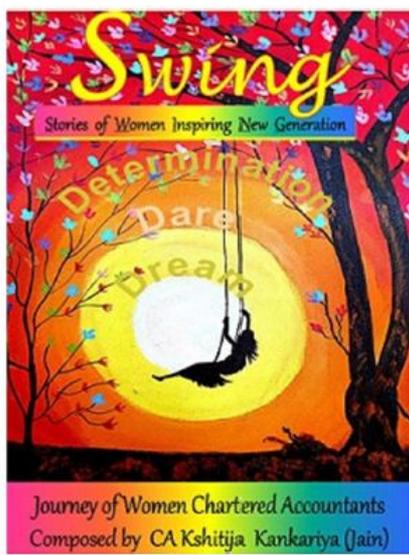
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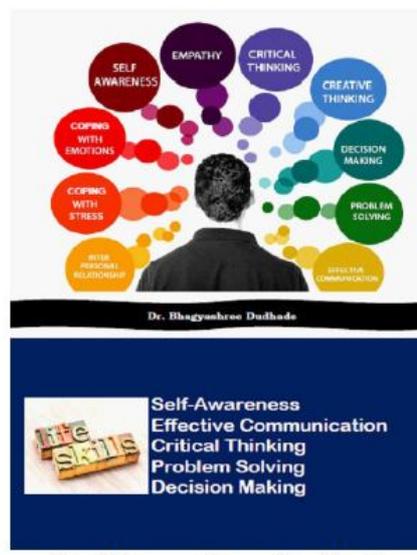
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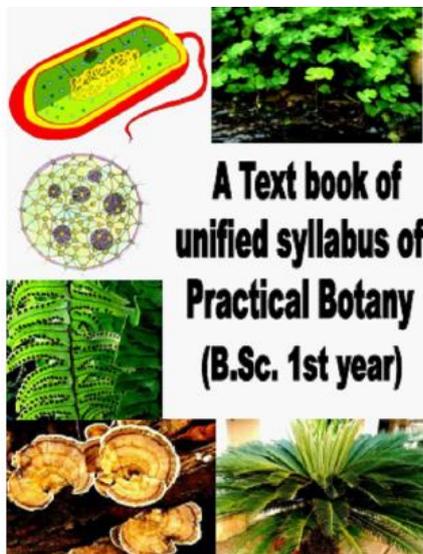
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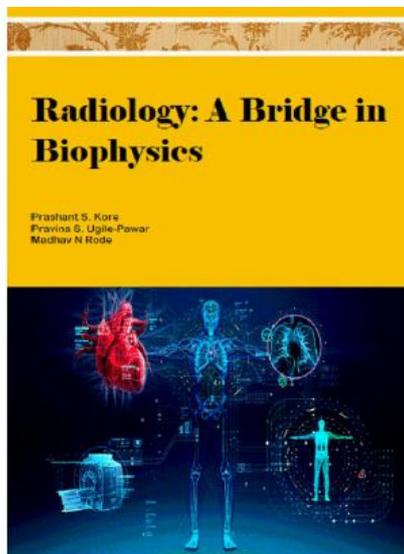
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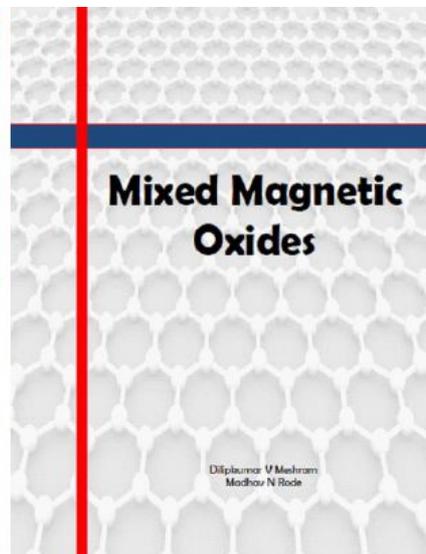
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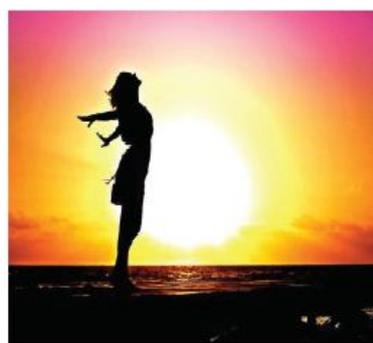
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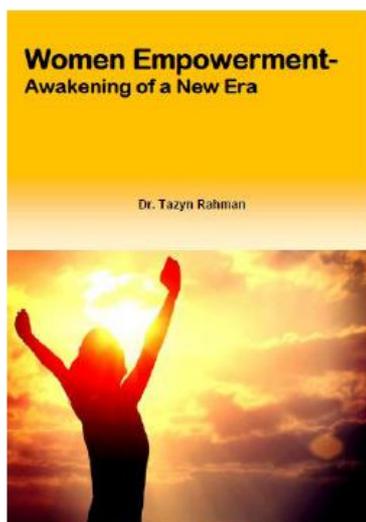


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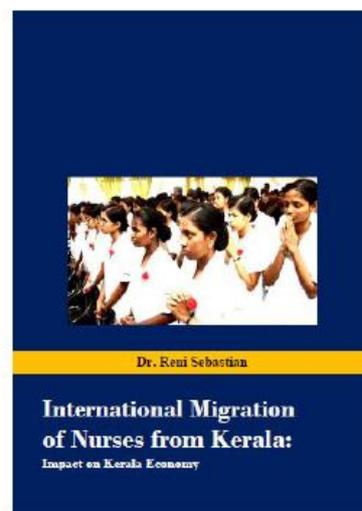
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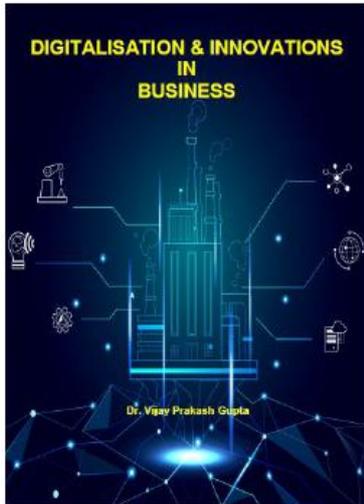
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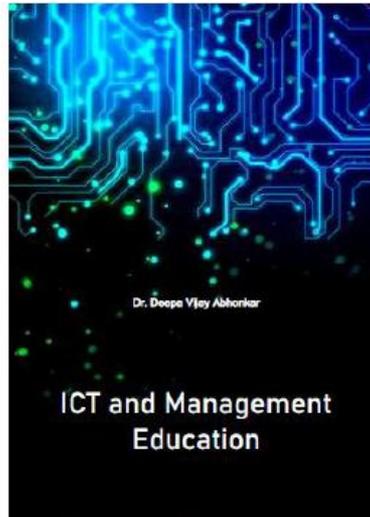


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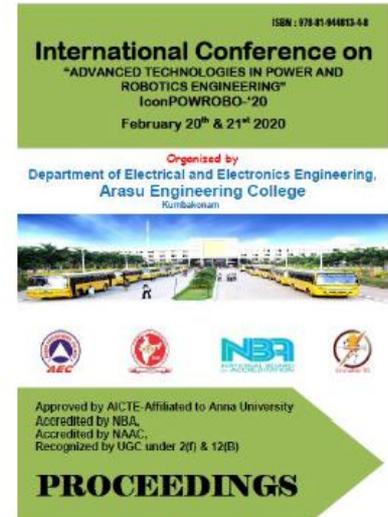
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