

Volume 6, Issue 1 (XXXII)

January - March 2019

ISSN 2394 - 7780



International Journal of

# Advance and Innovative Research

(Conference Special)

Indian Academicians and Researchers Association  
[www.iaraedu.com](http://www.iaraedu.com)



REINVENT 2019  
INTERNATIONAL CONFERENCE  
ON  
INDUSTRY 4.0 FRAMEWORK FOR GLOBAL CHALLENGES IN  
BUSINESS MANAGEMENT

ORGANIZED BY  
School of Commerce and Management  
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Volume 6, Issue 1 (XXXII): January - March 2019

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**Journal - 63571**

## UGC Journal Details

**Name of the Journal :** International Journal of Advance & Innovative Research

**ISSN Number :**

**e-ISSN Number :** 23947780

**Source:** UNIV

**Subject:** Multidisciplinary

**Publisher:** Indian Academicians and Researchers Association

**Country of Publication:** India

**Broad Subject Category:** Multidisciplinary

### CONTENTS

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#### *Research Papers*

- A CONCEPTUAL STUDY ON CRYPTOCURRENCY: AN INDIAN PERSPECTIVE** 1 – 6  
Swetha I K and Meghashilpa R
- BEARING OF INDUSTRY 4.0 ON ELECTIONS – A CASE STUDY ON CAMBRIDGE ANALYTICA** 7 – 18  
Priya Singh
- A STUDY ON IMPACT OF EMPLOYEE ENGAGEMENT ON EFFECTIVENESS OF THE START-UP IN SELECTED START-UPS** 19 – 24  
V Deepti and Dr. T Sobha Rani
- A STUDY ON IMPACT OF EFFECTIVE COMMUNICATION ON EMPLOYEE ENGAGEMENT** 25 – 28  
Shwetha R and Dnyaneshwari Makapur
- A STUDY ON THE NEED FOR AN AUGMENTED WORKFORCE IN TODAY'S EVOLVING FUTURE WORKERS TO IMPROVE EMPLOYEE ENGAGEMENT** 29 – 31  
Sarah John, Ahana Pinto and Dr. Shubhra Rahul
- PHYSICAL TO DIGITAL CONSUMER BEHAVIOUR** 32 – 35  
Anuradha Yadav
- CORPORATE SOCIAL RESPONSIBILITY-4.0: WITH REFERENCE TO EMPLOYEE LOYALTY & RETENTION** 36 – 45  
Dr. Nidhi Arora and Dr. Priti Verma
- IMPACT OF DEMONETIZATION ON THE SHARE PRICES OF COMPANIES LISTED IN NATIONAL STOCK EXCHANGE** 46 – 51  
Dheeraj Sharma
- SMART PARKING IN SMART CITY** 52 – 54  
Mohammed Yasir KP, M Chetan Gowda and Sanjana C Jacob
- HUMAN RESOURCE (HR) RECRUITMENT AND CHALLENGES IN THE INDUSTRY 4.0 FRAMEWORK** 55 – 60  
Chinmaya Prakash and Dr. Shubha Chandra
- CONTEMPORARY FINANCIAL RISK MANAGEMENT STRATEGIES FOR EMERGING STARTUPS IN INDIA: A STUDY ON THE POTENTIAL FUTURE STARTUP ECOSYSTEM OF INDIA** 61 – 67  
Dr. Sachita Yadav and Akash Rao



<b>SEED PRIMING WITH TiO<sub>2</sub> NANOPARTICLES, BOON TO RECENT AGRO BASED PRACTICES</b>	68 – 74
Mahak H S Karapurkar, Mateesha N Borkar, Upasana Saha, Purva Sudesh Dharwadkar, Dr. Shruti Awasthi and Dr. Yasrib Qurishi	
<b>INDUSTRY 4.0 FRAMEWORK FOR CHALLENGES IN CURRENT MARKETING STRATEGIES OF HANDICRAFT PRODUCTS AND ITS IMPLICATIONS</b>	75 – 79
Sudha N and Dr. Bala Koteswari	
<b>A REVIEW OF INDUSTRY 4.0 APPLICATIONS THROUGH SMART TECHNOLOGIES BY STUDYING EXAMPLES FROM THE AUTOMOBILE INDUSTRY</b>	80 – 86
Papri Ray and Dr. Y. V. Rao	
<b>LIVING WITH ARTIFICIAL INTELLIGENCE: OUR PAST, PRESENT, AND THE FUTURE</b>	87 – 90
Deepika Gautam and Ivin Abraham	
<b>DATA ANALYTICS IN TALENT MANAGEMENT: A GAME CHANGER</b>	91 – 95
Anand Hangal and Dr. Bala Koteswari	
<b>ADVANCEMENT IN TECHNOLOGIES IN HOTEL FRONT OFFICE</b>	96 – 99
Ranganathan Yadunath and Sheeba Samuel	
<b>DIGITALIZATION IN THE HOTEL INDUSTRY- AN EXPLORATORY STUDY TO UNDERSTAND THE DIGITALIZATION INVOLVEMENT IN HOTELS</b>	100 – 105
Dr. D. P. Sudhagar	
<b>A STUDY ON THE CUSTOMER SATISFACTION ON USING THE SMART DEVICES (WITH REFERENCE TO RURAL AREAS)</b>	106 – 110
Prasanna	
<b>A STUDY ON THE IMPACT OF INDUSTRY4.0 ON INTEGRATED MARKETING COMMUNICATIONS</b>	111 – 114
Roopa Devi .G and J. Bhuvaneshwari	
<b>INFORMATION SECURITY CHALLENGES AND YOUTH AWARENESS ON INFORMATION PRIVACY: A COMPREHENSIVE ANALYSIS</b>	115 – 122
Nancia Merin and Akanksha Dubey	
<b>A STUDY ON THE IMPACT OF E-TAILING: A PARADIGM SHIFT TO SUPPLY CHAIN MANAGEMENT TOWARDS CUSTOMER SATISFACTION</b>	123 – 127
Prof. Pallavi N and Teja M	
<b>A REVIEW OF LITERATURE ON HUMAN RESOURCE 4.0 (SMART HR-4.0)</b>	128 – 132
Arunima	
<b>MAKE SMART, MAKE LIVING SMART</b>	133 – 135
Ashok P and Vichitra Somashekar	
<b>HRM IN HOSPITALITY INDUSTRY: AN OVERVIEW</b>	136 – 139
Nithin Kumar K Naik and Sneha Ravindra Kanade	

<b>DIGITAL MARKETING – A REALITY CHECK</b>	140 – 143
Govind Kumar and Sneha Ravindra Kanade	
<b>IMPLEMENTATION OF ONLINE WITH OFFLINE EDUCATION FOR SKILL DEVELOPMENT COURSES</b>	144 – 157
Rumi Sikdar and Abhishek Sonawane	
<b>ROLE OF SOCIAL ENTREPRENEURSHIP FOR SUSTAINABLE DEVELOPMENT</b>	158 – 161
Shalu Singh	
<b>ELEMENTS AFFECTING USAGE OF MOBILE BANKING APP AMONG STUDENTS USING UTAUT MODEL</b>	162 – 165
Ramya U and Uma Shankar Shah Kalwar	
<b>IMPACT OF INTRODUCTION OF GST ON THE BUSINESS OF DEALERS: WITH SPECIAL REFERENCE TO THE DEALERS OF CHINTAMNAL, CHIKKABALLAPUR DIST</b>	166 - 174
B. Nataraja Chary	
<b>EASE OF ACCOUNTING THROUGH TECHNOLOGICAL ADVANCES: AN OVERVIEW OF OPPORTUNITIES AND OBSTACLES OF CONTEMPORARY ACCOUNTING PLATFORMS</b>	175 – 178
V. Kalpana Kumari	
<b>SIGNIFICANCE OF WORKFORCE ANALYTICS IN TALENT MANAGEMENT—INDUSTRY 4.0 FRAMEWORK</b>	179 – 182
Padmaja Peram and K Priya	
<b>ENVIRONMENTAL FRIENDLY GREEN TECHNOLOGY USED BY CONSTRUCTION INDUSTRIES IN BANGALORE</b>	183 – 189
Supriya Lathish and Dr. Sachita Yadav	
<b>ROLE OF TECHNOLOGY IN SUSTAINABLE TOURISM GOVERNANCE</b>	190 – 194
Sachin Soonthodu and Ishrat N Wahab	
<b>A STUDY ON INFLUENCE OF AUTOMATION ON INDIAN AGRICULTURE</b>	195 – 198
Raju V	
<b>A STUDY ON INFLUENCE OF ARTIFICIAL INTELLIGENCE IN ACCOUNTING</b>	199 – 202
Rashmi J	
<b>A REVIEW STUDY ON ROLE OF GEN Z IN THE EVOLUTION OF INDUSTRY 4.0</b>	203 – 206
Vidya Sarat, Sangeetha V and Davlin Linda	
<b>ENGAGEMENT OF TECHNOLOGY IN FINDING THE EFFECTIVENESS OF HRIS TOOLS IN INDIAN B-SCHOOLS</b>	207 – 211
Sibi Shaji	
<b>A DISCOURSE ANALYSIS OF THE DEVELOPMENTAL POLICY IN THE STATE OF PUNJAB, INDIA</b>	212 – 215
Dr. Shiba Daveskar	

**PROPENSITY OF ONLINE SHOPPERS: A DEMOGRAPHIC PERSPECTIVE**

216 – 219

Pushpa A

**ARTIFICIAL INTELLIGENCE FOR THE INTERNET OF THINGS**

220 – 221

Dr. Hyacinth R. Sherwood, Joyce Thabitha Shirley and Sudharshan N

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**A CONCEPTUAL STUDY ON CRYPTOCURRENCY: AN INDIAN PERSPECTIVE**

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**ABSTRACT**

*In the present world due to quick advancement of data and correspondence innovations, numerous exercises in our everyday life have been consolidated on the web and they turn out to be progressively adaptable and increasingly viable. A tremendous development in number of online clients has actuated virtual world ideas and made another business marvel which is digital money to encourage the monetary exercises, for example, purchasing, moving and exchanging. Digital money addresses profitable and elusive items which are utilized electronically in various applications and systems, for example, online informal communities, online social diversions, virtual universes and shared systems. The utilization of virtual cash has turned out to be broad in a wide range of frameworks as of late. This paper examines the future of cryptocurrency in the light of client's desires for its use in various forms. It additionally investigates the clients' certainty of managing digital money in a period where utilizing such virtual cash is not completely regulated. Additionally, the paper is expected to gauge the spread of cryptographic money use in the present environment.*

*Keywords: Cryptocurrency, Cryptographic Money, Digital Money, Virtual World, Online Communities.*

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**INTRODUCTION**

Computerized money is a continuous wonder that is getting enormous thought. There have been numerous endeavors at making a computerized money amid the 90s tech impact with structures like flooz beenz and digicash rising accessible yet there were a wide scope of purposes behind their failure for instance tech blast, with frameworks like Flooz, Beenz and Digicash rising available yet definitely fizzling. There were a wide range of purposes behind their disappointments, for example, misrepresentation, monetary issues and even gratings between organizations' workers and their managers.

Notably, those systems utilized a Trusted Third Party approach, inferring that the associations behind them affirmed and allowed to the traders to trade. Because of the disappointments of these organizations, the production of an advanced money framework was viewed as an act of futility for quite a while.

At that point, in mid 2009, an unknown software engineer or a gathering of developers under an allonym Satoshi Nakamoto presented Bitcoin.

Cryptographic money is computerized or virtual cash intended to fill in as a mode of trade. It utilizes cryptography to verify and confirm exchanges just as to control the formation of new units of a specific digital currency. Basically, digital currencies are constrained sections in a database that nobody can change except if explicit conditions are satisfied.

Inside a digital currency organize no one but miners can affirm exchanges by tackling a cryptographic riddle. They take exchanges, mark them as genuine and spread them over the system. A brief time-frame later, every block of the framework adds it to its database. When the exchange is affirmed it ends up unforgeable and irreversible and a miner gets a reward, in addition to the exchange expenses.

Basically, any cryptographic money organizes depends on the supreme agreement of the considerable number of members with respect to the authenticity of equalizations and exchanges. On the off chance that hubs of the system differ on a solitary parity, the framework would essentially break. In any case, there are a ton of standards pre-incorporated and customized with the system that keeps this from occurring.

Cryptocurrencies are supposed in light of the fact that the accord keeping process is guaranteed with solid cryptography. This, alongside previously mentioned variables, makes outsiders trust as an idea totally redundant.

**REVIEW OF LITERATURE****A Study on Cryptocurrencies and its status in India - Dr. A. UMAHANI, Dr. B. ANURADHA**

In this paper it is stated that the cryptographic forms of money and bitcoin will grow in India by industrialist and different brokers. At present it is too little to be in any way directed. The ascent in the variance of these monetary forms depend on the accompanying reasons viz Few nations were at that point sanctioned with these

kinds of coins and there will be a bit coin future exchanging moreover, another reason is that contributing Rs 1 Lakh and making 10% the following day. Central Bank and finance Ministry has issued cautioning against the utilization of these sorts of monetary standards to speculators, merchants and so on managing these may result in money laundering at their very own risk.

### **Cryptocurrency In India - Its Effect And Future On Economy With Special Reference to Bitcoin - Dr. Arvind Kumar Singh ; Karan Veer Singh**

In this paper observers predict that India's administration will manage Bitcoin in stages. India's Bitcoin industry respects these progressions realizing that administration acknowledgment will give the digital currency the backing it needs. Truth be told, India's Bitcoin industry has since quite a while ago endeavored to promote Bitcoin with systems that incorporate leading security checks, asking for distinguishing proof from clients, for example, government confirmed address archives, Permanent Account Numbers (PAN) or Aadhaar IDs. Private Bitcoin organizations have additionally propelled an affiliation, called the Digital Resources and Blockchain Foundation India (BFI), to instruct layman on Bitcoin advantages and utilization. Government mediation credits their endeavors. As far as creation, Bitcoins are certainly one of the most prominent developments of man. On the other hand, specialists wonder whether a portion of these planned directions will hurt Bitcoin in that government impedance negates Bitcoin's appeal, while different principles may hamper the blockchain advancement and improvement.

### **Risks And Returns Of Cryptocurrency - Yukun Liu; Aleh Tsyvinski**

In this paper observers infer that cryptographic money returns have low exposures to conventional resource classes – stocks, monetary forms and products. Their work provide reason to feel ambiguous about well known clarifications that the conduct of cryptographic forms of money is driven by its capacities as a stake later on of blockchain innovation like stocks, as a unit of record like monetary forms, or as a store of significant worth like valuable metal products. It is also stated that the returns of digital money can be anticipated by two variables explicit to its business sectors – energy and financial specialists' consideration. At last, they have reported that the blockchain innovation typified in digital forms of money has a potential to influence various vital businesses.

### **A Short Introduction to the World of Cryptocurrencies - Aleksander Berentsen and Fabian Schär**

This paper discusses Bitcoin Blockchain. Price instability and scaling issues oftentimes raise worries about the appropriateness of Bitcoin as a mode of payment. As a mode of exchange Bitcoin and blockchain-based tokens ought not to be dismissed. The advancement makes it conceivable to speak to computerized property without the requirement for a focal expert. This can prompt the production of another advantage class that can develop into an important portfolio expansion instrument. Also, blockchain technology gives a framework that allows various applications. Promising applications incorporate utilizing hued coins, keen contracts, and the likelihood of using fingerprints to verify the truth of information records in a blockchain, which may convey change to the universe of fund and to numerous different segments.

### **OBJECTIVES OF THE STUDY**

- To study the development of Cryptocurrency in India.
- To study the Cryptocurrency business.
- To identify the bottlenecks in Cryptocurrency.

### **METHODOLOGY**

This conceptual paper is mainly based on secondary data collected from several knowledgeable sources such as articles, research papers, journals, websites etc. For understanding the concept of Cryptocurrency, analyzing the working of Cryptocurrency (Digital Money) in India and Challenges faced.

### **JUSTIFICATION OF THE STUDY**

#### **Cryptocurrency**

Cryptocurrency is computerized or virtual cash that utilizes cryptography for security. Cryptographic money is hard to fake in view of this security highlight. Numerous digital forms of money are decentralized frameworks dependent on blockchain innovation, an appropriated record authorized by a different system of computers. A characterizing highlight of a cryptocurrency, and apparently its greatest appeal, is its natural nature; it isn't issued by any central authority, rendering it hypothetically insusceptible to government impedance or control.

The first blockchain-based digital currency was Bitcoin, which was propelled in 2009 by an individual named Satoshi Nakamoto. Bitcoin still remains the most famous and generally profitable. Today, there are a large number of interchange digital forms of money with different capacities or determinations. A portion of these are

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clones of Bitcoin while others are forks or new cryptographic forms of money that split off from an effectively existing one.

### **Development of Cryptocurrency in India**

India with a population over 1 billion robust has been on something of an economic renaissance inside the previous couple of years. More than 40 percentage of our nation's population has got right of entry to telecoms and internet offerings. Bitcoin and other cryptocurrencies had been running in the country for a number of years now. This article throws light on the state of the Indian Cryptocurrency marketplace.

One year subsequent to setting up a particular board to examine and explore digital currency, the Reserve Bank of India (RBI) presented a direction on cryptographic money in April to boycott collaboration between budgetary establishments (financial institutions) under its domain and business and cryptographic money related organizations. At long last, the policy is implemented as it was planned.

It stood firm on digital money out of the blue, and the Supreme Court's ongoing choice to keep the boycott unaltered denoted a diminish day to cryptographic money holders and engineers. Subsequently, in spite of the fact that individuals still seek the expert for not all that excessively strict arrangement on the conference on July 20th, almost certainly, the future advancement of crypto showcase is going to face a descending pattern in India.

In any case, in the event that we think back, from past 5 years since the first launch of Bitcoin in India, we may notice that our nation's government held a tricky frame of mind toward cryptos and there is solid relationship between the arrangement and the circumstance that the currency is in.

This article speaks about timeline of the industries' development related to policies.

It was in 2013 that Bitcoin initially excited major warmth in India, with individuals from every social class entered the market and made immediate exchanges or even speculates on it. Nonetheless, 2013 was additionally the year for individuals to begin to build up this innovative technology and the business. The expert around then at first took a spur of the moment measure, at that point they discharged a post at the year-end of 2013, cautioning the utilization of digital money which may cause dangers and peril, however no official regulatory policy was implemented.

At that point the entire India crypto industry strolled in the a three-year gold age, with cryptocurrency trades and new companies coming consistently; the coins and the innovation brought into more use cases in practical terms.

As India is nation where a substantial number of individuals, almost 21%, who don't have accounts at any banks yet at the same time have necessities to exchange cash, for universal settlement contributed an expansive piece of national economies, the coins and the innovation performed well to give moment and ease administrations to people in general.

The token even turned into an option in contrast to Rupee when the administration declared to demonetize 80% of money available for use. At that point the legislature in those years was pleasant to cryptos and the innovation behind it. They contributed venture to facilitate improvement in the innovation and offered help to the tokens, which really made the general public and the population at large aware of everything however that the government would bring cryptos into legal framework.

Be that as it may, things didn't work out how they would have preferred.

2017 was a defining moment for the improvement of the business: we began to catch wind of news detailing forthcoming extreme directions on crypto market, and saw moment variance as far as token value and exchanging volume as the pattern went negative. All things considered the bits of gossip to present stricter control and the poor execution of the market, driving the cost down essentially. As per some data.coms, the cost of Bitcoin dive from its most elevated amount, almost \$10,000, to at present much lower range of \$6500-\$6700.

At that point the RBI at last banned crypto industry by acquainting boycott to stop activities between crypto-organizations and establishments under its watch. It further sets information for business units to leave the field and constrained digital currency trade to quit giving services to citizens.

The Cryptocurrency returned and forward throughout the years in India. Indeed, it's the vagueness of the mentality of government toward the business prompts the high points and low points in the cryptocurrency. In the news, Tom Lee, the Fundstrat Global Advisors' analyst, told that an absence of clear regulatory framework forced pressure on the market, and progressively proficient investors from organization may enter the market



with a proper regulatory framework. Not until 5 years after the principal launch of the tokens, then our nation's authority came up with a clear policy.

As the Supreme Court dismissed the petition for digital currency, then the injunction released by RBI was introduced on July 6th. There has officially two trades to solidified their records and obtain clients to get their cash out; they closes channel to process fiat-to-crypto exchange and introduce crypto-just exchange until the lift, on the off chance that it is force, the ban later on.

### **Cryptocurrency Business**

Rosenzweig, a CEO of IMVU game company, contrasted virtual money with airline miles, which are considered as a kind of virtual cash, to make it progressively reasonable. Virtual money forms encourage exchange transactions, resulting in the completion of monetary exchanges for clients. They influenced the method for win, to spend, trade and aggregate cashless demanding and progressively productive. They are used to buy virtual merchandise inside a similar situation or to trade monetary forms among various platforms. Besides, they are used to purchase digital and physical merchandise. Therefore, virtual money offers great opportunities for organizations and administrators to adapt their applications resulting in increased incomes.

There are numerous kinds of Cryptocurrency that are executed in various platforms incorporating Cryptocurrency in social networks, Cryptocurrency in social gaming, loyalty points and Cryptocurrency in shared systems. These platforms can be ordered into two fundamental classifications, Centralized Cryptocurrency Platforms and Decentralized Cryptocurrency Platforms. The Centralized Cryptocurrency characterized as a Cryptocurrency framework that has a centralized vault which is like the central bank in every nation. The head of that vault has full control of exchanging the Cryptocurrency between people or from one location to another. The Decentralized Cryptocurrency can be characterized as the Cryptocurrency framework that has no centralized vault and has no single administrating authority. They can be acquired by registering or manufacturing effort.

Since there is no common virtual money over the digital medium, there are a few distinctive ways and techniques to acquire or produce virtual money forms. This paper introduces the most important ones.

**Pay for Cryptocurrency technique:** This strategy permits clients and gamers who are majors(18 years and above) to pay for cryptographic money utilizing genuine cash or its identical in the genuine financial framework, for example, prepaid cards and MasterCard's or e-payment frameworks, like PayPal. Every cryptocurrency platform has its very own pricing and trading rate which shows the amount of cash obtained. The obtained virtual money in this technique is stored in purchasers' accounts which are created within the platform by the administrators.

**Offer based Technique:** Many internet gamers don't have the capacity or the way to pay with money alternative for the cryptocurrency. Offer based technique allows clients and gamers whether they are majors or minors to gain digital money by watching publicizing videos, partaking in surveys, winning games levels and agreeing to accept a trial membership. Clients simply need to finish the limited time movement to earn the credits and points so as to finance their accounts which are created within the virtual game platform. This technique is considered as one of the most secure methods for gaining and creating cryptocurrency.

**Loyalty based Technique:** In this technique, clients and gamers gain points and credits, which are types of cryptocurrency, as long as they remain with the cryptographic money provider. Business organizations and games administrators reward clients for their loyalty by giving those points that are redeemable in the future. These points are negotiable with vouchers, discounts and gifts. Clients gain points as and when they make the purchase from the loyalty point provider's items or from other collaborating organizations. For instance, Nectar points, a loyalty point scheme in the UK, can be earned by acquiring real merchandise and things from a few partner organizations, for example, Sainsbury's and Hombase stores. Moreover, clients can join between this technique and the technique for paying for cryptographic money. For instance, Saudi Airlines' clients can pay for additional air miles if their collected air miles are insufficient to get the ideal tickets.

**Self-exertion based technique:** This technique is primarily used for decentralized digital money frameworks, viz., Bitcoin. It is a system of creating virtual cash in distributed systems (peer to peer networks). There will be fixed, changeless and limited number of generated virtual coins in Bitcoin which will equivalent to 21 million units and there will be no more. Unlike other cryptographic money where it is created by one or more central authority, Bitcoins are created by the system peers. The system clients run specific programming on their PCs to crack complex numerical riddles resulting in the creation of virtual coins. The multifaceted nature of the riddles guarantees the stream of creating the coins which are then dispersed haphazardly to the system clients. The

virtual coins can be saved in the local computerized wallet in the client's gadgets so the coins are completely controlled and overseen by them

### **Challenges in Cryptocurrency**

The type of cryptographic forms of money isn't free from some budgetary issues and security concerns. We examined a few investigations and cryptographic money stages and observed some cryptocurrency exchanges so as to investigate difficulties and issues that exist in such virtual world. The principle issues and effects of cryptocurrency can include:

**Security dangers:** Hackers and malevolent clients can make as much as they need from virtual cash in the event that they break the framework and know the strategy for virtual money manifestations. This will prompt the capacity to make counterfeit virtual money or take virtual cash by simply changing the records balances.

**Breakdown worries in Cryptocurrency frameworks:** Unlimited issuing of virtual cash in the assortment virtual networks will prompt monetary issues since its issuing do not depend on the demand and supply. It is workable for a few suppliers, namely, Second Life to issue boundless Linden Dollars and increase their virtual products costs so as to acquire genuine incomes. Then again, it will experience the ill effects of expansion like inflation and financial issues prompting breakdown in the virtual money framework.

**Effect on real fiscal frameworks:** Since some virtual cash frameworks are associated with true financial frameworks, they may influence the demands and supply facilities of true cash. For instance, allowing clients to buy virtual and genuine merchandise and services with virtual cash in some platforms may lessen the demands on real cash. Clients will never again rely upon real cash to purchase what they need and they will utilize virtual cash. Then again, a few platforms allow clients to trade their virtual cash with real money and this will increase demands to true money. These variations will influence on the real financial frameworks.

**Gold farming risks:** Gold farming term is prominent in developing nations. Gold farmers are players who play in social amusements, for example, World of Warcraft so as to gain gold, which is virtual cash and then convert it for real cash by selling it. The targeted groups are the players who don't have enough time to play and go after increasing virtual money. Infact, tremendous income is created from gold farming procedure and it isn't regulated by any regulatory body, resulting in increased fraud and monetary dangers where virtual cash is traded with real cash in questionable condition.

**Variance in virtual currency Value:** According to Chow and Guo study, it is seen that when the prominence of a virtual network drops, the estimation of its virtual cash will be depreciated. For instance, clients who possess 1000 units of virtual cash can purchase from variety of 100 things. In case the supplier of that virtual cash drops, clients can just purchase from 10 things with their 1000 units since dropping will be reflected in less products and services particularly in closed virtual networks.

**Money Laundering:** Money laundering is one hazard that is probably going to ascend with the utilization of Virtual Currency particularly with platforms that allow clients to trade virtual cash with genuine cash. A case happened in Korea in 2008; the police arrested 14 people for laundering \$38 million acquired from selling virtual money. This group changed over \$38 million, which is created by gold farming, from Korea to a paper organization in China as payments for the real business transactions.

**Identity Risks:** Creating an account in virtual cash platforms, like social games and networks isn't verified; money related exchanges can't be observed great. Gamers and clients can make more than one record with false identity and use them for unlawful exchanges. There is no proper way to authenticate the source of making virtual cash. This prompts failure to find out the transactions in case of illegal tax avoidance. Additionally, false identity will allow lawbreakers to get paid with virtual money for their illegal activities.

### **CONCLUSION**

Cryptocurrency offers another, powerful and appealing mode of payment technique that can increase organizations and administrators incomes. It additionally gives an elective technique for payment, apart from real cash, that allows clients to make financial transactions like purchasing, selling, exchanging and trading effectively. Despite the fact that cryptographic money platforms opens numerous channels for digital financial exchanges and furnish another type of cash with various instruments and techniques, they are not properly regulated by any authority. The various studies say cryptographic money platforms have given birth to numerous difficulties that put the financial system into risk. The absence of law is considered as the fundamental concern in digital currency frameworks.

In this paper, our analysis shows that digital money is exceptionally prone to be the following cash stage because of the extensive volume of cryptographic money that is streaming in various frameworks, the tremendous extending and developing of utilizing and actualizing digital currencies and the open doors that digital currency frameworks offer.

In addition, the certainty and trust rate of using cryptocurrency is perceptibly high as it is found in a few cases that have been expressed in this paper.

In any case, clients have not understood the full picture of using Cryptocurrency. In fact, numerous digital currency forms do not deserve that level of trust yet. Numerous difficulties and issues exist in numerous digital money technique and they are unmistakably laid out in the above segments of this paper. Until digital currency is by and large very much directed and controlled, clients need to play it safe of utilizing such virtual cash.

## REFERENCES

- Nakamoto, Satoshi. "Bitcoin: A Peer-to-Peer Electronic Cash System." 2008; Retrieved from <https://bitcoin.org/bitcoin.pdf>.
- Wadhawa, N. (2018, January 4). "Taxing cryptocurrencies in India" Retrieved from [www.thehindubusinessline.com](http://www.thehindubusinessline.com).
- World of Cryptocurrencies. (2018, February). Retrieved from [blogs.thomsonreuters.com](http://blogs.thomsonreuters.com).
- A K Gupta, The surge in Bitcoin's price and popularity: Looking beyond the hype, 2017, Retrieved from [www.capsindia.org](http://www.capsindia.org)
- Blockchain info, "Bitcoin Stats Bitcoin currency statistics", retrieved from <https://blockchain.info/stats>.
- Karan Dhar, How to buy and sell bitcoins? Are bitcoins legal in India, Retrieved from <http://www.businesstoday.in>.
- Reserve Bank of India, RBI cautions users of Virtual Currencies against Risks, Retrieved from <https://rbi.org.in>.
- Effect of Bitcoin in India. (2017, October 17). Retrieved from <https://www.ukessays.com/essays/economics/effect-bitcoinindia-8223.php>.
- Narayan, R. (2017, May 26). What is the future of bitcoin economy with respect to India? Retrieved from <https://www.quora.com/What-is-the-future-of-bitcoin-economy-with-respect-to-India>.
- Budget 2018: Bitcoins, crypto-currencies illegal, but government to explore Blockchain. (2018, February 01). Retrieved from <http://indianexpress.com/article/technology/budget-2018-bitcoins-other-crypto-currencies-illegal-but-govt-to-exploreblockchain-5047639/>.
- Balaji, S. (2017, June 21). *On Bitcoin, India's Government and Tech Companies Find CommonGround*. Retrieved from <https://www.forbes.com/sites/sindhujabalaji/2017/06/21/bitcoin-india-regulation/#353844e87e4a>
- Sethi, P. (2017, January 8). Are there any effects of the Bitcoin on the economy? Retrieved from <https://www.quora.com/Arethere-any-effects-of-the-Bitcoin-on-the-economy>.

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**BEARING OF INDUSTRY 4.0 ON ELECTIONS – A CASE STUDY ON CAMBRIDGE ANALYTICA**

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**ABSTRACT**

*The tussle of Political concepts of being Science or an Arts is Greece age controversy and is in flux but then again, its grabbed attention in 2018 with the exposure of 'Cambridge Analytica's scandal'. Usage of data's are not new to political elections but Cambridge Analytica's event verified that human behaviour can be predicted with the aid of numeral usage. The paper will emphasized on three main components of Industry 4.0 and its effect on election i.e.; data analysis, artificial intelligence and Psychographic usage by Cambridge analytica to study and interference human behaviour through numbers and digital science. The recent involvement of these numbers in forecasting elections, results brought the two key models of democratic countries in forefront [India & United America] raising the question on the credibility and Privacy of public opinion. The paper showcase the consequence of science & data on humanity and its further damage to the model of democracy by taking 'Cambridge Analytica's scandal' as a case study. This Review papers summarize the findings of existing literature and the various facts published in substantial sources so that readers can form an idea about the existing knowledge on a topic without having to read all the published works in the field. This paper has maintained the neutrality of the subject and just showing you the fact. The paper also accepts that the usage of Data in Elections cannot be ignored and one scandal is not enough to frame any opinion regarding this subject. However, this scandal cannot be ignored as elections are the core root of any democracy.*

*Keywords: Artificial Intelligence, Cambridge Analytica, Data Analysis, Elections, Industry 4.0, Psychographics.*

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“Just because you do not take an interest in politics doesn't mean politics won't take an interest in you.”

**Pericles** [Greek Statesman]

**INTRODUCTION**

Politics is immortal – it is born with civilization and will remain until the existence of civilization. The existence of politics is illustrious vary from state, government, law, governance and election. The history experienced many wars to bring ‘a people form of politics’ called ‘democracy’ and the initial glimpse of this uprising brought forward in the episode of the Peloponnesian war. In fact, the utmost disaster of the Second World War was also for the war of political ideology – Democracy vs capitalist/communist. The democracy has always been a debatable form of government in each era from Plato to John Locke to V. Pareto to Karl Marx to Robert Dahl and until today. All these political thinkers have invested good amount of their work on Democracy of course with different outlook. The Plato view on Philosophers King is much known than his opinion on democracy. As he considered democracy, “a government where freedom is the supreme good but freedom is also slavery”. Plato favoured an aristocracy ruled by philosopher kings. He did not believe most societies could maintain it though. Plato's aristocracy was based on merit. The leaders were strong, superior people who were well-educated and had the knowledge to rule. The Aristotle, also had not much support for the democratic government. He divided the democracy itself into good form as Polity and bad form as Democracy. John Locke differed his thought by supporting a democracy with ‘Social contract theory’, where a ruler gains authority through the consent of the governed. The duty of that government is to protect the natural rights of the people, which Locke believed to include life, liberty, and property. In the 18<sup>th</sup> and 19<sup>th</sup> century with the development of the ‘Classical Liberal theory’, C. B. Machperson discussed of strength of peoples vote depends upon the class and the market asset of an individual. This class division is further supported by Vilfredo Pareto ‘Elitist theory of democracy’, by emphasizing the debate of ruling vs the ruled class and many more debate around democracy. Nonetheless there is one common principle in all these theories i.e.; ‘people and human behaviour’. Therefore, people and democracy are interdependent. A democracy is a government in which the people possess the ultimate power by the mean of voting.

The two key players of politics are the state vs the people. The state – ‘democracy’ and the people being the pillar in which democracy is setup. It's a game of representation vs accountability. The representation of government to be accountable to the people and their needs. Election therefore, is the mean by which people participate in government making process through voting. “A man without vote is a man without protection” – Lyndon. B. Johnson. It a weapon in peoples hand through which they can get the best representative leaders to ‘rule with them’ rather ‘rule over them’, ‘rule for them’ instead of ‘role on them’. “Elections belongs to people” as Abraham Lincon states and “voting is not only our rights – it is our power” viewed Loung Ung. In fact in

India, General Elections is celebrated as Countries festival. It's a divine and holy connection between the people and the government. The entire population is directly and indirectly involved in holy game of politics. As Theodore Hesburgh says, "Voting is a civic sacrament". It's a reminder that every citizen has the right to express his or her views. The concept of public participation has always been debated and discussed since Greek democracy. Continuously, there have been emphasis on people's involvement in the government making process. Presently, people's participation or citizen's participation in some countries has become a central principle of policy making. The governments involve large-scale consultations, focus groups research, online discussion forums, or deliberative citizens' juries to involve people. Public participation is viewed as a tool, intended to inform planning, organising or funding of activities. This may also be used to measure attainable objectives, evaluate impact, and identify lessons for future practice. Therefore, the public participation is an ingredient to produce the best recipe of government for the state. As, Plato opines, "One of the penalties for refusing to participate in politics is that you end up being governed by your inferiors". The classification of inferior by Plato though differs from the contemporary leaders comparing it with the ideal philosopher king. "Election belong to people" as Abraham Lincon views and the absence of people from election is the destruction to democracy.

According to the recent report of The Economist Intelligence Unit, Democracy index 2018 reveals that political participation is on the rise in almost every region of the world. Whilst clearly disillusioned with formal political institutions, the population has turned anger into action, and turned out to vote, and to protest. The EIU Democracy Index provides a snapshot of the state of world democracy for 165 independent states and two territories. In 2017, Norway was ranked the world's best democracy, recording the highest score across the above criteria, 9.87. Two other Northern European countries, Iceland and Sweden, came second with scores of 9.58 and 9.39 respectively. In last year's study, the United States was downgraded from a "full democracy" to a "flawed democracy" and in the 2017 edition, it only came 21st overall with a score of 7.98.

2018 Rankings			
Democracy Index 2018 Top 5		Democracy Index 2018 Bottom 5	
Rank	Score	Rank	Score
1	Norway	163	Chad
2	Iceland	164	Central African Republic
3	Sweden	165	Dem. Republic of Congo
4	New Zealand	166	Syria
5	Denmark	167	North Korea

Source: <https://www.eiu.com/topic/democracy-index#>

The EIU has five parameters, which is the base of this result. The Democracy Index is based on five categories: electoral process and pluralism; civil liberties; the functioning of government; political participation; and political culture. The following table will show that all the top 5 countries 'public participation' has been extraordinary.

Sl. No.	Top 5 Countries	The Democracy Index five categories					Total Score – 10
		Electoral Process and Pluralism	Civil Liberties	The Functioning of Government	Political Participation	Political Culture	
1	Norway	10.00	9.71	9.64	10.00	10.00	9.87
2	Iceland	10.00	9.71	9.29	8.89	10.00	9.58
3	Sweden	9.58	9.41	9.64	8.33	10.00	9.39
4	New Zealand	10.00	10.00	9.29	8.89	8.13	9.26
5	Denmark	10.00	9.12	9.29	8.33	9.38	9.22

Source: <https://www.businessinsider.in>

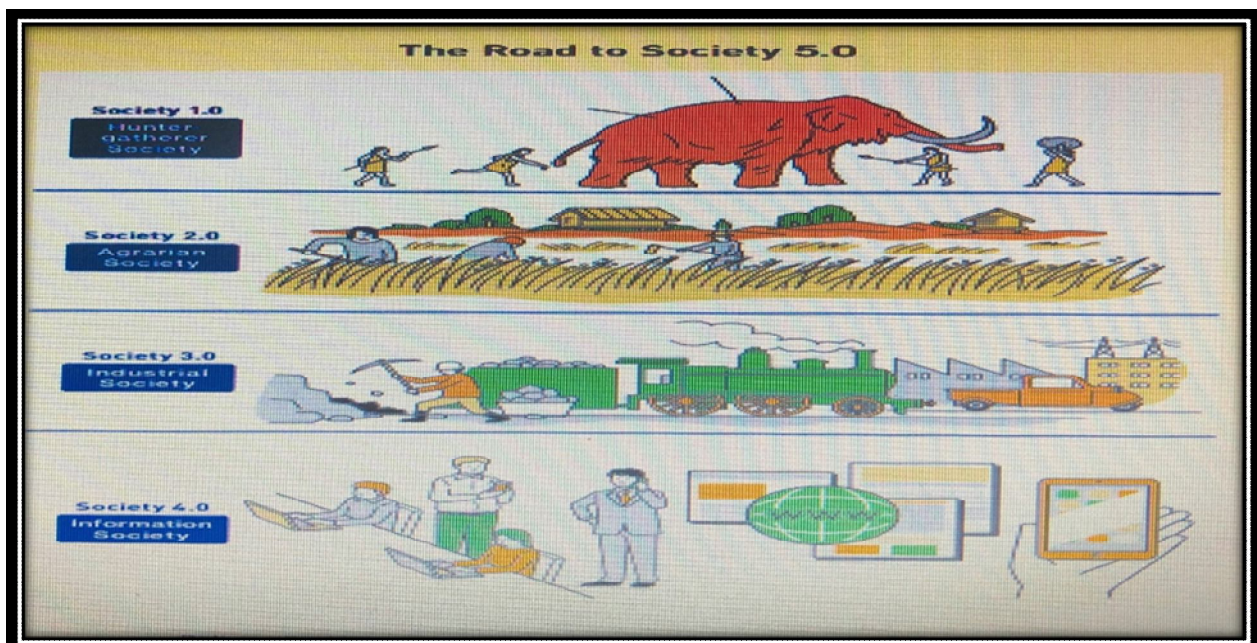


The above facts and figures clearly indicates the importance of public participation in a growing democracy. However, if see deeply its analysed easily that among all the five criteria public participation still measures the least score in the category. Why exactly has been the concern since ages? How to increase public participation? Why people don't participate in government making? How can people demand good officials without participation? And many more. Essentially, peoples involvement has become so significant that today we have Participatory art, Participatory cinema, and Participatory theatre, Participatory development, Participatory planning, and Participatory rural appraisal, Participatory action research, Citizen science, Participatory monitoring. Peoples involvement is no more limited just in politics instead their feeling and attachment with any subject is given the due most importance from politics, law, science, arts, culture, media, to what not. Whether it peace or violence, joy or sorrow, sage or criminal, poverty or growth, rich or poor, education or entertainment, books or media, government or governance or even technology or politics and many more, altogether 'people needs and human behaviour' is the centre point of studies. However, contemporary democratic techniques and technological electoral setup has put a question mark on the significance of people's opinion and public participation.

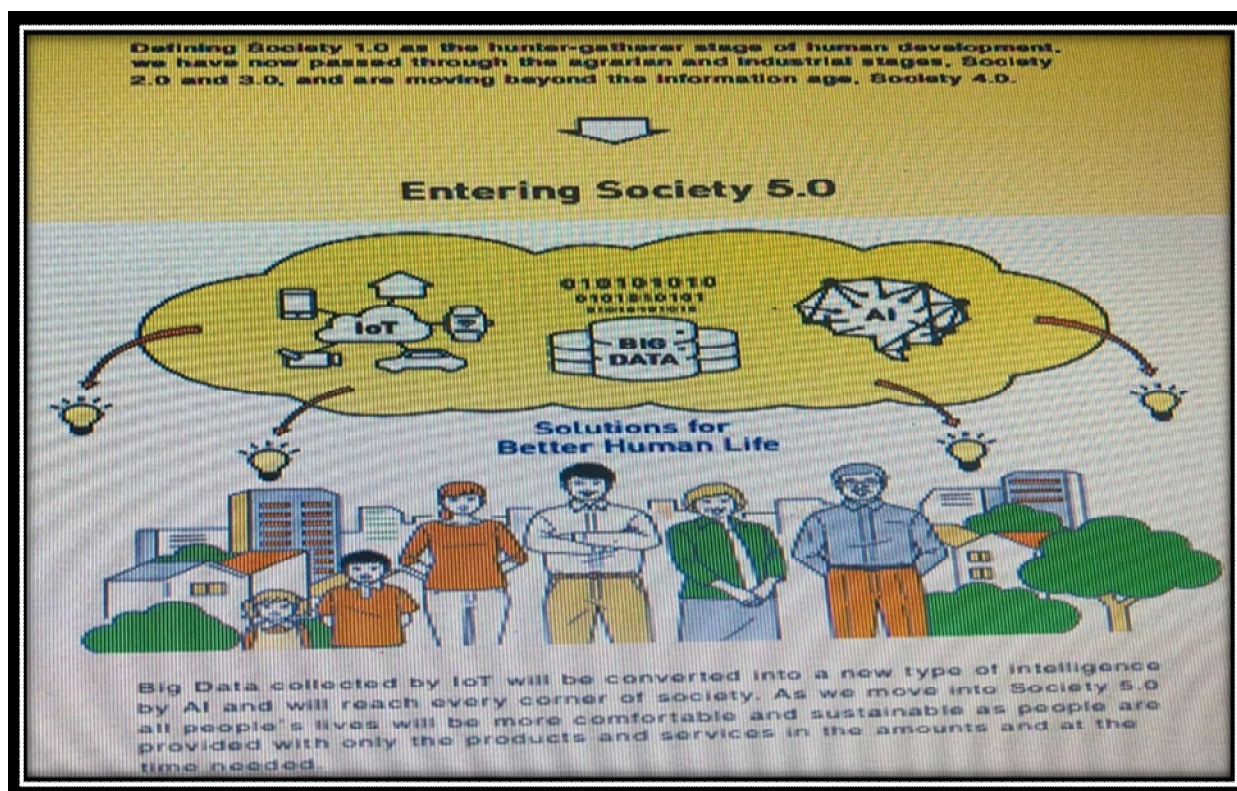
Politics being an inter-disciplinary subject has always connected it roots with various fields and economics is one such un-detachable area. Politics and Economy of every country is dependent to the extent of inseparable unit. Both goes hand in hand and are two faces of the same coin. Despite this, economics has always challenged the worth and existence of human over non-materialist things. THE first industrial revolution began in Britain in the late 18th century, with the mechanisation of the textile industry. The man were replaced by machine and the factory was born. The second industrial revolution came in the early 20th century, when Henry Ford mastered the moving assembly line and ushered in the age of mass production. In third revolution Manufacturing is going digital. A number of remarkable technologies converged: clever software, novel materials, more dexterous robots, new processes (notably three-dimensional printing) and a whole range of web-based services. The above three revolution though brought substantive changes for the flux of human kind. But, The Fourth Industrial Revolution builds on the Digital Revolution, representing new ways in which technology becomes embedded within societies and even the human body.

SL. NO.	INDUSTRIAL REVOLUTION	STAGES
1	First	Hand production methods to machine
2	Second	The Technological Revolution
3	Third	Digital Revolution
4	Fourth	Industry – 4.0

The Fourth Industrial Revolution is marked by emerging technology breakthroughs in number of fields, including robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, The Internet of things (IoT), decentralized consensus etc. Industry 4.0 is a name given to the current trend of automation and data exchange in manufacturing technologies also called a "smart factory". The science and technology is great for the growth of society until not mixed with the political flavours of a nation.







Source: japan.go.jp

The road of society 5.0 aims, 'at creating a society where we can resolve various social challenges by incorporating the innovations of the fourth industrial revolution (e.g. IoT, big data, artificial intelligence (AI), robot, and the sharing economy) into every industry and social life. By doing so the society of the future will be one in which new values and services are created continuously, making people's lives more comfortable and sustainable'. The Big Data collected by IoT will be converted into a new type of intelligence by AI and will reach every corner of society has raised many concern on the basic principles of democracy - freedom of speech and expression, Right to privacy & right to freedom. As, this data clearly has the capacity to control the human brain and feeling by neuron technology. Therefore, this study is an attempt to show the negative effect of industry revolution 4.0 on political elections with the usage of big data and artificial intelligence.

### THE FOCUS OF THE STUDY

The study focuses on adverse effect of technology on Election by interfering political behaviour. This paper has taken Cambridge Analytica's events as a case study to understand the harmful effect of Big Data and AI on Elections.

This Review papers on the secondary data's summarize the findings of existing literature and the various facts published in substantial sources so that readers can form an idea about the existing knowledge on a topic without having to read all the published works in the field. This paper has maintained the neutrality of the subject and just showing you the fact. The paper also accepts that the usage of Data in Elections cannot be ignored and one scandal is not enough to frame any opinion regarding this subject. However, this scandal cannot be ignored as elections are the core root of any democracy.

### OBJECTIVES

- The Cambridge Analytica's affair - Endeavour electoral results.
- Usage of Big data Analysis challenges Human Standpoints
- Artificial Intelligence is over powering human intelligence
- Influence of Psychographics in the Electoral Process

### INTRODUCTION – TO CAMBRIDGE ANALYTIC [CA]

In 2017 two companies constantly highlighted on media folios, Cambridge Analytica and facebook. The CA as the main server collected data from various clients facebook being one revealed various political facts of countries which are known for their democratic setup USA (western democracy) and India (Biggest representative democracy). But before we go further, let us know the roots and cliques of Cambridge Analytica.

The Cambridge Analytica having a motto as



“Data drives all that we do”, calls itself a data science company, is an offshoot of a British company called SCL Group in 2013 (formerly Strategic Communication Laboratories), and was set up as a U.S. subsidiary company of SCL. During its early days, it targeted Facebook and other social media platforms to run advertisements, including for political campaigns, based on user profiles and later expanded to data analytics, advertising, and consulting firm, for sourcing various usages of data.

A political consulting firm which combined data mining, data brokerage, and data analysis with strategic communication during the electoral processes. Cambridge Analytica was founded by conservative businessmen Steve Bannon and Robert Mercer. A minimum of 15 million dollars has been invested into the company by Mercer, according to *The New York Times*. SCL Strategic Communication Laboratories is a group a private British behavioural research and strategic communication company which performed data mining and data analysis on its audience. Based on results, communications would then be specifically targeted to key audience groups to modify behaviour in accordance with the goal of SCL's client. The company used to describe itself as a "global election management agency". According to Alexander James Ashburner Nix the former CEO of Cambridge Analytica and a former director of the SCL Group has nine similar companies sharing the same registered offices in London, including Firecrest technologies, Emerdata and six SCL Group companies including "SCL elections limited"; which is not a moral indicator. The company though closed operations in 2018 in the course of the Facebook – Cambridge Analytica data scandal although related firms still exist. Nonetheless its first activities were founded on a data set, which its parent company SCL bought 2014 from a company named Global Science Research founded by Aleksandr Kogan who worked as a psychologist at Cambridge.

The antiquity of Cambridge Analytica, succour the objectives of this paper.

### The Cambridge Analytica's affair – Endeavour electoral results

In the early 2018 with the political scandal of the **Facebook–Cambridge Analytica data analysis revealed** that CA had reaped the personal data of millions of people's Facebook profiles without their consent and used it for political purposes. This created crunch in the public understanding of personal data and hastened a massive fall in Facebook's stock price and calls for tighter regulation of tech companies' use of data. The scandal was substantial for provocative public discussion on ethical standards for social media companies, political consulting organizations, and politicians. Consumer advocates called for greater consumer protection in online media and the right to privacy as well as restrictions on distortion and publicity. The unlawful gathering of personal data by Cambridge Analytica was first reported in December 2015 by Harry Davies, a journalist for *The Guardian*. However, their involvement in various countries political elections can be measured by these evidence. The following countries involved CA in its election process.

- In **India**, Cambridge Analytica had been used by the two largest political parties, BJP and Congress (INC) to carry out "in-depth electorate analysis" and influence voters, including in the 2010 elections to the Bihar

Legislative Assembly. In this regards, 355 Indian Facebook users installed a Cambridge Analytica app, exposing the data of 562,455 users.

- CA ran campaigns in secret during **Kenya's** 2013 and 2017 elections. In 2018, a CA employee said that his predecessor at the company had been found dead in his hotel room in Kenya while working on Uhuru Kenyatta's 2013 campaign. The company claimed on its website to have conducted a survey of 47,000 Kenyans during the 2013 elections in order to understand "key national and local political issues, levels of trust in key politicians, voting behaviours/intentions, and preferred information channels".
- **Malta**, a Southern European island country in its Disinformation and 'fake news' inquiry, published on 29 July 2018, the UK Parliament's Digital, Culture, Media and Sport Committee noted that it is believed that CA, or its associated companies, worked with the Labour Party in Malta, on the 2013 general election campaign.
- **Mexico**, renowned with Forbes report that says the British news program Channel 4 News had mentioned the existence of proof revealing ties between the PRI and Cambridge Analytica, suggesting a modus operandi similar to the one in the United States. In 2017 when the company had reached out to PRI, Mexico's ruling political party, despite having sufficiently equipped to mess with the election on its own, party but still paid Cambridge Analytica to prevent it from working with rival parties.
- **European Union and BREXIT** befitted news with CA involvement in the 2016 Brexit referendum supporting "persuadable" voters to vote for leaving the European Union. Articles by Carole Cadwalladr in The Observer and Guardian newspapers, respectively published in February and May 2017, speculated in detail that CA had influenced both the Brexit /Vote Leave option in the UK's 2016 EU membership referendum and Trump's 2016 US Presidential campaign with Robert Mercer's.
- The association of CA and **USA** begins in 2012 with the involvement of 44 US Congressional, US Senate and state-level elections in the 2014 midterm elections. The company worked with the Joahn Bolton Super PAC on a major digital and TV campaign focused on senate races in Arkansas, North Carolina and New Hampshire and helped turn out voters for the Republican candidates in those states. Nonetheless, the CA's involvement in the 2016 presidential elections became known in July 2015. As of December 2015, CA claimed to have collected up to 5,000 data points on over 220 million Americans. In 2016, the company said that it had not used psychographics in the Trump presidential campaign.

In addition CA helped in involving other countries decision in 2016 USA elections. On 18 May 2017, Time reported that the US Congress was investigating CA in connection with Russian attempts to interfere in the 2016 presidential election. In 2018, the *Times of Israel* reported that the company had used what Nix had called "intelligence gathering" from British and Israeli companies in their work to influence the election results in Trump's favor.

This exhibits CA capability in moulding the political power of quite a few but significant countries. As, Cambridge Analytica's executives said in 2018 that the company had worked in more than 200 elections around the world, including in Nigeria, the Czech Republic and Argentina.

### Usage of Big data Analysis challenges Human Standpoints

The data frigidity is not new to the electoral world. In past episode of money power, muscle power, influence, autocracy, dictatorship and many other techniques has forced countries to alter electoral results. But, all this was 'human versus human'. The opponent and its behaviour was well-known and recognizable. However, involvement of Big Data Analysis in the game of numbers to predict electoral result creates a culture of 'salves and master'. The 'slaves' being people whose behaviours are analysed deeply to rule over them by the 'master' being Techniques of Industry 4.0.

The Big data analytics helps organizations harness their data and use it to identify new opportunities. That, in turn, leads to smarter business moves, more efficient operations, higher profits and happier customers. Big data is the massive compiling of snippets of digital information gathered about you from a wide range of sources, from computer searches, to your Facebook likes, to credit card transactions to your purchases at the supermarket to every imaginable factoid about you that may be floating about the internet. In his report Big Data in Big Companies, IIA Director of Research Tom Davenport interviewed more than 50 businesses to understand how they used big data. There's no single technology that encompasses big data analytics but in reality several types of technology work together to help you get the most value from your information. Here are some of the biggest players:



**Machine learning**, a specific subset of AI that trains a machine how to learn, makes it possible to quickly and automatically produce models that can analyze bigger, more complex data and deliver faster, more accurate results – even on a very large scale.

**Data management** needs to be high quality and well-governed before it can be reliably analyzed. With data constantly flowing in and out of an organization, it's important to establish repeatable processes to build and maintain standards for data quality.

**Data mining technology** helps you examine large amounts of data to discover patterns in the data – and this information can be used for further analysis to help answer complex business questions. With data mining software, you can sift through all the chaotic and repetitive noise in data, pinpoint what's relevant, use that information to assess likely outcomes, and then accelerate the pace of making informed decisions.

**Hadoop**. This open source software framework can store large amounts of data and run applications on clusters of commodity hardware. It has become a key technology to doing business due to the constant increase of data volumes and varieties, and its distributed computing model processes big data fast.

**In-memory analytics** analyses data from system memory (instead of from your hard disk drive), you can derive immediate insights from your data and act on them quickly. This technology is able to remove data prep and analytical processing latencies to test new scenarios and create models.

**Predictive analytics** technology uses data, statistical algorithms and machine-learning techniques to identify the likelihood of future outcomes based on historical data.

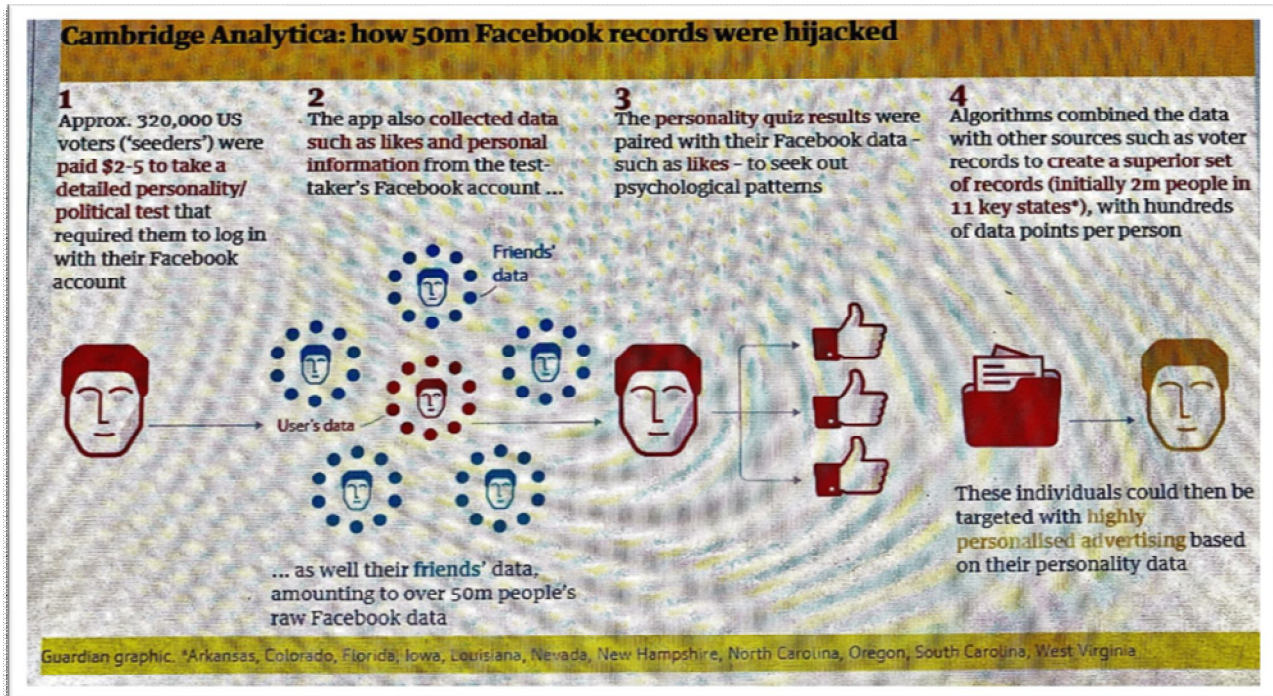
**Text mining analyses** text data from the web, comment fields, books and other text-based sources to uncover insights you hadn't noticed before. Text mining uses machine learning or natural languages processing technology to comb through documents – emails, blogs, Twitter feeds, surveys, competitive intelligence and more – to help you analyze large amounts of information and discover new topics and term relationships.

The CA with Facebook used one of the above mentioned techniques in various elections to play with numbers to challenge the people's choice. The following table will display the digital power over social prime.

Sl. No.	CA effected Countries	Year of election	Type of Election	Data used by CA with Facebook
1	India	2010	State Legislative Assembly	562,455 users
2	Kenya	2013	Presidential Election	survey of 47,000
3	United States	2016	Presidential Election	87 million



The **Facebook–Cambridge Analytica data scandal** a major political scandal in early 2018 harvested raw data from up to 87 million Facebook profiles. The company claims to work for the win of Donald Trump's 2016 Presidential election. In 2018, following disclosures that the company had improperly used the personal information of over 50 million Facebook users while working on Trump's presidential campaign. The diagram below gives clarity on methods used by CA to acquire data's.

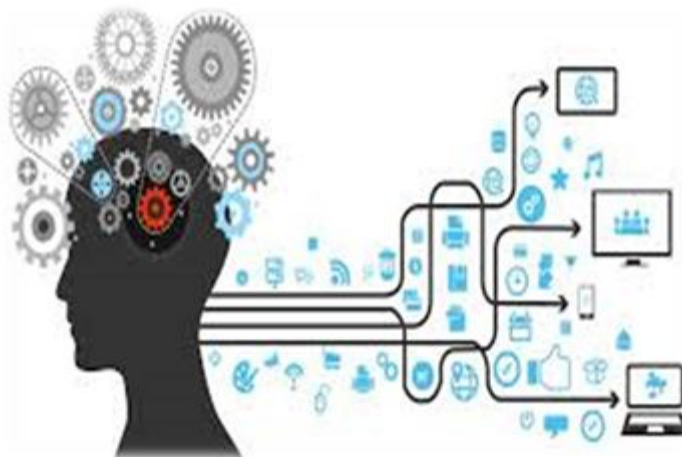


Source: theguardian.com

The algorithm used in the Facebook data breach trawled through personal data for information on sexual orientation, race, gender – and even intelligence and childhood trauma. However, despite this breach of ethics in data collection Mr. Kogan maintains everything he did was legal and says he had a “close working relationship” with Facebook, which had granted him permission for his apps. The Facebook denies this was a data breach. Vice-president Paul Grewal said: “Protecting people’s information is at the heart of everything we do, and we require the same from people who operate apps on Facebook. If these reports are true, it’s a serious abuse of our rules.”

### Artificial Intelligence is over powering human intelligence

The Artificial Intelligence [AI] is considered a next level technique to maximise the effectiveness of election campaigns and political life. AI is a Machine learning systems based on statistical techniques that can automatically identify patterns in data. It is an area of computer science that emphasizes the creation of intelligent machines that work and react like humans.



Computer science defines AI research as the study of “intelligent agents” “: any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals. More

specifically, Kalpan and Haenlein define AI as “a system’s ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation”. Colloquially, the term “artificial intelligence” is used to describe machines that mimic “cognitive” functions that humans associate with other human minds, such as “learning” and “problem solving”.

Vyacheslav Polonski, Researcher, University of Oxford opines, ‘Artificial intelligence can be used to manipulate individual voters’. During the 2016 US presidential election, the data science firm Cambridge Analytica rolled out an extensive advertising campaign to target persuadable voters based on their individual psychology and help them be more informed about key political issues. AI can be also be used to manipulate public opinion. Massive swarms of political bots were used in the 2017 general election in the UK to spread misinformation and fake news on social media. The same happened during the US presidential election in 2016 and several other key political elections around the world. Typically disguised as ordinary human accounts, bots spread misinformation and contribute to an acrimonious political climate on sites like Twitter and Facebook. Example provided is the 2016 election, pro-Trump bots even infiltrated twitter hashtags and Facebook pages used by Hillary Clinton supporters to spread automated content. Bots were also deployed at a crucial point in the 2017 French presidential election, throwing out a deluge of leaked emails from candidate Emmanuel Macron’s campaign team on Facebook and Twitter. However, Polonski does raise concern of ethical questions and insist companies should commit to using AI ethically and judiciously to ensure that their attempts to sway voters do not end up undermining democracy.

Rebecca Crotoft, Yale law researcher, takes AI debate to higher concern with its connection with political campaigns as ads you’ve seen on TV, online and on social media. Crotoft explains how she believes AI can form, “A video generated by machine-learning software that shows someone doing or saying something that in fact they did not do or say.” And Lyrebird, a voice-cloning tool, is just one example. Lyrebird uses AI and natural language processing to clone voices and create shockingly accurate digital voices, which one could use to say anything. The tool has used created clips of President Trump and Barack Obama “speaking” in an effort to raise awareness of voice-cloning technology. Crotoft states so far no public evidence of deepfakes being used to discredit political figures still warns that it could become a real issue in the future elections.

**Abishur Prakash's forthcoming book "Go.AI (Geopolitics of Artificial Intelligence, focus on AI-Politicians. The futurist era when politics will be ruled by AI instead of human leaders. The preview of this is now seen in many electoral process as follows.**

- Alice was an artificial intelligence (AI) system created by Yandex, Russia’s equivalent to Google. She ran her campaign using slogans like “the political system of the future” and “the president who knows you best.” While Alice didn’t win, she did receive 25,000 votes.
- Michihito Matsuda, Tokyo AI raced in a mayor election in April, 2018 placed third with 4,000 votes. His campaign slogan: “Artificial intelligence will change Tama City.”
- SAM, AI from New Zealand referred as a she, has been called the first virtual politician in the world, is created to run 2020 general elections. Today, SAM is reaching out to voters through Facebook Messenger and is sharing her thoughts on climate change, healthcare and education, among other topics.

This seems fascinated yet daunting. As, to see AI ruling human will be similar to Alien overtaking human civilization.

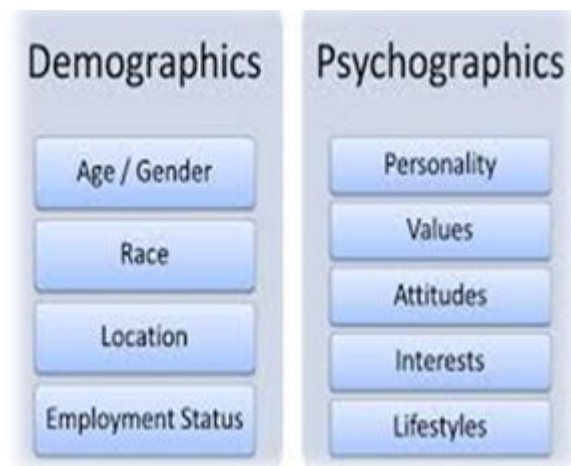
Dan Patters points out two more tools of AI usage of which can disrupt the voting and increasing electoral hacking collective. The automated cyber-attacks against political campaigns are being shaped by artificial intelligence. To defend against automated hacks, Google has deployed its own AI systems that detect bot behavior and limit the rate of login attempts. Google's AI analyzes attack patterns and then implements evasive maneuvers. "It's almost this proxy war," says the Google security executive. "Computer versus computer."

- Password-stuffing with bots it’s a process through which Campaigns lock piles of sensitive data in email and cloud accounts protected by simple passwords are hacked by automated bots using a technique called password stuffing.. In 2016, Russian hackers infiltrated the Clinton campaign by sending phishing emails to John Podesta that were tailor-made to fool the campaign chairman. Once the attackers had his password, they were able to exfiltrate piles of sensitive campaign data.

- The Internet of Things is an "Emerging threats are an evolution of current threats," said Microsoft's cybersecurity field chief technology officer Diana Kelley. "The core threat is criminals who are trying to get access to our data, our systems, and our devices." Devices, she said, produce big data. The more data available to an AI algorithm, the more effective that algorithm will be. And hackers are obsessed with data. There is no better source of data than the network of connected devices known as the Internet of Things, or IoT. In October 2016, a botnet known as 'Mirai' took down internet communications systems across the U.S. Kelley warned that sophisticated hackers targeting elections are also likely to harness insecure IoT devices to a similar attack on Election Day.

Therefore, It might not be long before machines begin thinking for themselves -- creatively, independently, and sometimes with better judgment than a human as 'AI positioned to be a game changer', Charles Rose.

### Influence of Psychographics in the Electoral Process



Psychographics is a qualitative methodology used to describe consumers on psychological attributes. Psychographics have been applied to the study of personality, values, opinions, attitudes, interests, and lifestyles. While psychographics are often equated with lifestyle research, it has been argued that psychographics should apply to the study of cognitive attributes such as attitudes, interests, opinions, and beliefs while lifestyle should apply to the study of overt behaviour. Psychographic studies of individuals or communities can be valuable in the fields of marketing, demographics, opinion research, prediction, and social research in general. Psychographic attributes can be contrasted with demographic variables (such as age and gender), behavioral variables (such as purchase data or usage rate), and organizational descriptors, such as industry, number of employees, and functional area.

The above diagrams clearly shows the different attributes associated with Psychographics. This study is stepping towards interpreting neuron cells of being brain which is the major achievement of AI.

Sue Halpern emphasizes the significance of psychometric technology on voting behaviour of an individual. In September, 2016, Alexander Nix, the C.E.O. of Cambridge Analytica, the data and messaging company that was working at the time with Donald Trump's supposedly flagging Presidential campaign, explained his firm's work like this: "If you know the personality of the people you're targeting, you can nuance your messaging to resonate more effectively with those key audience groups." The fancy term for this is psychographic targeting.

Christopher Wylie, the former C.A. employee who recently came forward to detail how the company improperly acquired personal data from fifty million Facebook users, has said that the company used that data to create a "psychological warfare mindfuck tool." But Aleksandr Kogan, the Cambridge University researcher who provided the company with the Facebook data, has described it as "not that accurate at the individual level." Kogan's conclusion tracks with research that has been done by the U.K.-based Online Privacy Foundation, whose research director, Chris Sumner, recently told me that psychographics are much more accurate for groups rather than individual people.

The method of "psychographics," is more or less an online application of decades-old principles of psychology. In this process, the Pollsters typically rely on demographic data to predict election outcomes. Demographic research tends to classify people according to clear-cut characteristics, such as age, sex, race, class, education, and employment. Private companies also study traits like the age and gender of who buys their products so as to sell more effectively. Psychographics works the same way—except it uses personality type, rather than age and

sex, to predict behavior. Psychology has always been used as a tool for political manipulation as used by Cambridge Analytica, the data analytics company in Donald Trump's 2016 presidential campaign, reportedly used some of the most sophisticated—and nefarious—psychological tactics to help secure political victory.

The paper defines four objective to substantiate Cambridge analytica episode as a base to study effect of Industry 4.0 on electoral politics of a nation. The first objective indicates the involvement of The Cambridge Analytica's in every important election and how its interference has changed the political games as well. The second objective showcase the usage of Big data analysis in election and these data in turn has the capacity to change and even complete ignore the people's choice in an election. The third objective challenges pose a concern of future election completely run and ruled by the AI politicians. Finally, the fourth objective shows the significance and interference of mind and heart by the application of psychometric methods to learn the pattern of political behaviour. Therefore, it's clearly indicated that with the significance and dependence of science and technology in contemporary world, Industry 4.0 cannot be missing from politics. Nonetheless, countries have to take some strict measure to stop AI in washing off the existence of elections and people's participation in process of making government.

### **CONCLUSION**

In this paper comprehensive information on Cambridge analytica, its association with Facebook and their prediction on substantial electoral results is discussed. This paper shows the power of Science and technology in the form of data analysis and artificial intelligence in the democratic elections. AmyWebb, futurist, NYU professor warns, that the deployment of these technologies is a risk to people who care about things like freedom of speech and Western democratic ideals. Her recommendations is the formation of GAIA, what I call the Global Alliance on Intelligence Augmentation. A central organization that can develop global norms and standards, some kind of guardrails to imbue not just American or Chinese ideals inside AI systems, but worldviews that are much more representative of everybody. Thomas Frey says people are irrational constantly changing between their needs and wants. And with such instability in a character, so how can we possibly make better decisions and create a better world if all we have to work with is defective humans. So, the worthiness of artificial intelligence cannot be omitted. It would be easy to leapfrog our thinking towards a system where AI makes all of our decisions for us, but any process that reduces individual participation will be heavily scrutinized before we learn to trust it, and trust takes time. In the view of Paul Nemitz, the critical inquiry into the relationship of the new technologies like AI with human rights, democracy and the rule of law must therefore start from a holistic look on the reality of technology and business models as they exist today, including the accumulation of technological, economic and political power in the hands of the 'frightful five' [the power of money, the power over infrastructures for democracy and discourse, the power over individuals based on profiling and the dominance in AI innovation], which are at the core of the development and systems integration of AI into commercially viable services. The Cambridge Analytica forced various political powers to invest time in modelling data analysis and artificial intelligence in forming positive path for the future election. However, transparency and clarity of any extent in this study will compromise moral, values and ethics in accepting AI as an optimistic approach towards electoral development.

"The Fourth Industrial Revolution should be a revolutions of values"

**Amira Yahyaoui** [Founder and chair, AI Bawsala]

### **REFERENCES**

#### **Book**

- O.P.GAUBA. 1981. 'An Introduction to Political theory'. Macmillan Publisher. 5<sup>th</sup> Edition.

#### **Articles**

- Ashely Sams. 2018. Artificial Intelligence Could Help or Hurt Midterm Elections.
- **Abishur Prakash. 2018. AI-Politicians: A Revolution in Politics.**
- Dan Patterson. 2018. How AI is creating new threats to election security.
- **Paul Nemitz. 2018. Constitutional democracy and technology in the age of artificial intelligence.**
- Vyacheslav Polonski. 2018. **How artificial intelligence conquered democracy.**

#### **Websites**

- <https://www.brainyquote.com>
- <https://www.businessinsider.in>



- 
- [www.cbsnews.com](http://www.cbsnews.com)
  - <https://www.cfr.org>
  - <https://theconversation.com>
  - [www.futuristspeaker.com](http://www.futuristspeaker.com)
  - <https://www.eiu.com>
  - <https://ijnet.org>
  - <https://www.independent.co.uk>
  - [www.marketingaiinstitute.com](http://www.marketingaiinstitute.com)
  - <https://medium.com>
  - <https://royalsocietypublishing.org>
  - [www.technologyreview.com](http://www.technologyreview.com)
  - <https://theconversation.com>
  - [www.theguardian.com](http://www.theguardian.com)
  - <https://www.wikipedia.org/>
  - <https://www.weforum.org>

**Reports**

- The report by The Economist Intelligence Unit [EIU] on Democracy Index 2018.
- The report by the road of society on 5.0 on Industry 5.0.

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## A STUDY ON IMPACT OF EMPLOYEE ENGAGEMENT ON EFFECTIVENESS OF THE START-UP IN SELECTED START-UPS

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### ABSTRACT

*Number of start-ups are competing to survive in this ever increasing, challenging and volatile market environment. It is well known that the most important asset to any start-up is the people. "A start-up is only as good as the people it keeps". Without knowledgeable, dedicated, motivated and engaged employees, any start-up cannot function properly or run efficiently to be as successful as it could be. So, Start-up's success is depends upon employee engagement in the start-up.*

*The present exploratory research is conducting on 80 Respondents from the 16 selected start-ups in Bangalore city to examine various employee engagement drivers utilized by start-up in Bangalore city and the effect of employee engagement on the productivity of the employee and growth of the start-up. The data was collected through the questionnaire including 25 items on five-point Likert scale. Statistical analysis was done using the software SPSS version 20 which indicated the Factor analysis, multiple regression analysis and simple regression analysis.*

*Keywords: Employee Engagement, Employee Engagement practices, Employee Productivity, Start-ups in Bangalore and Start-up Growth*

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### INTRODUCTION

Start-up is the Word which is frequently used from past few years for developing first generation entrepreneurs in this business for fulfilling the needs and requirements of the people with their innovative and creative methods in the process. And Bangalore has secured first place in the development of the start-ups rather than all states in an India. Numerous start-ups are competing to survive in this ever increasing, challenging and volatile market environment. Employees are the important asset for to the start-ups to survive with success in the present competitive business environment. But, engagement has emerged as a critical driver of business success in today's Competitive Market place. Further, employee engagement can be a deciding factor in organizational success.

Most employees need a factors for better survive in the society and feel good about their jobs and work in a better way. Some employees are motivated by money while others find recognition and rewards motivating. Motivation in the workplace has a direct impact on employee productivity. Employees who are enthused, excited and passionate about their jobs carry their responsibilities to the best of their ability; hence production numbers increase as a result.

So, Start-up's success is depends upon employee engagement in the start-up. The employee engagement drivers make the employees more active and enthusiastic and creating commitment to perform in better way. When the employees are satisfied and engaged Start-ups can retain the employee. And also they will work sincerely with the feeling of their company.

### LITERATURE REVIEW

**Sharma, (2013)**, studied on women entrepreneurs in India. She concluded that women entrepreneurs experience many problems like lack of education, family support, social barriers, legal aspects etc. She also elucidated the various factors like pull and push factors affecting entrepreneurship. According to her women have the credible and determination in setting up the enterprise and also fighting against all odds.

**Sharma Baldev R et al (2010)**, Researcher has conducted research on "Determinants of Employee Engagement in a Private Sector Organization: An Exploratory Study" focused on to discover employee engagement level in the organisation and the determinants thereof among the sales executives of a pri-vate sector organization. Sample for the study consists of 51 sales executives of a manufacturing organization lo-cated in the National Capital Region.

**Goyal, Parkash, (2011)**, in their research paper concluded that now the position of entrepreneur had improved than earlier. Government is providing required awareness and adequate steps are being taken up by them. Startups must be put together with the business expertise and mentors to overcome the latest trends in the business environment and competent enough for aspiring the supremacy in the entrepreneurial coliseum.

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**Thiagarajan B & Renugadevi V (2011)**, researcher said through “An empirical investigation on Employee Engagement Practices in Indian BPO Industries”, and the main focus of this research paper is to introduce employee engagement and key research on engagement related factors in BPO Industries in India. this researcher identifies factors such as Career development opportunities, per-formance appraisal and motivation factors are connected to employee engagement.

**Sakari Taipale, Kirsikka Selander, Timo Anttila, Jouko Nätti (2011)**, Explore with the research on “Work en-gagement in eight European countries: The role of job demands, autonomy, and social support” aim of this paper was to build upon recognized theories and models about job demands and freedom, it uses a new work engagement approach, produces cross-national knowledge about work engagement and its predictors.

## RESEARCH GAP

*On the basis of literature review there are still scope for doing the research in the domain of Impact of employee Engagement on effectiveness of the start-up. The subsequent studies gaps had been recognized as follows: there's no studies on Employee engagement practices and effectiveness of start-ups and Association between the employee engagement and boom of start-ups.*

## RESEARCH METHODOLOGY

### Objectives

- To know the impact of Employee engagement practices on level Employee engagement at selected Start-ups in Bangalore.
- To Identify the impact of employee engagement on Productivity

### Hypothesis

H1: Employee Engagement Practices will impact positively on level of Employee Engagement

H2: Employee Engagement will impact positively on productivity.

H2.1: Employee Engagement will impact positively on Employee productivity.

H2.2: Employee Engagement will impact positively on Start-up's productivity.

Descriptive research design has been used in this research. Primary as well as secondary data has been used for data collection. Sample size of 80 individual employees has been taken from 16 Start-up companies in Bangalore city. Convenience sampling technique has been used because of researcher convenience. Data collection had done by using questionnaire. Questionnaire has been prepared by using 5 point Likert scale. Principal Component factor analysis and Regression Analysis has been used for data analysis.

## SCOPE OF THE STUDY

This study will helps to identify the employee engagement practices which are majorly impact on level of employee engagement in start-up.

This study will assist to understand the impact of employee engagement on employee productivity.

This study will assist to identify the impact of employee engagement on Start-up's productivity.

## DATA ANALYSIS

Data was checked for suitability for factor analysis with help of correlation analysis, KMO test of sampling adequacy and Bartlett's test of sphericity (Boyd et al, 2002; Malhotra, 2004). Most variables had significant correlation between them. Both KMO Test of Sampling Adequacy value and Bartlett's Test of Sphericity value were found adequate (Table II). However, when data was subjected to Principal Component Analysis (PCA), communality value of some of the variables was less than 0.5. Those variables also had insignificant factor loadings. For refining result variables with lesser communality values were deleted following an iterative procedure. After three iterations resulting in deletion of three variables optimum output was obtained. This data set was checked for suitability for factor analysis.

Table-1: KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.807
Bartlett's Test of Sphericity	Approx. Chi-Square	530.072
	Df	105
	Sig.	.000

Data set was then subjected to another round of Principal Component Analysis and Varimax rotation. Communalities for all fifteen variables were higher than 0.5 (Annexure I) indicating it to be an optimum solution. Final solution explained 60.170% of total variance associated with the problem (Annexure II). Factor output comprised of five factors based on fifteen variables (Annexure III). Relevant factor loadings for each variable indicated that all the variables were adequately explained by derived factors. Factor output comprised of three factors representing specific practices of Employee Engagement which are majorly used by the startup companies in Bengaluru city. These are presented in the table given below.

#### Factor X: Compensation

This factor extracted in this research explained 45.604 per cent of variance. It covered of seven variables; Stress reducing activities, pay for over time, incentives, family care policies, healthy and safety norms, participated in decision making process and empowered in job. These way add to Compensation during working in the startup company and Employee are working for both financial and non-financial benefits. Someone satisfied by financial and someone satisfied by nonfinancial benefits so Startups management can identify in their survey that which will really engage the employees. For employees work, performance can provide the award and formal appreciations and bonus, salary increments and services which helps to create competitive nature in employee. Therefore, this factor was labelled as 'Compensation'. Factor loadings for all seven variables were significant ranging from 0.875 (for Stress Reducing activities) and 0.529 (for Empowered in my job). Probably it was due to the fact that Bengaluru city is in first place in India in development of startups and 1100+ startups located in Bangalore and Bangalore is the place to provide more job opportunities for jobseekers.

#### Factor Y: working Environment:

This second factor in this research explained 45.604 per cent of variance. It comprised of five variables namely Working Responsibilities, working hours, internal communication, and opportunities for growth and sharing information with supervisor. According to past researcher all these variables comes under working environment. Working environment is key to employee engagement. Employees are required autonomy and supportive management and freedom at workplace to improve the start-ups performance. When Start-ups providing clear goals and tasks, flexible timing and challenging role to the employees it helps to motivate the workforce to do that tasks. It ranged from 0.818 (for Work Responsibilities) to 0.583 (for sharing information with supervisor). Probably this factor was help for improve the employee satisfaction and employee commitment towards work in the Startups and it helps for attracting the candidates to apply for the job in the startups.

#### Factor Z: Development opportunities:

The third factor explained 60.170 per cent of total variance associated with the development opportunities. It had only three variables such as good performance leads to promotions, designed training and HRD schemes and hike in pay. These variables represent Promoting of talented and experienced work force, opportunities for career development, training and development, workshops, seminars, new project, this factor was labelled as 'Development Opportunities'. Factor loading for these three variables ranged from 0.737 (Leads to Promotion) to 0.686 (for hike in Pay). It seemed that development activities will helps to engaging the employee at work place even it is a startup in Bengaluru city. This opportunities helps for enhancing their personal and professional career.

Table-2: Factors Name

Factor No:	Variable	Factor Loading Value	Factor Name
X 24.517%	My company offers Stress reducing Activities	.875	Compensation
	Satisfied with the pay for overtime work	.819	
	At Work place, Satisfied with incentives for My work	.702	
	Satisfied with tolerable family care policies	.654	
	My company has Clear healthy and safety norms	.578	
	My company encourages to Participated in Work related activities and decision making process	.534	
	I feel Empowered in my Job	.529	
Y 45.604%	At Work Place , Satisfied with work responsibilities and working environment	.818	Working
	At Work place, I am Comfortable with working hour	.792	

	At Work, Satisfied with the internal communication with supervisor and co-workers	.717	Environment
	My job offers opportunities for Growth	.684	
	I feel Free to Share the Information and productivity Details with my Supervisor	.583	
Z 60.170%	I believe, Good Performance leads to Promotions and transfers	.737	Development opportunities
	There are well Designed training and HRD Schemes	.700	
	I believe, good work offers hike in pay	.686	

### H1: Employee Engagement Practices will impact positively on level of Employee Engagement

In order to access the impact of independent variables on Employee Engagement as dependent variable, enter method of multiple regressions has applied

**Table-3: Regression Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.658 <sup>a</sup>	.433	.410	.451	1.825
a. Predictors: (Constant), Development Opportunities, Working (Employee Engagement practices) Environment, Compensation					
b. Dependent Variable: Employee Engagement					

### Interpretation

Model summary (Table 3) shows the value of R as 0.658, R Square as 0.433 and adjusted R square value as 0.410 which indicates that this regression model explains about % of variation of dependent variable (Employee Engagement) due to independent variable (Employee Engagement practices).

**Table-4: ANOVA**

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	11.769	3	3.923	19.323	.000
1 Residual	15.431	76	.203		
Total	27.200	79			
a. Dependent Variable: Employee Engagement					
b. Predictors: (Constant), Development Opportunities, Working Environment, Compensation (Employee Engagement)					

### Interpretation

The ANOVA (Table4) discovers that the F statistics of the regression model is statically significant at 0.05 levels implying the goodness of fit of the regression equation. (Model is statistically significant).

**Table-5: Regression- Coefficient- Impact of Employee Engagement Practices on Employee Engagement**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.036	.428		2.423	.018
	Compensation	.426	.087	.514	4.873	.000
	Working Environment	.365	.087	.384	4.213	.000
	Development Opportunities	-.085	.070	-.128	-1.211	.230
a. Dependent Variable: Employee Engagement						
Source: Primary Data through Questionnaire						

### Interpretation

Table represents standardized regression coefficients which show the strength of impact and its positive/negative direction. It also comprises of „t“ and significant values to validate the hypothesis framed to measure the significant impact of dimensions of Employee Engagement practices in Start-ups on employee engagement.

### H2: Employee Engagement will impact positively on productivity.

H2.1: Employee Engagement will impact positively on Employee productivity.

H2.2: Employee Engagement will impact positively on Start-up's productivity.

In order to access the impact of independent variables on Employee Engagement as dependent variable, enter method of Simple regressions has applied

**Table-6: Regression Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.600 <sup>a</sup>	.360	.352	.602	1.896
a. Predictors: (Constant), Employee Engagement					
b. Dependent Variable: E Productivity					

### Interpretation

Model summary (Table 3) shows the value of R as 0.600, R Square as 0.360 and adjusted R square value as 0.352 which indicates that this regression model explains about % of variation of dependent variable (Employee Productivity) due to independent variable (Employee Engagement).

**Table-7: ANOVA**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	15.906	1	15.906	43.849	.000
	Residual	28.294	78	.363		
	Total	44.200	79			
a. Dependent Variable: E Productivity						
b. Predictors: (Constant), Employee Engagement						

### Interpretation

The ANOVA above Table reveals that the F statistics of the regression model is statically significant at 0.05 levels implying the goodness of fit of the regression equation. (Model is statistically significant).

**Table-9: Regression- Coefficient- Impact of Employee Engagement on Employee Productivity**

Table 2: Regression Coefficient Impact of Employee Engagement on Employee Productivity						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.015	.478		2.122	.037
	Employee Engagement	.765	.115	.600	6.622	.000
a. Dependent Variable: Employee Productivity						

### Inference

Table represents standardized regression coefficients which show the strength of impact and its positive/negative direction. It also comprises of „t“ and significant values to validate the hypothesis framed to measure the significant impact of Employee Engagement on employee productivity in start-ups.

H2.2: Employee Engagement will impact positively on Start-up's productivity.

**Table-11: Regression Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.553 <sup>a</sup>	.306	.297	.533	1.222
a. Predictors: (Constant), Employee Engagement					
b. Dependent Variable: Strat-up's Productivity					

### Interpretation

Model summary (Table 3) shows the value of R as 0.553, R Square as 0.306 and adjusted R square value as 0.297 which indicates that this regression model explains about % of variation of dependent variable (Start-up's Productivity) due to independent variable (Employee Engagement).

**Table-12: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.768	1	9.768	34.445	.000 <sup>b</sup>
	Residual	22.119	78	.284		
	Total	31.887	79			
a. Dependent Variable: Startups's Productivity						
b. Predictors: (Constant), Employee Engagement						

**Interpretation**

The ANOVA above Table reveals that the F statistics of the regression model is statically significant at 0.05 levels implying the goodness of fit of the regression equation. (Model is statistically significant).

**Table-13: Regression Coefficients- Impact of Employee Engagement on Start-up's Productivity**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.881	.423		4.447	.000
	Employee Engagement	.599	.102	.553	5.869	.000

a. Dependent Variable: Start-up's Productivity

**Inference**

Table represents standardized regression coefficients which show the strength of impact and its positive/negative direction. It also comprises of „t“ and significant values to validate the hypothesis framed to measure the significant impact of Employee Engagement on Start-up's Productivity.

**CONCLUSION**

Start-up companies are first generation companies for enhancing their growth in this competitive business are the required employee's assistance. So that the Results of this study identified three major factors such as **working environment, compensation and development opportunities** which are majorly using in start-up companies for engaging and satisfying the employees to give more productivity in Bangalore city. This Engagement practices has impact on engagement practices to increase the engagement level of employees in Start-up companies. And also this study reveals that engaged employee has contributed their efforts to give more productivity and to enhance the productivity of the start-up company in Bangalore city. This study used by the HR managers and Human resource Management policy makers to make sure to provide the more practices to the employees to engage them in the work place. that's really helps for the startup promoters to retain the employees and to get the better performance.

**REFERENCE**

1. May, D. R., Gilson, R. L., & Harter, L. M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of occupational and organizational psychology*, 77(1), 11-37.
2. Ellis, C. M., & Sorensen, A. (2007). Assessing employee engagement: the key to improving productivity. *Perspectives*, 15(1), 1-9.
3. Robbins, S. P. (2009). *Organizational Behavior*, Motivation concepts, 194.
4. Markos, S., & Sridevi, M. S. (2010). Employee engagement: The key to improving performance. *International journal of business and management*, 5(12), 89.
5. Sharma Baldev, R., & Anupama, R. (2010). Determinants of employee engagement in a private sector organization: An exploratory study. *Advances in Management*.
6. Goyal, M., & Parkash, J. (2011). Women entrepreneurship in India-problems and prospects. *International Journal of Multidisciplinary Research*, 1(5), 195-207.
7. Shanmugan, P., & Krishnaveni, R. (2012). Employee engagement: An introspection into its conceptualisation. *International Journal of Social Science & Interdisciplinary Research*, 1(9), 186-194.
8. Goyal, M., & Parkash, J. (2011). Women entrepreneurship in India-problems and prospects. *International Journal of Multidisciplinary Research*, 1(5), 195-207.
9. Taipale, S., Selander, K., Anttila, T., & Nätti, J. (2011). Work engagement in eight European countries: The role of job demands, autonomy, and social support. *International Journal of Sociology and Social Policy*, 31(7/8), 486-504.
10. Thiagarajan, B., & Renugadevi, V. (2011). Employee Engagement Practices in Indian BPO Industries-An Empirical Investigation. *Interdisciplinary Journal of Contemporary Research in Business*, 2(10), 134-141.
11. Sharma, Y. (2013). Women entrepreneur in India. *IOSR Journal of Business and Management*, 15(3), 9-14.

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**A STUDY ON IMPACT OF EFFECTIVE COMMUNICATION ON EMPLOYEE ENGAGEMENT**

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**ABSTRACT**

*Having an engaged workforce is critical to Organizational success. Managers must understand that today's employees are seeking more from their jobs and careers than in previous decades. Employees will choose to either stay within an organization or go based on whether or not that organization meets their needs and expectations. Apart from seeking tangible benefits such as salary they look out for roles that will provide a sense of satisfaction & fulfillment. An engaged employee is one who produces results, does not change job frequently and more importantly the sense of belongingness makes him the ambassador of the company at all times. The main objectives of the study is to understand how the internal communication creates workplace relationships based on meaning and worth.*

*Keywords: Employee Engagement, Communication, feasible work environment*

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**INTRODUCTION**

Employee engagement is a fairly new phenomenon that continues to gather the attention of and implementation into organizations. While communication has been identified as a factor affecting engagement, no scientific research has concentrated solely on the relationship between the two.

Taking this into account this study sought to find whether there is a relationship between internal communication and employee engagement. Results indicated that there is a positive relationship between factors of internal communication and factors of employee engagement. The current research found that internal communication is linked to commitment, discretionary effort, and meaningful work; all factors of engagement. In addition, results also indicated that communication channel satisfaction and channel combinations were linked to employee engagement.

Employee Engagement is a fundamental concept in the effort to understand and describe, both qualitatively and quantitatively, the nature of the relationship between an organisation and its employees.

Employee engagement can be defined in different ways. As engaged employee is one who produces result, does not change job frequently and more importantly the sense of belongingness makes him the ambassador of the company at all times.

The performance given by an engaged employee as defined by '**Hay Group**' is as follows. "A result achieved by stimulating an employee's enthusiasm for work and redirecting it towards organization success".

This result can be achieved only when an employer offers an implicit contract to the employees that demonstrate specific good/positive behavior which are providing support to the organizational goals.

Effective communication is important to employee's managers, senior leaders, other interested party, and stake holders. Communication is a powerful tool that can have an extensive impact on the success of any organization. One of the most difficult challenges for any organization today is to find ways to communicate effectively to its employees.

Employee retention is increasingly influenced by communicating effectively between leaders/ managers and employees specifically, communicating approach about career development and management can be essential to retaining an existing workforce and engaging employees shows that keeping employees informed with personal, relevant and engaging communication gives companies a competitive edge and has direct results on the core.

**REVIEW OF LITERATURE**

Communication is a powerful tool that can have an enormous impact on the success of any organization. Effective communication can increase employee engagement, boost workplace productivity, and drive business growth. Communication is the cornerstone of an engaged workforce. A company's workforce represents its most significant investment and ultimately determines the success or failure of the organization. Engaged employees are far more likely to demonstrate the dedication and commitment that are essential to the long-term growth of any company, large or small. One of the most difficult challenges for any organization today is to find ways to effectively speak to its employees.



Deetz (2001) described two ways of seeing and defining internal communications.

The most common approach focuses on internal communication as a “phenomenon that exists in organizations”. In this view, the organization is a container in which communication occurs.

A second approach sees internal communication as “a way to describe and explain organizations”. Here, communication is the central process through which employees share information, create relationships, make meaning and “construct” organizational culture and values. This process is a combination of people, messages, meaning, practices and purpose (Shockley-Zalabak, 1995), and it is the foundation of modern organizations (D’Aprix, 1996).

Communication is one of the most dominant and important activities in organizations (Harris & Nelson, 2008). Fundamentally, relationships grow out of communication, and the functioning and survival of organizations is based on effective relationships among individuals and groups. In addition, organizational capabilities are developed and enacted through “intensely social and communicative processes” (Jones et al., 2004). Communication helps individuals and groups coordinate activities to achieve goals, and it’s vital in socialization, decision-making, problem-solving and change-management processes.

### **STATEMENT OF THE PROBLEM**

An employee can also be found to be experiencing three different levels of engagement. He could be engaged, not engaged or disengaged. Engaged employees are those who work with passion towards the organization’s goals. An employee who is not engaged is one who is seen to be participating but not with passion and energy towards the organization’s common goal. Disengaged employees are those who are unhappy at their work and act out of their unhappiness. Engagement is also found to have three different facets, Intellectual engagement that refers to dedication towards performing better at one’s job, effective engagement or feeling positive after performing one’s job and lastly social engagement which is involved in discussions with others about enhancing work related improvements.

### **OBJECTIVES OF THE STUDY**

- To analyze the importance of appreciation from immediate reporting authority.
- To understand the two way flow of information from the top to bottom and vice versa.
- To test the association between Internal Communication and Employee Engagement.
- Internal Communication creates workplace relationships based on meaning and worth.
- To measure the impact of employee communication on Employee Engagement among the employees of automobile sector.

### **LIMITATIONS OF THE STUDY**

This study was only confining to 78 respondents. Hence data collected may not be generalized

Out of total population the selected sample size was 78

Duration of the study was also limited due to time constraints of the employees.

Study as mainly focused at communication between employee and employer and it can be considered as a part of employee engagement.

### **SCOPE OF THE STUDY**

The concept of communication between employee and his immediate reporting authority is focused on is focused in this study. Employee Engagement includes many aspects like communication, leadership, management policies etc. This study elaborates impact of internal communication towards their working attitude. This survey is done in Automobile Industry Concorde Motors (India) pvt ltd and Bangalore motors pvt Ltd (VST groups).

### **RESEARCH METHODOLOGY**

**Type of research:** survey and interview

**Statistical tool:** For data analyses purpose statistical tools like charts and graphs are used in order to make easy understanding of collected data and its out come

**Sample technique:** Non probability sampling techniques was used to conduct the study. Mainly the convenient sampling technique was used

**Sample size:** The size of the sample were only limited to 78.

**Location of the sample:** Concorde Motors (India) Pvt. Ltd., Bangalore

Bangalore Motors Pvt. Ltd., Bangalore

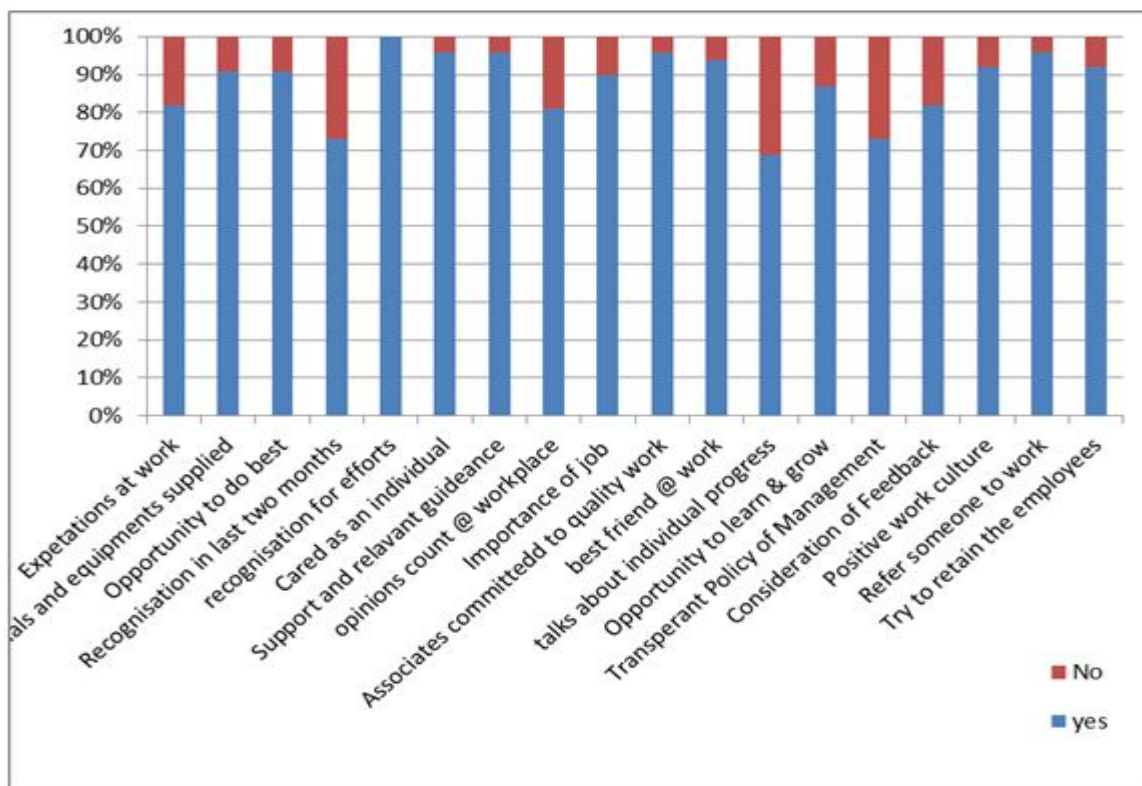
**Targeted sample:** Employees of Automobile Service Sectors

### SOURCES OF DATA COLLECTION

**Primary Data:** Here the first hand information was collected directly from the employees who were required for the research it contains effective tools like questionnaires, interview methods and observations. This study mainly focused on closed end saturated questionnaires, interview methods of data collection as primary data sources.

**Secondary Data:** Here data readily available in secondary sources like journals, articles, news papers, websites, internet, books and company links. This study secondary source of data collections like e-journals, e-articles and books.

### DATA ANALYSIS



Connecting people through communication is very important aspect of Employee Engagement. As diversified workplace emerge the need for team based and collaborative digitally connected work environments becomes critical to efficiency and growth.

These automobiles service sectors are following the traditional methods of communication through the survey we understood that 80% of employees know exactly management expects from them. But still 20% of employees are unaware about expectations of their jobs.

So, here now organizations' must introduce internal blog which connects employees across department and most importantly it keeps to staff up to date their job requirements.

Motivational tools like appraisal of employees, recognition of their work and efforts is only communicated to that employee are not enough.

Here the intention is not only appreciating an employee but indirectly motivating others to do so. So, this kind of messages should pass in digital groups and by this other employee's gets motivation.

Giving updates about tools and equipment supplied for the week/day through instant messaging makes employee to feel special and we can expect high productivity & through this they can give proper guidance and advancement in their job to prepare a qualitative and qualitative employee.

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**FINDINGS**

Most of the employees are graduates having experience of more than 5 years. So exactly they are able to understand what company/employer expects from them.

90% of the surveyed employees agree that they are getting the opportunity to do their best & on time the materials & equipments are supplied at right time.

Every employees getting recognition for their contribution and efforts and all of them felt that they are cared at workplace

From management employees are getting support and relevance guidance in career advancement and employee opinions seems to be counted.

Employees are happy in their place and they are ready to refer their friends and relatives to work here. The cause of their happiness is positive work environment.

If the employees want to quit the organisation is only one reason because of the salary & that too they know that company will try to retain them.

**SUGGESTIONS**

Employees are having experience more than 5 year is not communicated about their progress frequently. This can cause loss of interest in job and effects the overall productivity. So always appreciation about their achievements from the immediate reporting authority is needed.

New employees who are having less experience than 2 years are not able to adjust to the work environment. So, the immediate reporting authority should communicate more and recognize their work by that new employees get motivated.

These observations and results are disused with management and suggested for working on better communication with two affected groups.

**CONCLUSION**

Both the automobile service sectors clearly stating that the communication between employer and employee creates a gratified environment.

So, communication from the Management is important as well the communication between the employee and his immediate reporting authority leaves a lot of impact on working environment.

**REFERENCES**

- Pamela S Shockley -Zalabak (Author). (1995), Fundamentals of Organizational Communication: Knowledge, Sensitivity, Skills, Values, Longman Publishers USA, [https://books.google.co.in/books?redir\\_esc=y&id=pU3wAAAAMAAJ&focus=searchwithinvolume&q](https://books.google.co.in/books?redir_esc=y&id=pU3wAAAAMAAJ&focus=searchwithinvolume&q)
- Roger D'Aprix (Author), 16-Feb-1996, Communicating for Change, <https://books.google.co.in/books?isbn=0787901997>
- Frederic M. Jablin (Editor), Linda L. Putnam (Editor). (2001) New Handbook Of Organizational Communication: Advances In Theory, Research, And Methods, 1st edition by sage publications([www.sagepublications.com](http://www.sagepublications.com)) [https://www.amazon.com/dp/1412915252/ref=rdr\\_ext\\_tmb](https://www.amazon.com/dp/1412915252/ref=rdr_ext_tmb)
- Thomas E. Harris (Author), Mark D. Nelson (Contributor), (2008) ,Applied Organizational Communication: Theory and Practice in a Global Environment (Rutledge Communication Series) 3rd Edition, <https://www.taylorandfrancis.com> <https://www.amazon.com/Applied-Organizational-Communication-Practice-Environment>
- Nancy R. Lockwood, SPHR, GPHR, M.A. Manager, HR Content, program. 2007, Leveraging Employee Engagement for Competitive Advantage: HR's Strategic Role SHRM Research, [www.shrm.org/research](http://www.shrm.org/research)
- Mr. Prabhakar, senior HR manager, VST groups, Bangalore motors pvt ltd.
- Mrs. Sajidha, senior HR manager, Concorde motors (India) pvt ltd.

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**A STUDY ON THE NEED FOR AN AUGMENTED WORKFORCE IN TODAY'S EVOLVING FUTURE WORKERS TO IMPROVE EMPLOYEE ENGAGEMENT**

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**ABSTRACT**

*With the dawn of a new era of Artificial intelligence there seems to be a drastic impact on the current workforce and transform work distinctly from their traditional ways. The advent of technology advancement has led to a transition in the role of humans. Workforce seems to be threatened and fear losing their jobs. This study tries to understand the need of creating an augmented workforce with new software's, robotics and AI in companies by re skilling and retraining them to be capable to learn fast and embrace the dynamic digital and automated opportunities of the future. This involves developing a conducive environment where the roles of employees are complemented by technology rather than replaced by it. Engagement drivers of today's workforce are influenced by how we experience technology in their daily lives. It is the need of the hour that organisations create a culture that sees AI as a positive change and to use automation to create an augmented workforce so that employees feel engaged, safeguarded and committed to their work. Organisations need to find a ways to blend human and digital talent to create future workers.*

*Keywords: Artificial intelligence, Augmented workforce, Employee engagement.*

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**INTRODUCTION**

An Augmented workforce is one which blends in human intelligence with artificial intelligence. It is bringing together these two different areas of expertise to work together with their enhanced skills for the benefit of the organization.

An augmented workforce is a blend of human employees and technology working on tasks together. By utilizing AI and cognitive technologies, companies can streamline processes and create a more efficient workforce.

The world is quickly adapting itself to the changes in technology. Organizations also have to create a space for that change, Human resource is the lifeblood of any organization, and a good worker will lead to optimum use of company's resources, faster and efficient completion of projects, less errors and enhancement in the quality of work.

An augmented workforce is a mix of artificial intelligence with human resources, which required a constant and dedicated efforts on both sides, not only the company, but also the talent have to work on adapting themselves to the changing situations, organizations have to put up systems in place to make way for a blended workforce, while those who are in the upper chain of the workforce and those currently entering in have to adapt themselves to the change by learning more on the software and resources made available to them.

Employee engagement illustrates the commitment and energy that employees bring to work and is a key indicator of their involvement and dedication to the organization. It also means the emotional commitment the employee has to the organization and its goals. Employee engagement has been acknowledged as a vital factor contributing to organizational success and could have positive implications in all aspects of any business. Engagement takes place when employees are committed to their work and for the organization with job engagement when they find their work interesting and when they identify themselves as an important part of the organisation.

According to a recent study by Deloitte" 41 percent of companies reported they have fully implemented or have made significant progress in adopting cognitive and AI technologies within their workforce. And another 34 percent of survey respondents are in the midst of pilot programs." But, only 17 percent of global executive's report they are ready to manage a workforce with people, robots, and AI working side by side"—the lowest readiness level for a trend in the five years of the Global Human Capital Trends survey.

Employees want to be involved in decisions that affect their work. Organizations need to instil a sense of involvement, positive emotions about their work and a sense of belongingness in their employees. Emphasis should be given to employee opinions and opportunities should be provided to them to be heard. Transparency from the senior leadership will also make the organization culture more open. The leaders of high engagement workplaces create a trustful and challenging environment, in which employees are encouraged to participate and innovate to move the organization forward.

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**REVIEW OF LITERATURE**

Carol Stubbings (2018) has made a point in her study that organisations can't protect jobs which are made redundant by technology, that they have a responsibility to their people. She has said that organisations must protect people not jobs and must nurture agility, adaptability and re-skilling for a stronger workforce.

Sahasi (2017) believes that an augmented workforce can transform the way business is done, by automating repetitive tasks such as filling out forms or packaging of products, it provides freedom to the worker from tedious and time consuming jobs.

**STATEMENT OF THE PROBLEM**

Artificial intelligence is strongly moving into the workforce, an augmented employee is one who uses technology to make the job less tedious. Engaged employees tend to have a more positive attitude towards the adaptation of technology. There is a need to find how a future worker can be re-skilled to adapt to changing technology to improve employee engagement.

**NEED FOR THE STUDY**

It is important for organisations to understand the growing need for artificial intelligence and how it can be adapted in the organisation as to keep employees engaged.

**OBJECTIVE OF THE STUDY**

- a. To study the meaning of augmented workforce
- b. To research on how far Indian organizations are AI driven
- c. To study the need for an augmented workforce to keep employees engaged.

**RESEARCH METHODOLOGY**

This paper is based on review of the secondary data that has been collected from the existing available sources such as including theoretical papers, case studies, and other types of papers, books, journals.

**LIMITATIONS**

Due to lack of time this paper is based on solely secondary data that has collected from various existing sources.

**AI AS A BOON NOT A BANE**

Predictions of machines replacing human has been the warning for years, reality has shaped itself most differently, While, artificial intelligence has been rapidly growing along with it the need for the right human resource has also been increasing. Even if we have automated ordering services and applications that process requests within seconds, it's the human element that helps retain customers and improves business. Whether it's a professor entering daily attendance or a analyst creating spreadsheets AI has greatly improved the way these basic jobs are performed without replacing the human talent that perform them, it helps reduce the burden of repetition and duplication and saves data and keeps records far more efficiently than can be done with the human hand. Artificial Intelligence used optimally by the talent will lead to more efficient work flows and is a boom for the data driven workforce.

**Automation in a sense can be studied under three heads**

- RPA-Robotic Process Automation: Where rules are defined and made, the machine just applies the rules, a yes/no, a process that is streamlined, the machine doesn't think of consequences, if yes, a certain action will be taken, if no, another will be taken.
- Machine Learning: Can be used for analysis, large volumes of data is presented to the machine, which will analyze the data and give the results accordingly, stock brokers, investment bankers and even marketers who have to analyze huge amounts of customers data could use it to make their jobs simpler.
- Cognitive augmentation: A machine that can think, these are intelligence that can be used for quick and effective decision making, such as flying of an aircraft or planning of logistics, where the best route or movements can be thought off faster by the machine.
- While each of these processes are different and can be applied differently in jobs, they all require the basic human resources to guide them into decision making, many will reduce the redundancy in the jobs and increase employee engagement.

**NEED FOR AUGMENTED WORKFORCE**

With the ever evolving nature of technology, the ways jobs have been performed have drastically changed as well. Organizations now have easier and far more reliable options when it comes to basic tasks. Data redundancy and accuracy is far better with the use of artificial systems, rather than depending on human hands

alone. In studies conducted by deloitte, it is clear that while 40% of organizations can apply artificial intelligence to their processes, only 15% have the human resource trained and ready for carrying them to fruition.

It is imperative that organizations take a far more serious look into updating their workforce, as a trained and specialized augmented workforce will bring in larger gains in the long run. Robotics and AI have proved essential in jobs where there is a routine schedule or process. The qualifications for human capital are changing and reskilling of employees has become the need of the hour. Machine learning can be adapted to solve standard problems and can be applied to non-conforming situations to get reasonable solutions. Every process that may seem cumbersome can be redesigned in a more practical manner with the help of the right kind of AI tools. Human intelligence, the crux of which is the emotional quotient can be used in the right places to make decision making processes simpler and faster. AI coupled with human capacity to make decisions is the need of the hour, to have a better skilled augmented workforce and to increase the organizations clout of human capital.

### **AUGMENTED WORKFORCE AS A TOOL FOR EMPLOYEE ENGAGEMENT**

Technology indeed plays a very important role in business; nowadays business companies are making use of advanced techniques of operation. As technology continues to evolve, they pose more challenges for managers because organizations will have to need more number of employees with increased technical and professional skills. These knowledge workers can not be managed with old styles of management. They expect operational autonomy, job satisfaction and status. It is because of these facts that attention of managers is shifting towards employees' side of organizations. Managers' eye is on how to keep employees engaged in their job. Employers now realize that by focusing on employee engagement, they can create more efficient and productive workforce. Any initiatives of improvement which are taken by management cannot be fruitful without wilful involvement and engagement of employees.

The organisation needs to rethink how jobs are being performed, an augmented worker is one who reduces the dreariness of a job, and he works faster and more efficiently by working the machine rather than people. They need to redesign the job roles to make it further employee friendly and coordinate tasks that are repetitive. Jobs need to be adapted to technology and employee must be re-skilled with using those systems to their advantage. Creativity, problem solving and ethical decision making are the speciality of a human workforce, organisation using these key skills that are a part of human efficiency with the right kind of technology will keep future employees more engaged in their work.

### **CONCLUSION**

Artificial intelligence coupled with human intelligence is the reality of future business development. Employers embracing technology in an employee friendly manner, with skill up gradation and training will see far better results as they will get the best of both worlds. Strong reduction in data redundancy and duplication using artificial intelligence, working far more efficiently with the emotional quotient needed to make the right decision at the right time is the blend that is an augmented worker. A good mix of artificial intelligence with human emotions is what is required by organisations, this will lead to a more positive and engaged workforce.

### **WEB REFERENCE**

- <https://www.peplematters.in/article/lets-talk-talent/the-rise-of-the-augmented-workforce-what-does-it-mean-for-the-hr-organization>
- <https://beebole.com/blog/what-is-augmented-workforce-how-to-manage/>
- <https://www.networksasiasia.net/article/increasing-competitive-advantage-augmented-workforce.1468892520>
- <https://deloitte.wsj.com/cio2017/05/10/get-ready-for-the-augmented-workforce/>
- <https://www.insightsforprofessionals.com/blog/what-is-an-augmented-workforce?sid=talent-management>
- <https://www2.deloitte.com/insights/us/en/focus/human-capital-trends/2017/future-workforce-changing-nature-of-work.html>
- <https://www.insightsforprofessionals.com/blog/what-is-an-augmented-workforce?sid=talent-management>
- <https://aibusiness.com/konica-minolta-augmented-workforce-ai/>
- <https://home.kpmg/xx/en/home/insights/2018/06/augmented-workforce-fs.html>
- <https://www.pwc.com/gx/en/services/people-organisation/workforce-of-the-future/workforce-of-the-future-the-competing-forces-shaping-2030-pwc.pdf>
- <https://deloitte.wsj.com/cfo/2017/09/19/preparing-for-the-augmented-workforce/>

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**PHYSICAL TO DIGITAL CONSUMER BEHAVIOUR**

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**ABSTRACT**

*From past decades after revolution of internet and evolution of Smartphone online consumer behaviour is increasingly growing. Modern lifestyle works as a catalyst for its growth.*

*Across all stages of the consumer behaviour from traditional to online to digital advanced digital technologies are creating new opportunities for innovation and growth, and producing novel ways to improve and customize the customer experience. This digitally focused advancement which lays the foundation for what Deloitte calls the digital manufacturing enterprise (DME)—is enabled by the rise of Industry 4.0.*

*Industry 4.0 encompasses a new industry revolution that combines the Internet of Things (IoT) and appropriate physical and digital technologies, including analytics, additive manufacturing, robotics, high-performance computing, artificial intelligence and cognitive technologies to integrate digital information from many different sources and drive the physical act of manufacturing. This paper explores the two objectives first, the ways how manufacturers can use Industry 4.0 technologies as their strength to make a better customer relationship and generate new value for customers. Second how consumer behaviour of Delhi NCR is shifting from traditional to online.*

*Keywords: Online Consumer Behaviour, Industry 4.0, Traditional Consumer Behaviour*

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**INTRODUCTION**

(Deloitte University Press) Industry 4.0 combines the Internet of Things (IoT) and relevant physical and digital technologies, including analytics, additive manufacturing, robotics, high-performance computing, artificial intelligence and cognitive technologies, advanced materials, and augmented reality, to integrate digital information from many different sources and locations, and drive the physical act of manufacturing.

The concept of Industry 4.0 incorporates the IoT within the context of Physical to Digital to Physical loop. This is a process starting from physical and ends with physical that means it capture information from physical world start process digitally in between the machines and give output finally to the physical world. The process has three steps as follows:

1. Establish the Physical records
2. Analyze and Visualize
3. Generate movement

**Establish the Physical records**

Capture information from the physical world to create a digital record of the physical operation and supply network.

**Analyze and Visualize**

Machines talk to each other to share information, allowing for advanced analytics and visualizations of real-time data from multiple sources.

**Generate movements**

Apply algorithms and automation to translate decisions and actions from the digital world into movements in the physical world.

In the same way shopping behaviour of consumers are changing from traditional way to online shopping. In today's modern lifestyle when people don't have much time for shopping they use online websites for their convenience. They have a limited time for their quality time in which they want to use with their family and friends for enjoying. Fuel price and crowdie outside is also another factors for influence in online shopping. Online shopping is one of the better ways of saving time in busy life. So people are influenced for the different websites of their choices. This is also a physical to Digital consumer behaviour.

**Traditional Shopping** – Consumers just go to the physical market, choose product they need, set price with shopkeeper, buy the product and get it instantly. Traditional way of shopping is the one of the older ways of shopping.

**Online Shopping** – Online shopping is the modern way of shopping. Consumers go to the websites available as per need (like for grocery there are different E-Tailor website, for apparel and others there are different websites) and choose products of their need and order it. They get the product as per E-Tailor websites deliver it.

Online shopping is becoming increasingly popular. Online retail sales are estimated to grow from \$172 billion in 2005 to \$329 billion in 2010 [Johnson 2005].

The potential benefits of online shopping for consumers include convenience, various selection, low price, original services, personal attention, and easy access to information, among others.

Apart from this online shopping has its own cons factors like security issues like credit card details, quality issues etc. Consumers have perceptions of risks and benefits toward online shopping. These specifications include user interface features, Web site content and design, and system usability. The above two views do not contradict but rather reinforce each other.

### **The Defining Traits of online shopping and Industry 4.0**

The manufacturing industry is the backbone of the any country's economy; indeed, the competitiveness of the manufacturing industry played a pivotal role in enabling the country to successfully overcome the recent financial and economic crises.

The next wave of innovation will be driven by the Internet of Things, i.e. Industry 4.0. In particular, Industry 4.0 differs from traditional firms in three key ways: the audience they engage, the degree of connection they maintain, and their monetization of the products and services they provide. Each Industry 4.0 trait is intrinsically tied to the physical-to-digital-to-physical leap. In the same way we try to connect online shopping and traditional shopping with Industry 4.0.

The process of digitization is already taking place at a rapid pace. There were 113 million new mobile subscriptions in the third quarter of 2013, with 30 million in China, 10 million in India, 6 million in Bangladesh, 5 million in Indonesia and 4 million in Egypt. By the end of September 2013, the total number of mobile users worldwide stood at approximately 4.5 billion. Over the past three years, the ratio of data to speech has risen from around 1:1–10:1. By 2020, it is estimated that 6.5 billion people and 18 billion objects will be connected to mobile networks. The virtual world is thus clearly extending its reach into the physical environment. In a study carried out on behalf of the industry association BITKOM (Federal Association for Information Technology, Telecommunications and New Media), Fraunhofer ISI estimates that the economic benefit of digitization and increased real-world networking in the fields of energy, healthcare, transport, education and government is at a level of 56 billion Euros a year.

### **Challenges and Benefits of online shopping in Industry 4.0**

With online shopping consumers can get products from anywhere, because of this consumer all over the world have been affected by this fast constantly evolving industry and this is disrupting consumer behaviour in the global market. This supply chains world and due to dynamic nature there are new challenges and many opportunities presented. Consumers are now benefitted from this new way of shopping.

## **CHALLENGES**

### **Supply Chain Management**

Over the past decade in the Online shopping consumers get new products at a rapid rate and this has incorporated various new business operations for different types of products and is making supply chains more complex each year. With the removal of trade barriers in various countries the growth of the internet is growing and consumers use this means for purchasing merchandise online, this has disrupted the online industry a global competitive industry.

Industry 4.0 is making it easier because of fast manufacturing of the products. And make demand-supply chain profitable. Industry 4.0 fulfils the customer's requirement for fashion retailers to produce the right product at the right time; this is due to customer's requirement for needing unique products in the market and has forced supply chain to react to these requirements really fast.

### **Security Concern**

In online shopping people has fear of their security concern like credit/debit card details leak , their personal information leak etc.; Consumers don't even like to share their email ids and mobile numbers online. They have security issues.



**Technical Issues**

Technical issues like website download time; internet coverage areas, visually appealing products, navigation process etc are the main concern for online shopping. There are some areas where internet facilities are not available, for them online shopping is not feasible.

**Quality issues**

Because of no touch no feel concern in online shopping people have less faith in online shopping. They have fear of low quality issues and size issues in apparel mainly. Consumer need a product of their comfort if they don't get it then it will affect the loyalty.

Apart from above these challenges online industry is profiting because of its more beneficial factors discussed as below:

**BENEFITS OF ONLINE SHOPPING****Global Products**

Consumers get products which are not available in the local brick & mortar shops easily. Approaching global products are now just a click away. They can go to the website and choose products of their own choice and get it without any hassle.

**Convenience**

The main concern in modern life is convenience. Consumers need convenience in every step of their daily life. In traditional way they have to go to the market in heavy traffic consuming lots of time with heavy fuel price. Apart from this they don't get the parking for their vehicle. These are the some small but big issues in the daily busy life. Online shopping make all these problems solved. By ordering online they can spend this time with their family and friends.

**Assurance of ON-Time delivery**

Consumers are assured for on time delivery of their products which they have bought online. The most significant mediating role on consumers' relationship purchasing behaviour is delivery of the product. In an online shopping context, this feature of a shopping site was validated to be an important factor determining consumers' site loyalty and decision-making in terms of whether or not they will shop at the store.

**More Verities**

Apart from all these consumers can get more verities of the products with other customer's reviews which helped them for buying that particular product from that particular website.

**Discounts/Offers**

In the modern time consumers want good quality products in fewer prices which they can get from online shopping. E-tailers bought products directly from manufacturer without any middlemen. So they can sell products in fewer margins and get profits. In this way consumers are also getting benefitted by having products in fewer prices.

**DISCUSSION**

The shift from traditional to online of consumers shopping behaviour is very rapid and drastic from past decade. By Industry 4.0 manufactures are getting benefits by Internet of Things (IoT) and this will help further in retail markets and in the end to the consumers. This capability can lead to increased customer loyalty, as customers are more loyal to brands that create differentiated and personalized experiences. That loyalty can, in turn, lead to considerable savings, as the cost to acquire a customer is much greater than the cost of retaining one. As a result, companies can be better positioned to deliver value to end users at every digital and physical interaction, ranging from simple product performance alerts to services throughout the customer life cycle (such as product exploration, education, buying, service, and maintenance). Further, digital solutions that connect manufacturers to customers, and customers to each other, can create considerable network effects.

**REFERENCES**

- BITKOM, Fraunhofer ISI. (2012). Gesamtwirtschaftliche Potenziale intelligenter Netze in Deutschland.
- Ericsson. (2013). Mobility report, November.
- Industry 4.0 engages customers; the digital manufacturing enterprise powers the customer's life cycle, Deloitte University Press.
- Kagermann, H. (2014). Change Through Digitization—Value Creation in the Age of Industry 4.0. Management of Permanent Change, 23–45.

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- Sharma, Yadav (2018) “Critical Evaluation of Traditional and Online Theories of Consumer Behaviour: Review and Setting Stage for Future Research”, IJAIR, Vol.5, issue 4(VII), Pg 1-13.
  - Thonemann (2002), “Improving supply-chain performance by sharing advance demand information” European Journal of Operational Research”, 142:81107.

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**CORPORATE SOCIAL RESPONSIBILITY-4.0: WITH REFERENCE TO EMPLOYEE LOYALTY & RETENTION**

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**ABSTRACT**

*Fred Reichheld in his book, the loyalty Effect, defines the loyalty as the willingness to make an investment or personal sacrifice to strengthen a relationship. Plato originally said that only a man who is just can be loyal, and that loyalty is a condition of genuine philosophy. In general, employee loyalty can be best described in terms of a process, where certain attitudes give rise to certain behaviors (intended or actual). There have been major changes in the business world and the workforce in the last couple of decades. Finding and retaining the best employees is every company's challenge. The present study was an attempt to know the relationship between CSR & Employee Loyalty & Retention. Corporate Social Responsibility (CSR) is often defined as corporate responsibility, corporate citizenship, social enterprise, sustainable development, triple- bottom line, corporate ethics, and in some cases, corporate governance. What binds these terms together is the expectation that corporate (private and public enterprises alike) behave ethically vis-à-vis a broad group of stakeholders - workers and their families, communities and the wider society.*

*Keywords: CSR, Loyalty & Retention*

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**INTRODUCTION**

India is a developing economy, here Corporate Social Responsibility (CSR) play important role in organizations. In Indian industry one can easily notice a paradigm shift from corporate philanthropist to being socially responsible. The importance of CSR is increasing in Indian corporate scenario because organizations have realized that ultimate goal is not profit making beside this trust building is viable and assert able with societal relationship. The compulsion of CSR has emerged in last two decades when Indian organization realizes the importance of sustaining in this cutthroat competition era. Before this Indian industry had materialistic culture. In the hue and cry of LPG (Liberalization, Privatization and Globalization) companies were only focused toward profit maximization which led social backwash. To overcome this fashion CSR play an important role in sustainable development which is only possible when there is a balance between profit and lowering social backwash or eradicating it [1]. The importance of CSR emerged significantly in the last decade. Over the time, CSR expanded to include both economic and social interests. Along with this it also broadened to cover economic as well as social interests. Companies have become more transparent in accounting and display public reporting due to pressures from various stakeholders. It is possible for companies to behave in the desired ethical and responsible manner towards consumers, employees, communities, stakeholders and environment. They have started incorporating their CSR initiative in their annual reports. CSR is an entry point for understanding a number of firm-related and societal issues and responding to them in a firms business strategy. However, there is a universal and prominent view on protecting the environment and stakeholders interests. Emerging economies like India have also witnessed a number of firms actively engaged in CSR activities, and the Ministry of Corporate Affairs has come up with voluntary guidelines for firms to follow. Companies in India have quite been proactive in taking up CSR initiatives and integrating them in their business processes.

The importance of CSR emerged significantly in the last decade. Over the time, CSR expanded to include both economic and social interests. Along with this it also broadened to cover economic as well as social interests. Companies have become more transparent in accounting and display 'public reporting' due to pressures from various stakeholders. It is possible for companies to behave in the 'desired' ethical and responsible manner towards consumers, employees, communities, stakeholders and environment. They have started incorporating their CSR initiative in their annual reports. [2]

India has a long tradition in the field of corporate social responsibility and industrial welfare has been put to practice since late 1800s. Historically, the philanthropy of business people in India has resembled western philanthropy in being rooted in religious belief. Business practices in the 1900s that could be termed socially responsible took different forms: philanthropic donations to charity, service to the community, enhancing employee welfare and promoting religious conduct. The concept of CSR has evolved from being regarded as detrimental to a company's profitability, to being considered as somehow benefiting the company as a whole, at least in the long run. [3]

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**LITERATURE SURVEY**

For Chaffee (2017), the origins of the social component in corporate behavior can be traced back to the ancient Roman Laws and can be seen in entities such as asylums, homes for the poor and old, hospitals and orphanages. This notion of corporations as social enterprises was carried on with the English Law during the Middle Ages in academic, municipal and religious institutions. Later, it expanded into the sixteenth and seventeenth centuries with the influence of the English Crown, which saw corporations as an instrument for social development (Chaffee 2017). In the following centuries, with the expansion of the English Empire and the conquering of new lands, the English Crown exported its corporate law to its American colonies where corporations played a social function to a certain extent<sup>1</sup> (Chaffee 2017).

During the eighteenth and nineteenth centuries, the Christian religious philosophy and approach to the abiding social context were seen as a response to the moral failure of society, which was visible in terms of poverty of the overall population in the English Empire and some parts of Europe (Harrison 1966). This religious approach gave way to social reforms and to the Victorian philanthropy which perceived a series of social problems revolving around poverty and ignorance as well as child and female labor (Carroll 2008; Harrison 1966). The religious roots of the Victorian social conscience gave Victorian Philanthropists a high level of idealism and humanism, and by the late 1800's, the philanthropic efforts focused on the working class and the creation of welfare schemes with examples that could be seen in practice both in Europe as in the United States of America (USA) (Carroll 2008; Harrison 1966). A clear case was the creation of the Young Men's Christian Association (YMCA), a movement that begun in London in 1844 with the objective of applying Christian values to the business activities of the time, a notion that quickly spread to the USA (see: Heald 1970).

During the late 1800's and early 1900's, the creation of welfare schemes took a paternalistic approach aimed at protecting and retaining employees and some companies even looked into improving their quality of life (Carroll 2008; Heald 1970). For Heald (1970), there were clear examples that reflected the social sensitivity of businessmen, such as the case of Macy's in the USA, which in 1875 contributed funds to an orphan asylum and by 1887 labeled their charity donations as Miscellaneous Expenses within their accounting books, and the case of Pullman Palace Car Company which created a model industrial community in 1893 with the aim of improving the quality of life of its employees.

Also during this period, there was a growing level of urbanization and industrialization marked by large-scale production. This brought new concerns to the labor market such as: new challenges for farmers and small corporations to keep up with the new interdependent economy, the creation of unions of workers looking for better working conditions, and a middle class worried for the loss of religious and family values in the new industrial society (Heald 1970). As a response to these new challenges, and with the aim of finding harmony between the industry and the working force, some business leaders created organizations for the promotion of values and improvement of the working conditions. Such was the case of the Civic Federation of Chicago, an organization created to promote better working conditions and where religious values merged with economic objectives with a sense of civic pride (Heald 1970).

By the 1920's and early 1930's, business managers began assuming the responsibility of balancing the maximization of profits with creating and maintaining an equilibrium with the demands of their clients, their labor force, and the community (Carroll 2008). This led to managers being viewed as trustees for the different set of external relations with the company, which in turn translated into social and economic responsibilities being adopted by corporations (Carroll 2008; Heald 1970). Later, with the growth of business during World War II and the 1940's, companies began to be seen as institutions with social responsibilities and a broader discussion of such responsibilities began taking place (Heald 1970). Some early examples of the debate of the social responsibilities of corporations can be found in *The Functions of the Executive* by Barnard (1938) and *The Social Control of Business* by Clark (1939).

1950's and 1960's: the early days of the modern era of social responsibility It was not until the early 1950's that the notion of specifically defining what those responsibilities were was first addressed in the literature and can be understood as the beginning of the modern definitional construct of Corporate Social Responsibility. In fact, it was during the 1950's and 1960's that the academic research and theoretical focus of CSR concentrated on the social level of analysis (Lee 2008) providing it with practical implications. The period after World War II and the 1950's can be considered as a time of adaptation and changing attitudes towards the discussion of corporate social responsibility, but also a time where there were few corporate actions going beyond philanthropic activities (Carroll 2008). Perhaps the most notable example of the changing attitude towards corporate behavior came from Bowen (1953), who believed that the large corporations of the time concentrated great power and that their actions had a tangible impact on society, and as such, there was a need for changing

their decision making to include considerations of their impact. As a result of his belief, Bowen (1953) set forth the idea of defining a specific set of principles for corporations to fulfill their social responsibilities. For him, the businessman's decisions and actions affect their stakeholders, employees, and customers having a direct impact on the quality of life of society as a whole (Bowen 1953). With this in mind, Bowen defined the social responsibilities of business executives as "the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society" (Bowen 1953, p. 6). As Carroll (2008) explains, it seems that Bowen (1953) was ahead of his time for his new approach to management which aimed at improving the business response to its social impact and by his contributions to the definition of corporate social responsibility. Furthermore, the relevance of Bowen's approach relies on the fact that this was the first academic work focused specifically on the doctrine of social responsibility, making Bowen the "Father of Corporate Social Responsibility" (Carroll 1999).

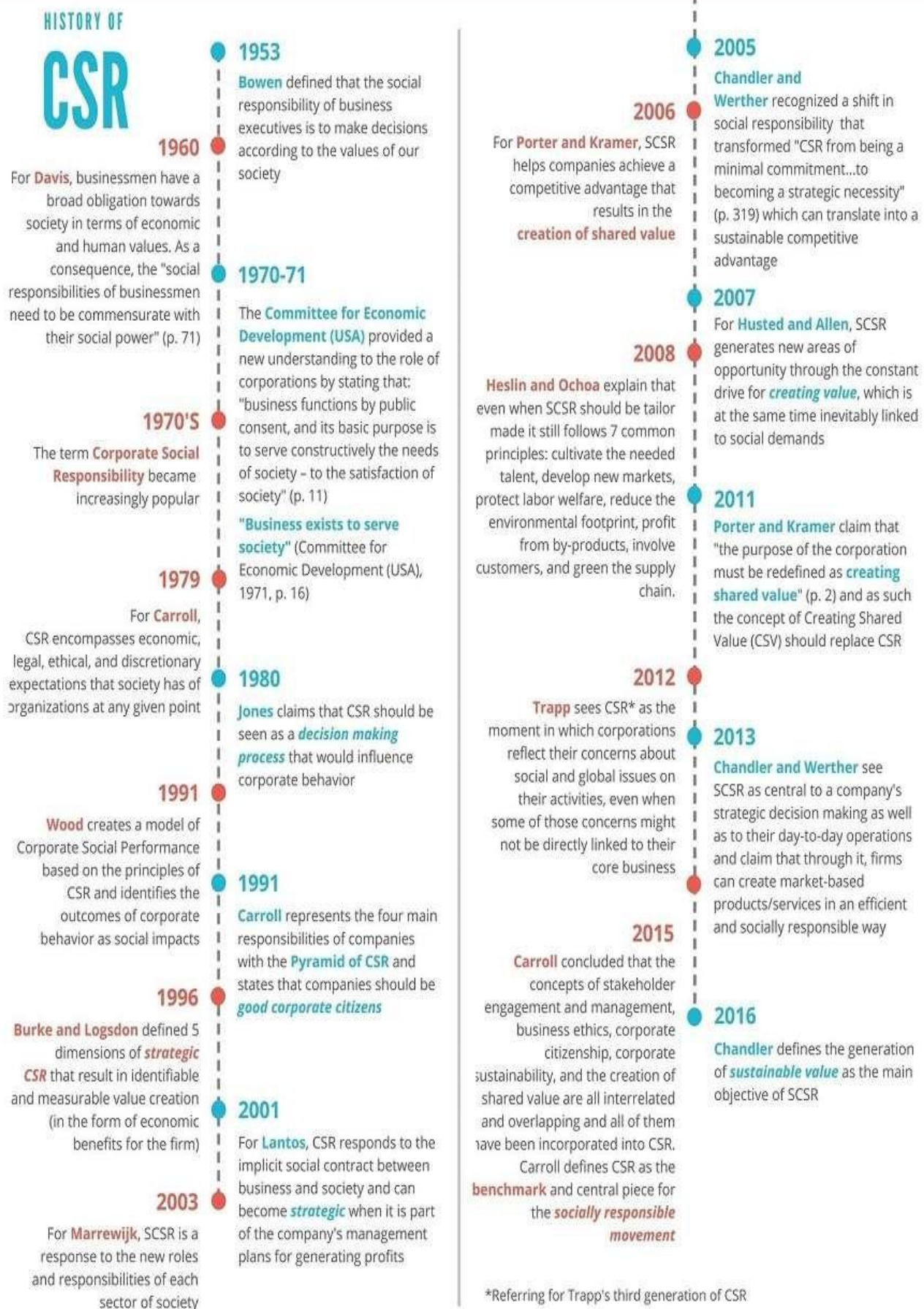
After Bowen, other authors were concerned with corporate behavior and its response to the social context of the time. For example, in the book *Corporation Giving in a Free Society* published in 1956, Eells (1956) argued that the large corporations of the time were not living up to their responsibility in a time of generalized inflation. In a similar way, with the book *A moral philosophy for management* published in 1959, Selekman (1959) explored the evolution of the moral responsibility of corporations as a response to the labor expectations of the time.

These early explorations of CSR as a definitional construct, along with the social context of the time, gave way to a growing interest of scholars to define what CSR was and what it meant (Carroll 2008). Naturally, it is understandable that the interest in CSR during 1960's was influenced by growing awareness in society and social movements of the time. However, it is necessary to point out that the effect of this growing interest was perhaps more visible in the USA, which is why some examples of the following sections might seem to center on this particular country.

Some of society's main concerns during this period revolved around rapid population growth, pollution, and resource depletion (Du Pisani 2006) and were accompanied with social movements with respect to the environment and human and labor rights (Carroll 1999). At the same time, books such as *The Silent Spring* by Carson (1962) and *The Population Bomb* by Ehrlich (1968) began raising questions with regards to the limits of economic growth and the impact that society and corporations were having on the environment.

During the 1960's there was also a new social context marked by a growing protest culture that revolved mainly around civil rights and anti-war protests. In the case of the USA, the protests transformed from being student-led sit-ins, walk-outs and rallies, to more radical political activism which, in most cases, saw business corporations as an integral part of the "establishment" they wanted to change (Waterhouse 2017). These protests put pressure on companies that, in the protestors' view, represented the "establishment" (i.e. banks and financial institutions as well large scale corporations) but had a strong focus on those with direct links to war. An example is the case of the Dow Chemical Company which produced napalm used in the Vietnam War and as a result faced constant protests and accusations (Waterhouse 2017).

Accordingly, during the 1960's scholars approached CSR as a response to the problems and desires of the new modern society. A notable example of this period was Keith Davis (1960), who explained that the important social, economic and political changes taking place represented a pressure for businessmen to re-examine their role in society and their social responsibility. Davis (1960) argued that businessmen have a relevant obligation towards society in terms of economic and human values, and asserted that, to a certain extent, social responsibility could be linked to economic returns for the firm (Carroll 1999; Davis 1960). The significance of Davis' ideas is that he indicated that the "social responsibilities of businessmen need to be commensurate with their social power" (p. 71) and that the avoidance of such would lead to a decrease of the firm's social power (Davis 1960).



## OBJECTIVES

- To study the CSR status in India.
- To understand the meaning and various models of CSR.
- To study the policies governing CSR in India.
- To study the challenges faced by CSR in India.
- To make suggestions for accelerating CSR initiatives.

According to World Business Council for Sustainable Development, 2001, CSR is “the commitment of business to contribute to sustainable economic development, working with employees, their families, and the local communities”. The Indian government is also mulling over a new Companies Bill in the Indian Parliament clause 135(5) of the same bill prescribes that every company with a net worth of at least Rs.5000 million (\$1 is approximately Rs 55), or turnover of at least Rs. 10,000 mn, or a net profit of at least Rs. 50 mn will have to spend 2 % of its three years’ average profit on CSR activities (The Financial Express, 2012). Given that almost a third of the country’s population lives in poverty and penury, CSR provides Indian corporations a readily available and highly impactful opportunity to prove and establish the legitimacy of their actions by moving beyond charities and vanilla rural developmental activities. More objectively, it will tend to counter-balance to some extent, the impact of the huge negative externalities that commercial activities tend to create in the developing societies they operate in, also new business models emerging out of these innovative hybrid partnerships may give rise to unforeseen fortuitous results that will give a boost to economic growth in this emerging market. [4]

## DATA COLLECTION & ANALYSIS

Data was collected from Multi-National Companies in Bangalore with a Questionnaire ,With Respect to Employee Retention & Loyalty , Few questions were imposed .Below Table 1 is a summary of Mean and Standard Deviation.

Table-1 : Mean & Std. Deviation for Few Questions			
	N	Mean	Std. Deviation
Our firm is a socially responsible firm	246	19.15	.815
I want to work in this organization because it is socially responsible company	246	18.85	.962
I joined this company because it has a reputation of socially responsible organization	246	17.91	1.237
CSR activities motivate employees	246	18.92	1.068
CSR will enhance customer loyalty	246	18.31	1.133
Valid N (listwise)	246		

**Table-2: Results for Q:Our firm is a socially responsible firm**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	1.6	1.6	1.6
	Disagree	10	4.1	4.1	5.7
	Neither Agree nor Disagree	12	4.9	4.9	10.6
	Agree	140	56.9	56.9	67.5
	Strongly Agree	80	32.5	32.5	100.0
	Total	246	100.0	100.0	

**Table-3: Results for Q:I want to work in this organization because it is socially responsible company**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.4	.4	.4
	Disagree	30	12.2	12.2	12.6
	Neither Agree nor Disagree	38	15.4	15.4	28.0
	Agree	112	45.5	45.5	73.6
	Strongly Agree	65	26.4	26.4	100.0
	Total	246	100.0	100.0	



**Table-4: Results for Q:I joined this company because it has a reputation of socially responsible organization**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	40	16.3	16.3	16.3
	Disagree	56	22.8	22.8	39.0
	Neither Agree nor Disagree	61	24.8	24.8	63.8
	Agree	65	26.4	26.4	90.2
	Strongly Agree	24	9.8	9.8	100.0
	Total	246	100.0	100.0	

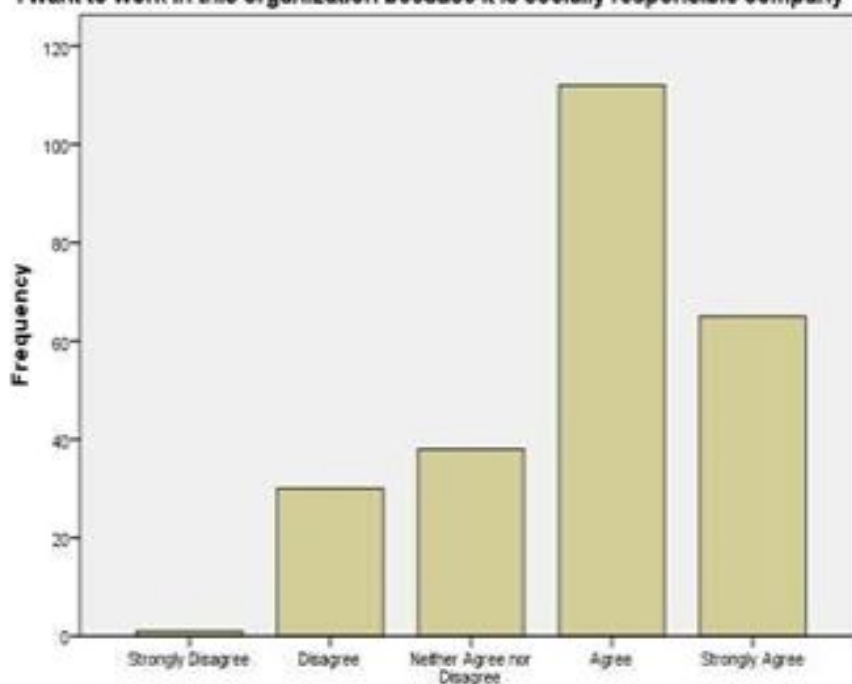
**Table-5: Results for Q: CSR activities motivate employees**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	4.9	4.9	4.9
	Disagree	14	5.7	5.7	10.6
	Neither Agree nor Disagree	36	14.6	14.6	25.2
	Agree	103	41.9	41.9	67.1
	Strongly Agree	81	32.9	32.9	100.0
	Total	246	100.0	100.0	

**Table-6: Results for Q: CSR will enhance customer loyalty**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	19	7.7	7.7	7.7
	Disagree	42	17.1	17.1	24.8
	Neither Agree nor Disagree	61	24.8	24.8	49.6
	Agree	92	37.4	37.4	87.0
	Strongly Agree	32	13.0	13.0	100.0
	Total	246	100.0	100.0	

I want to work in this organization because it is socially responsible company



I want to work in this organization because it is socially responsible company

**Figure-1: Results for Q: I want to work in this organization because it is socially responsible company**



It can be observed from Figure 1, 177 out of 246 participants agree to work in an organisation because of it being a social responsible company, This also indicates the concern of employees towards society has increased indicating a positive sign for the country.

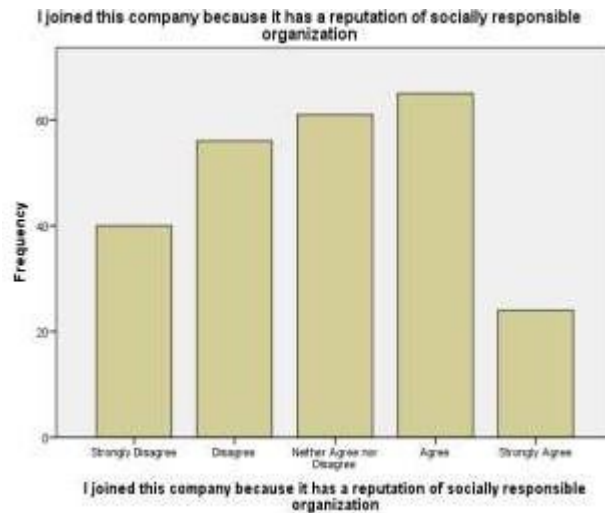


Figure-2: Results for Q: I joined this company because it has a reputation of socially responsible organization

It can be seen there is a mixed reaction over here, people joined organisation earlier because of CSR activities , 89 participants agree where as others are neutral and disagree in this regard, This also suggests that earlier the awareness of CSR was not as it is today.

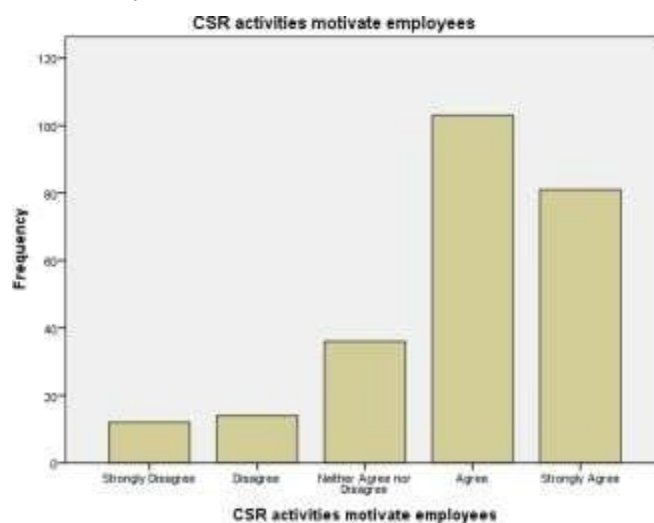


Figure-3: Results for Q: CSR activities motivate employees

It can be observed from Figure 3,184 out of 246 Respondents agree to the fact that CSR motivates employees , It can be also concluded that Employees are getting motivated because of CSR.

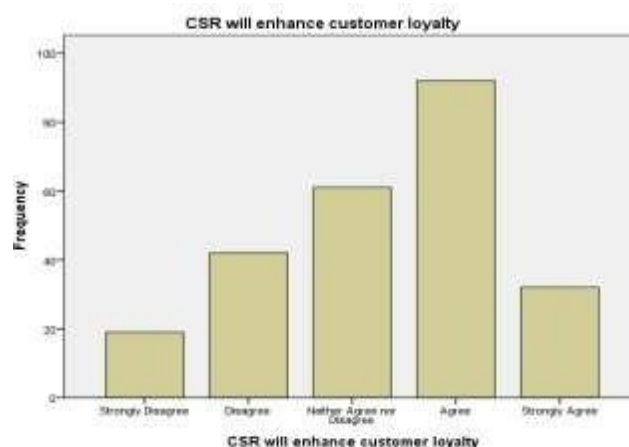


Figure-4: Results for Q: CSR will enhance customer loyalty

124 out of 246 Participants agree to the face that customer loyalty will also enhance because of firm practising CSR, It is a very good sign as the actors involved in Business if happy, the management along with company also progresses towards success and prosperity.

Regression analysis is done to check the effect of CSR on Employee Loyalty & Retention, Results are displayed in below Table.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.788 <sup>a</sup>	.620	.619	.594

a. Predictors: (Constant), Our firm is a socially responsible firm

ANOVA <sup>a</sup>						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	140.612	1	140.612	398.394	.000 <sup>b</sup>
	Residual	86.119	244	.353		
	Total	226.732	245			

a. Dependent Variable: I want to work in this organization because it is socially responsible company

b. Predictors: (Constant), Our firm is a socially responsible firm

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.056	.892		1.183	.238
	Our firm is a socially responsible firm	.930	.047	.788	19.960	.000

a. Dependent Variable: I want to work in this organization because it is socially responsible company

ANOVA <sup>a</sup>						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	221.325	1	221.325	927.777	.000 <sup>b</sup>
	Residual	58.207	244	.239		
	Total	279.533	245			

a. Dependent Variable: CSR activities motivate employees

b. Predictors: (Constant), Our firm is a socially responsible firm

It can be claimed that People want to work in the organisation if it is following CSR & Motivation of employees in CSR is more which will also help in less artition rate and more retention.

## CONCLUSION

Currently, one of the challenging issues for the organization is retention of loyal employees. Best management practices, smart human resource policy, significant financial resources and sufficient time is needed to overcome the challenges. Employee retention enables the organization not only keep valuable employees but also upgrades organizational performance and significantly contributes to maintain its' competitive advantage as well as the market position. The study attempted to find out an increase of employee satisfaction, retention, loyalty that may have an impact on organizational financial and non-financial performances, using the methods used previously applied by different researchers conducting similar studies. Employee satisfaction is taken as independent variable, employee loyalty, retention considered as a mediating factor and organizational financial and non-financial performances are considered as dependent variables for the study. Reliability test, correlation and regression analysis conducted to test the hypothesis elaborated in the survey. From the studies it is observed that retention of loyal employees enables improving organizational financial and non-financial performances and job satisfaction had an influential impact.

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**REFERENCES**

1. Aguinis, H., & Glavas, A. (2012). What we know and don't know about corporate social responsibility: a review and research agenda. *Journal of Management*, 38(4), 932–968.
2. Avram, E., & Avasilcai, S. (2014). Business performance measurement in relation to corporate social responsibility: a conceptual model development. *Procedia - Social and Behavioral Sciences*, 109, 1142–1146.
3. Barnard, C. I. (1938). *The functions of the executive*. Cambridge: Harvard University Press.
4. Clark, J. M. (1939). *Social control of business* (2nd ed.). United States of America: Augustus M Kelley Pubs.
5. Bowen, H. R. (1953). *Social responsibilities of the businessman*. University of Iowa Press.
6. Eells, R. S. F. (1956). *Corporation giving in a free society*. New York: Harper.
7. Davis, K. (1960). Can business afford to ignore social responsibilities? *California Management Review*, 2(3), 70–76.
8. Carson, R. (1962). *Silent spring*. Boston, Cambridge: Houghton Mifflin, Riverside Press.
9. Ehrlich, P. R. (1968). *The population bomb*. New York: Ballantine Books.
10. Baumol, W. J. (1970). *A new rationale for corporate social policy*. USA: Heath Lexington Books.
11. Davis, K. (1973). The case for and against business assumption of social responsibilities. *Academy of Management Journal*, 16(2), 312–322.
12. Carroll, A. B. (1979). A three-dimensional conceptual model of corporate performance. *Academy of management review*, 4(4), 497–505.
13. Cochran, P. L., Wood, R. A. (1984). Corporate social responsibility and financial performance. *The Academy of Management Journal*, 27(1), 42–56.
14. Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, 34(4), 39–48.
15. Donaldson, T., Preston, L. E. (1995). The stakeholder theory of the corporation: concepts, evidence, and implications. *The Academy of Management Review*, 20(1), 65–91.
16. Burke, L., & Logsdon, J. M. (1996). How corporate social responsibility pays off. *Long Range Planning*, 29(4), 495–502.
17. Carroll, A. B. (1998). The four faces of corporate citizenship. *Business and Society Review*, 100(1), 1–7.
18. Elkington, J. (1998). Partnerships from cannibals with forks: The triple bottom line of 21st-century business. *Environmental Quality Management*, 8(1), 37–51.
19. Carroll, A. B. (1999). Corporate social responsibility. *Business & Society*, 38(3), 268–295.
20. Commission of the European Communities. (2001). *Green paper: promoting a European framework for corporate social responsibility* (COM(2001) 366 final). Brussels: E. Commission. Committee for Economic Development. (1971). *Social responsibilities of business corporations*. USA: Committee for Economic Development.
21. Du Pisani, J. A. (2006). Sustainable development – historical roots of the concept. *Environmental Sciences*, 3(2), 83–96.
22. Eberhard-Harribey, L. (2006). Corporate social responsibility as a new paradigm in the European policy: how CSR comes to legitimate the European regulation process. *Corporate Governance: The international journal of business in society*, 6(4), 358–368.
23. Carroll, A. B. (2008). A history of corporate social responsibility: concepts and practices. In A. M. Andrew Crane, D. Matten, J. Moon, & D. Siegel (Eds.), *The*
24. Crane, A. (2008). *The Oxford handbook of corporate social responsibility*. Oxford: OUP.
25. Dahlsrud, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management*, 15(1), 1–13.

26. Carroll, A. B., & Shabana, K. M. (2010). The business case for corporate social responsibility: a review of concepts, research and practice. *International Journal of Management Reviews*, 12(1), 85–105.
27. European Commission. (2011). Corporate social responsibility: a new definition, a new agenda for action. (MEMO/11/732, MEMO/11/734 and MEMO/11/735). *Oxford handbook of corporate social responsibility* (pp. 19–46). New York: Oxford University Press.
28. Chandler, D., & Werther, W. B. (2013). *Strategic corporate social responsibility: stakeholders, globalization, and sustainable value creation* (3rd ed.). United States of America: SAGE Publications.
29. European Commission Retrieved from [http://europa.eu/rapid/press-release MEMO-11-730\\_en.htm](http://europa.eu/rapid/press-release_MEMO-11-730_en.htm). European Commission. (2014a). The corporate social responsibility strategy of the European commission: results of the public consultation. Brussels: E. Commission.
30. Ban, K.-M. (2015). Launch of new sustainable development agenda to guide development actions for the next 15 years. <https://sustainabledevelopment.un.org/?page=view&nr=1021&type=230&menu=2059>. Accessed 16 Apr 2018.
31. Carroll, A. B. (2015). Corporate social responsibility: The centerpiece of competing and complementary frameworks. *Organizational Dynamics*, 44(2), 87–96.
32. Chandler, D. (2016). *Strategic corporate social responsibility: sustainable value creation*. United States of America: SAGE Publications.
33. Chuang, S.-P., & Huang, S.-J. (2016). The effect of environmental corporate social responsibility on environmental performance and business competitiveness: the mediation of green information technology capital. *Journal of Business Ethics*, Springer, 150(4), 991–1009.
34. CSR Europe. (2016). CSR Europe report 2016. CSR Europe. (n.d.). CSR Europe - 20 years of business-policy interaction driving the CSR movement. <https://www.csreurope.org/history>. Accessed 19 Mar 2018.
35. Benites-Lazaro, L. L., & Mello-Théry, N. A. (2017). CSR as a legitimatizing tool in carbon market: Evidence from Latin America's clean development mechanism. *Journal of Cleaner Production*, 149, 218–226.
36. Chaffee, E. C. (2017). The origins of corporate social responsibility. *University of Cincinnati Law Review*, 85, 347–373.
37. Djelic, M.-L., & Etchanchu, H. (2017). Contextualizing corporate political responsibilities: neoliberal CSR in historical perspective. *Journal of Business Ethics*, 142(4), 641–661.
38. Business for Social Responsibility. (2018). Our Story. <https://www.bsr.org/en/about/story>. Accessed 2 Mar 2018.
39. Earth Day. (2018). The history of earth day. <https://www.earthday.org/about/thehistory-of-earth-day/>. Accessed 25 May 2018.
40. Elkington, J. (2018). 25 years ago I coined the phrase “triple bottom line.” Here’s why it’s time to rethink it. *Harvard Business Review*

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**IMPACT OF DEMONETIZATION ON THE SHARE PRICES OF COMPANIES LISTED IN NATIONAL STOCK EXCHANGE**

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**ABSTRACT**

*The research study examined the impact of demonetization on share prices of companies listed in NSE by employing Event study methodology. After a review of few studies it came out to the knowledge that there is a dearth of studies on demonetization in India. In this study data have been taken of 50 companies listed in Nifty50 Index and find out Abnormal Average Return using market model. This study also checked Market Efficiency and finally concluded that there is no significant impact of demonetization announcement on stock market prices of NSE. On the basis of finding we can conclude that Indian stock market is not efficient in semi strong form. The results of the present study would be useful to the academicians and investors to take suitable investment decisions.*

*Keywords: Demonetization, Share Price Behaviour, Event Study Methodology, Market model.*

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**INTRODUCTION**

Demonetization is the act of baring a currency unit of its status as legal tender. There is a change of national currency. The old currency unit must be replaced and retired with a new currency unit. The highest demonetization of India was the Rs.10000 note in 1938 and again in 1954. But these notes were demonetized in January 1946 and again demonetized in January 1978, according to RBI data.

On 8<sup>th</sup> November, 2016 The Government of India has taken a big economically change decision. Prime Minister Narendra Modi has come out with his masterstroke on corruption, counterfeit currency, terrorism and black money by announcing demonetization and ceasing Rs.500 and 1000 notes as a part of legal tender in India. However this is the first time that Rs.2000 currency note is being circulation since November 10<sup>th</sup> 2016. There are many benefits of demonetization: - One of biggest benefit of this move was that it has gone to drastically affect the corrupt practices. Secondly the banking system has been improved as it has slowly head towards a cashless society. Cashless society is increasing financial inclusion and credit access. Thirdly it has reduced the risk and cost of cash handling as soft money is safer than hard money. It has reduced tax avoidance.

**OBJECTIVES**

- To find out the impact of demonetization on Indian Stock Market.
- To analyse the market efficiency on Indian stock market.

**RESEARCH DESIGN****SAMPLE SELECTION**

For the purpose of conducting this study, the closing price of NIFTY 50 Index and 50 stock listed on NIFTY50 Index representing: financial services (34.43%), Energy (13.09%), IT (12.1%), Pharma (3.66%), ConsumerGoods (12.85%), AutoMobile (9.26%), Metal (3.96%), Construction (3.34%), Cement & Cement Product (2.44%), Telecom (1.62%), Services (0.94%), Media & Entertainment (0.66%), Fertilisers & Pesticides (0.49%) and have been taken into consideration as a proxy to study Indian Stock Market.

**SAMPLE PERIOD:**

In order to find out the impact of demonetization on share price of companies listed in NSE, the time period of study have been included 9<sup>th</sup> October, 2016 to 8<sup>th</sup> December, 2016(Event Window) and 12<sup>th</sup> May,2016 to 8<sup>th</sup> October,2016(Estimation Window).

The impacts of demonetization on Indian stock market have been captured using 'Event Study Methodology'. To measure the effect and its influence on stock prices, time period of 21 days prior to the announcement of demonetization and 21 days post the happening of this event have been taken into consideration. This research have been studied the short run impact of demonetization on share market.

Conduct an event study methodology the following terms need to be defined:

**Event of interest:** The event of interest for the present research study is the demonetization announcement in India (8<sup>th</sup> November, 2016).

**Event window:** The event window has been chosen as -21 days, through 0, to +21 days. Here, 0 depicts the announcement date of the event,-21 days are the 21 days time period prior to announcement date, and +21 days are the 21 days time period after the announcement date.

**Estimation Window:** The estimation window used for the study is from day –121 to day –22 (from 22 to 121 days prior to the event window), thus comprising of 100 trading days. No other event occurred in this time period, so it is clean window.

**Source of data:-**To conduct this study the secondary data (Closing stock prices) of NIFTY50 Index and all the stocks listed on NIFTY 50 have been collected from NSE website i.e. [www.nse.com](http://www.nse.com).

## **LITERATURE REVIEW**

An intensive over view of many relevant studies in the domain of demonetization has been done to understand the concept in a more refined manner. The reviews of few relevant studies are as under:-

A foreign study conducted by American historians Weinstein (1967) deals with a little surprised based on the spy melodrama, which runs through the national folklore. The study highlighted the “corrupt bargains”. There was deciding a presidential election in 1800, 1824 and 1876, which detected the presence of silent but malign phenomenon the “money power”. According to the coinage act of 1873, the discontinuation of the silver dollar as a monetary standard corrupt under the influence of cabal of powerful government bond holder. The purpose of the study is to establish a single gold unit of account and raise the market value of its public securities. The evidence of the coinage act suggest that money power myths such as the “crime of 1873” and the conclusion was found that there was no “crime in 1873”.

Chauhan & Kaushik (2017) analyzed the impact of demonetization on stock market by using event study methodology and analyzed the stock of S&P BSE 100 companies. The study found that there is no significant impact of demonetization on stock market and also found that the stock prices has short period downfall due to some other factor.

Iyengar, Iyengar & Aswani (2017) the authors were of the opinion that impact of Demonetization on Indian Stock Market; primary focus was on FMCG sector, Banking sector and automobile sector. This study has been used Event study methodology and has seen the effect on Efficient Market Hypothesis. Finally concluded that demonetization has some impact on capital markets and the Indian stock market fail to indicate semi strong form of efficiency in this particular event.

Tiwari & Singh (2017) tried to find out the impact of demonetization in short & long run on different sectors of our economy by using secondary data related to sectoral indices of NSE and concluded that demonetization has some negative effect in short run period but after some months has positive effect in long run period.

Padmavathy, Umashankar & Indhu (2017) examines the impact of demonetization on share price of companies listed in National Stock Exchange by employing event study methodology. This study selected Banking and Automobile sector and it's significance t-test is conducted. The result suggested that demonetization announcement does not have any significant impact on Indian stock market.

Dhandayuthapani & Vishnupriya (2017) studied about the economy had affected the different sector after demonetization .This study taken three sectors i.e. State Bank of India, Hindustan Uniliver limited, Indian steel and conclude positive effect on economy after demonetization . The study represents the difference between the opening price and the closing price and the signals for the purchase share.

Quint & Shubik (2011) was concerned with showing the effects of a demonetization and they proposed three models viz., the first with gold money, the second with demonetized gold but no central bank, and the third with demonetized gold, but with a central bank.

Mali (2016) discussed the reasons of demonetization and its effects on different sectors in India. This study based on secondary data collected from different newspapers and online source and analyzed some positive and some negative impacts of demonetization on different sectors but in long run it definitely had been positive impact in controlling black money and fake money.

Rani (2016) analyzed the demonetization post effects on retailers and consumers. This research was based on primary data and the sample size was 50 shopkeepers in a town and found that the effect of demonetization was positive for Indian Economy in coming time.

Bhaskar & Kumar (2017) analyzed the present situation of e-commerce in India and to know how the demonetization helps the e-commerce in future. It was found that e-commerce was positively impacted economic society and helped solidify the economy by wiping out black money and fake notes.

Ohlan (2017) in which the essential issue of demonetization was correlated with influencing of demonetization on international tourist arrivals. The break-point unit root tests were developed for collecting the monthly data

from 2003 to 2017 on number of foreign tourist arrivals to meet the purpose. This study further found that there was no impact of demonetization on the series of tourist arrivals to India and there was no significant structural break in tourist arrivals.

Sunil & Shenoy (2017) analyzed the impact of demonetization on stock market of 5 selected sectors and considered for this study 5 companies in each sectors. The data has been taken from 7<sup>th</sup> September 2016 to 8<sup>th</sup> March 2017 which consists of 2 month before demonetization and 4 month after demonetization. The author used ANOVA on the BHAR in the three windows for data analysis. It was concluded that demonetization had no impact on stock return during the study period.

V Mukundan (2017) examined the impact of Demonetization and its effects on stock market. This study was collected data for 54 companies from 13 different sector from 1 July to 28 Feb 2017. It was analyzed that there is a significant difference in Average Price, Total trades quantity and Total trades pre and post Demonetization by using z-test and concluded that there was no significantly difference of pre and post demonetization on stock market. Sawyer & Gygax (2001) reexamined the Event study methodology in finance and emphasis the limitation of using event study methodology. This paper focused mainly the evolution of abnormal returns and conditionality, learning and convergence in the theory of event studies. The theory of the event study is reviewed with reference to the measurement of abnormal returns in the first section of this paper and in another section focused on the specification of learning models. Finally, this paper had brought coherent methodology.

Sawyer & Gygax (2001) reexamined the Event study methodology in finance and emphasis the limitation of using event study methodology. This paper focused mainly the evolution of abnormal returns and conditionality, learning and convergence in the theory of event studies. The theory of the event study is reviewed with reference to the measurement of abnormal returns in the first section of this paper and in another section focused on the specification of learning models. Finally, this paper had brought coherent methodology.

Konchitchki & O'Leary (2011) investigate the Event study methodology in information system and using three approaches of Event study. In first approach a vast survey of research that uses Event study of methodology provide by this paper. In second approach on the basis of prior research this paper summarizing the Event study methodology and it offers pleading to researchers.

Sharma & Singh (2009) examined the semi- strong form efficiency of the Indian stock market in regarding bonus issues. This study used event study methodology with an 80 days event window and calculated Abnormal return by using market model for studied of 25 bonus issues between 2002 to 2007 time period. Find out that positive market reaction prior to announcements, and negative reaction after the announcement so the results were not statistically significant. Finally concluded that Indian stock market is efficient in semi strong form.

Lal & Mitra (2011) investigated the effects of bond-rating changes announcements on equity share prices in India. The period has been taken by this study 1 April, 2002 to 31 March, 2008 of 98 companies and for analysis of data used event study methodology. This study has been taken event window 30 days prior of the event and 30 days after of the event and estimation period has been taken -230 to -31 days. Finally concluded that before the ratings were changed by the bond-rating agency improved financial and operating conditions of the companies were realized by the investment community.

Mehta, Jain & S Yadav (2014) analysed the market reaction related to stock dividend decisions in the Indian context and find out impact on returns, liquidity, and risk. The sample period included 51 stocks dividend from 2002 to 2010 and for finding the short term and long term result used event study methodology. In this paper the event window has been taken -20 days, 0, +20 days and estimation period has been taken -171 days to -21 days before event window for calculating the AAR and CAAR. This study concluding that the announcement of stock dividends in India reduces viability of returns in the short run as well as long run.

Sharma & Chander (2009) studied that the impact of earnings' announcement on the Indian stock market and used Event study methodology for finding the result. The time period have been taken 2001 to 2007 and on the basis of daily return sample have been selected 133 stocks out of 20 major industrial sectors of BSE. This study showed that 2001 to 2002 the Indian stock market faced a bear phase and 2003 to 2007 the Indian stock market faced a bull phase. The result suggested that this study has not shown any inconsistency in the stock price behavior in long term analysis and shown informational inefficiency.

Kapil Choudhary & Sakshi Choudhary (2009) found that the stock return behavior around the stock splits on Indian stock market during the period from December 1999 to December 2007. This study also tried to sort out the liquidity, trading range and neglected firm hypothesis. For finding the result used Event study methodology and the event window was taken -30 days prior to the event and +30 days after to the event and Estimation

period was taken -225 days to -31days. This study concluded that could not confirm the trading range hypothesis because majority of shares in India of stock splits While the neglected firm hypothesis could firmly be associated with the stock splits in India.

J. Bodhanwala (2015) investigated the impact of stock splits on returns, price, trading volume, number of trades, abnormal return and cumulative average abnormal return. This study used Event Study methodology for analysis of 719 stock splits and has been taken the event window of -30 to +30 trading days .After the analysis of data this study finding that stock split significantly impacted the stock market and also find out the difference between pre and post stock split and after stock split share market has been increased.

### EVENT STUDY METHODOLOGY

The impact of Demonetization announcements on stock market has been captured using event study methodology (Brown & Warner, 1980; Bowman, 1983; Brown & Warner, 1985; Henderson Jr., 1990; Peterson, 1989; McWilliams & Siegel, 1997; MacKinlay, 1997; McWilliams & McWilliams, 2000; Serra, 2004; Wells, 2004; Weston, Mitchell, & Mulherin, 2004; Kothari & Warner, 2007; Tabak, 2010; Konchitchki & O'Leary, 2011) as explained below.

#### Actual return

The daily actual return for all the securities in the sample was calculated using the following formula. (Dr. S. Padmavathy et.al. 2017)

$$R_{j,t} = P_{j,t} / P_{j,t-1} - 1$$

Where  $R_{j,t}$  is actual return of the firm j at time t

$P_{j,t}$  is closing price of the security j at time t

$P_{j,t-1}$  is closing price of the security j at time t-1 i.e., previous trading day

Likewise, market return also calculated by the above procedure.

#### Expected return

The expected return was calculated during event period by using Market model as follows:

$$ER_{j,t} = \alpha_j + \beta_j R_{m,t}$$

Where  $ER_{j,t}$  is expected return for the security j on trading day t

$R_{m,t}$  is the market return for security j at time t

$\alpha_j$  &  $\beta_j$  are the regression parameters assessed using the market return as independent variable and company return as dependent variable from the estimation period

#### Abnormal return:

Abnormal return was calculated during the period of event window as follow:

$$AR_{j,t} = R_{j,t} - ER_{j,t}$$

Where  $AR_{j,t}$  is the abnormal return for security j on time t

### Significance Testing

#### Hypothesis

$H_0$ : Demonetization announcement has no significance impact on Share prices.

$H_1$ : Demonetization announcement has significance impact on Share prices.

**T test:** Here t test is used to test the significance of abnormal returns. The level of significance is 5% i.e.,  $\alpha = 0.05$  and the critical values are -1.96 and 1.96. The test statistic are calculated from

$$T_t = AR_{j,t} / S.E$$

Where S.E is the standard Error calculating on Estimation period.

### RESULTS AND INTERPRETATION

#### Impact on share price return of each company of Nifty 50 Index

S. NO.	Company Name	AAR	CAAR	AAR(Ttest)
1	Adani Ports and Special Economic Zone Ltd.	0.000	0.041	0.019
2	Asian Paints Ltd.	-0.002	-0.140	-0.150



3	Hindustan Unilever Ltd.	0.000	0.026	0.040
4	I T C Ltd.	0.000	0.002	-0.010
5	Titan Company Ltd.	-0.001	-0.099	-0.084
6	Axis Bank Ltd.	-0.001	-0.054	-0.057
7	Bajaj Finance Ltd.	-0.001	-0.107	-0.065
8	Bajaj Finserv Ltd.	-0.002	-0.109	-0.078
9	HDFC Bank Ltd.	0.000	-0.016	-0.044
10	Housing Development Finance Corporation Ltd.	-0.001	-0.052	-0.046
11	ICICI Bank Ltd.	0.001	0.128	0.085
12	Indiabulls Housing Finance Ltd.	-0.001	-0.080	-0.060
13	IndusInd Bank Ltd.	-0.001	-0.026	-0.043
14	Kotak Mahindra Bank Ltd.	0.000	0.022	0.001
15	State Bank of India	0.000	0.037	0.013
16	Yes Bank Ltd.	-0.001	-0.053	-0.038
17	Bajaj Auto Ltd.	0.000	-0.020	0.003
18	Eicher Motors Ltd.	-0.001	-0.102	-0.058
19	Hero MotoCorp Ltd.	0.000	-0.052	-0.016
20	Mahindra & Mahindra Ltd.	-0.001	-0.061	-0.071
21	Maruti Suzuki India Ltd.	-0.001	-0.055	-0.077
22	Tata Motors Ltd.	-0.001	-0.059	-0.059
23	GAIL (India) Ltd.	0.001	0.112	0.077
24	Hindustan Petroleum Corporation Ltd.	0.000	0.017	-0.013
25	Bharat Petroleum Corporation Ltd.	0.000	-0.001	-0.027
26	Indian Oil Corporation Ltd.	-0.001	-0.026	-0.039
27	NTPC Ltd.	0.001	0.063	0.082
28	Oil & Natural Gas Corporation Ltd.	0.001	0.035	0.044
29	Power Grid Corporation of India Ltd.	0.000	0.011	0.011
30	Reliance Industries Ltd.	0.000	-0.036	-0.026
31	Bharti Airtel Ltd.	0.001	0.049	0.081
32	Bharti Infratel Ltd.	0.000	0.022	0.017
33	Cipla Ltd.	0.000	-0.059	-0.022
34	Dr. Reddy's Laboratories Ltd.	0.000	0.033	0.024
35	Sun Pharmaceutical Industries Ltd.	0.000	-0.012	-0.010
36	Coal India Ltd.	0.000	-0.032	-0.029
37	Hindalco Industries Ltd.	0.001	0.055	0.032
38	JSW Steel Ltd.	-0.001	-0.080	-0.068
38	Tata Steel Ltd.	0.001	0.098	0.067
40	Vedanta Ltd.	0.002	0.141	0.073
41	UltraTech Cement Ltd.	0.000	-0.048	-0.029
42	Grasim Industries Ltd.	-0.001	-0.024	-0.038
43	Tech Mahindra Ltd.	0.002	0.131	0.121
44	Infosys Ltd.	0.001	0.016	0.040
45	HCL Technologies Ltd.	0.000	-0.037	-0.026
46	Tata Consultancy Services Ltd.	0.000	-0.005	-0.005
47	Wipro Ltd.	0.000	0.017	0.036
48	Larsen & Toubro Ltd.	0.001	0.067	0.032
49	UPL Ltd.	0.000	0.004	0.024
50	Zee Entertainment Enterprises Ltd.	-0.002	-0.147	-0.116

An analysis of total 143 days window period (-21,0,+21 event window and -121 to -22 Estimation window)of each company of Nifty 50 shows the AAR,CAAR and AAR (T-test) in above table.

From the overall analysis of this table the critical value is below 1.96 during the 143 days window. So, null hypothesis (Demonetization announcement has no significance impact on Share prices) is accepted and alternative hypothesis (Demonetization announcement has significance impact on Share prices) is rejected. This indicates that the demonetization announcement did not affect the companies listed in all sector of Nifty 50 Index .Hence; demonetization has no significance impact on share prices listed in NSE.

## CONCLUSION

The study examined the impact of Demonetization on share prices of companies listed in NSE and find out the AAR, CAAR, and AAR (T-test) of 143 days window period by using Event study methodology. Finally concluded by data analysis that the effect of demonetization was only for a short time period but after long time it showed positive result. So, this study did not find any significant impact of demonetization announcement on stock market prices of NSE. On the basis of result we can conclude that Indian stock market is not efficient in semi strong form.

## REFERENCES

- Bhaskar, P.P. & Kumar, D.P. (2017). Affect of Demonetization On E-Commerce. *Review Of Research Journal*.
- Chauhan,S.& Kaushik,N.(2017).Impact of Demonetization on Stock Market: Event Study Methodology. *Indian Journal of Accounting, XLIX (1)*,127-132.
- Choudhary,K.,& Choudhary,S.(2009)..Stock Return Behaviour around Stock Splits : Indian Evidences . *Asia-Pacific Business Review*, 2, 91-101.
- Dhandayuthapani,S.& Vishnupriya,S.(2017). Aftermath demonetization in stock market: A study. *International Journal of Advanced Research and Development* ,2,26-28.
- Iyengar,M. Iyengar,N.& Aswani,C.(2017).Impact of Demonetization on Indian Stock Market:An Event Study Approach. *International Journal Of Core Engineering & Management*,4,18-27.
- J. Bodhanwala, R. (2015). Stock Split: A Test of Market Efficiency on Indian Stocks (2001–2013). *SAGE Publications*, 16, 112–124.
- Lal, J.,& Mitra,M. (2011). Effect of Bond Rating on Share Prices: A Study of Select Indian Companies. *SAGE Publications* , 15(3), 231–238.
- Mali, V. (2016). Demonetization: A step towards modified India. *International Journal of Commerce and Management Research*, 2,35-36.
- Mehta ,C. Jain,P K.,& Yadav,S.(2014). Market Reaction to Stock Dividends: Evidence from India. *VIKALPA*,39,55-74.
- Mukundan, A. (2017). Impact of Demonetization on Indian Stock Market.
- Ohlan, R. (2017).Is demonetization a demon for India tourism industry? *ELSEVIER*, 23, 38-40.
- Padmavathy,S. Umashankar,M.& Indhu,V.(2017). Share Price Behavior around Demonetization. *International Journal of Management Research & Review*,7,665-673.
- Quint, T .& Shubik, M. (2015). The demonetization of gold: transactions and the change in control. *Springer* ,11,109-149.
- Rani,G. (2016). Effects of demonetization on retail outlets. *International Journal of Applied Research*, 2(12), 400-401.
- Sawyer, K.R., & Gygax, A.A. (2001). How Eventful are Event Studies? *Research Gate*
- Sharma, J., & Singh, R.(2009).Market Reaction to Bonus Issues in the Indian Stock Market . *Asia-Pacific Business Review*, 3,56-65.
- Sharma, R.,& Chander,R .(2009).Earnings Announcements and Stock Price Behavior on Indian Stock Markets . *Asia-Pacific Business Review*, 3,117-126.
- Sunil, T. & Shenoy, V. (2017). Impact of Demonetization on Stocks of Selected Sectors – An Event Study. *International Journal of Research in Finance and Marketing (IJRFM)*,7,29-38.
- Tiwari,H.& Singh,S.(2017). Impact of Demonetization on Sectoral Indices of NSE.*International Journal of Pure and Applied Researches*,2(1),37-46.
- Weinstein, A. (1967).Was There a” Crime of 1873”?The Case of the Demonetized Dollar. *OXFORD JOURNALS*, 54,307-326.
- Yaniv Konchitchki, D. E. (2011). Event study methodologies in information systems research. *International Journal of Accounting Information Systems* , 99-115.

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**SMART PARKING IN SMART CITY**

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**ABSTRACT**

*Cities are running out of space for parking as number of vehicles is increasing on a day to day basis. People park a km away or more to go to the required destination. People have started living in a smart world for which apps can be used even for parking purposes. The residential parking space at prominent areas in the city can be utilised for parking and a source to earn an Income for urban residents.*

*Keywords: Parking, Smart Parking, Idle Time, Apps, Easy Money.*

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**INTRODUCTION**

Smart city is becoming a possibility each passing day; usage of internet is making it possible to come up with innovative ideas. One of the key problems that smart cities face is with its parking. While we try to address the parking problems of the city, it is important to note that at the crux of this problem is the paradox of balancing the means and the ends of achieving a systematic, well enforced roadside parking. The ultimate objective is not to smoothen the parking experience to encourage people to bring out their cars and vehicles more often, but to achieve convenience for those opting to bring their vehicles, and to remove the bottlenecks being caused due to haphazard parking. Solutions for the parking issues should be designed keeping the end results in mind. Making the traffic and parking experience smoother should be the agenda.

Ultimately a well managed parking space scenario in the city will not just provide comfortable option to drivers to make a swift parking and safe drive, it will also lead to a clear enlistment of available parking spots and more informed rider decisions to choose the appropriate mode of transport. Given the call for removing parking spaces altogether from some of the busy roads in the city a better parking environment will enforce discipline and informed commuting decisions on a daily basis.

The smart parking solution that we are trying to implement is based on using a mobile application which would be accessible through cloud computing. The solution that we have come up with does not use any type of external devices apart from a simple mobile application.

The rest of the paper is organized based on the analysis received from respondents through a survey.

**OBJECTIVES OF THE STUDY**

The objective of the study was to bring a solution to the parking problem found in tier one cities, using of application to make parking easy and to save time.

**RESEARCH METHODOLOGY**

A survey was conducted in the form of interview and questionnaire in some of the traffic congested area of Bangalore of the residents around.

**NEED FOR SMART PARKING**

India is the seventh largest country in terms of area and most populous democracy in the world. Some of the most populated cities of India include Mumbai, Delhi, Bangalore, Hyderabad and Ahmedabad. The population in India has increased by 1 million (approx.) in 10 years. According to this data the parking issue will always be on the rise.

**HOW OUR SOLUTION WORKS**

The solution that we have come up with is a simple application that could be easily used by the majority. The application works based on information given by the availer and the avalee, to do this both of them should have registered themselves in the application by providing their Name, Contact details and an Identity Proof. The app works on a simple logic. Time, day, date and place are some of the pre-requisites that have to be filled by the availer and avalee to get the closest available parking space to their destination. The availer (parking space provider) of this solution will not only be by the residents but institutions like convention halls, schools, colleges etc.

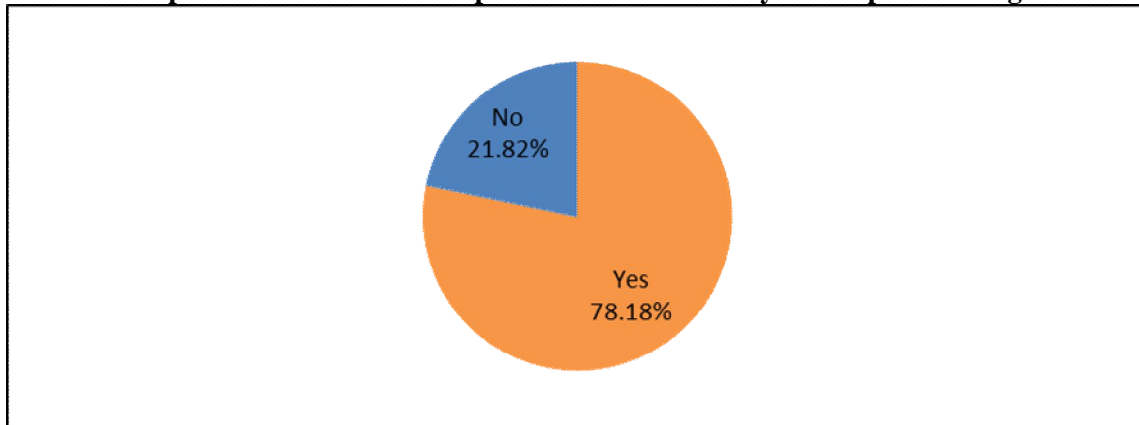
The availer only has to check or uncheck the availability of the parking-space; he does not have to do anything else because his details have already been registered.

The availer gets paid on hourly basis. The availer gets the details of the person who will be parking the vehicle

once they book the free slot. Payment will be deducted from the wallet which should be pre loaded with minimum amount. This will bring down traffic congestions, traffic rules violation and enables a convenient parking facility. A person who has more than one property can list more than one parking slots if they are not occupied and earn money hourly on each slots.

Having done the survey in a tier one city like Bangalore we have analysed the following

**Graph-1: The number of respondents who are ready to accept the change**



The results were analysed after conducting the survey for 55 people staying in populated areas of Bangalore. Among those respondents 43 (78.18%) of them readily agreed to avail a service like this while 12 (21.82%) were not satisfied. Most of them readily agreed to the solution are because they found it troublesome to find parking spaces constantly. Some key issues raised by the respondents were

- **Security**

The insecurity concern that the parking space providers might face, and person who is availing the service. About 27 respondents (49.10%) had issues concerning security.

- **Payment**

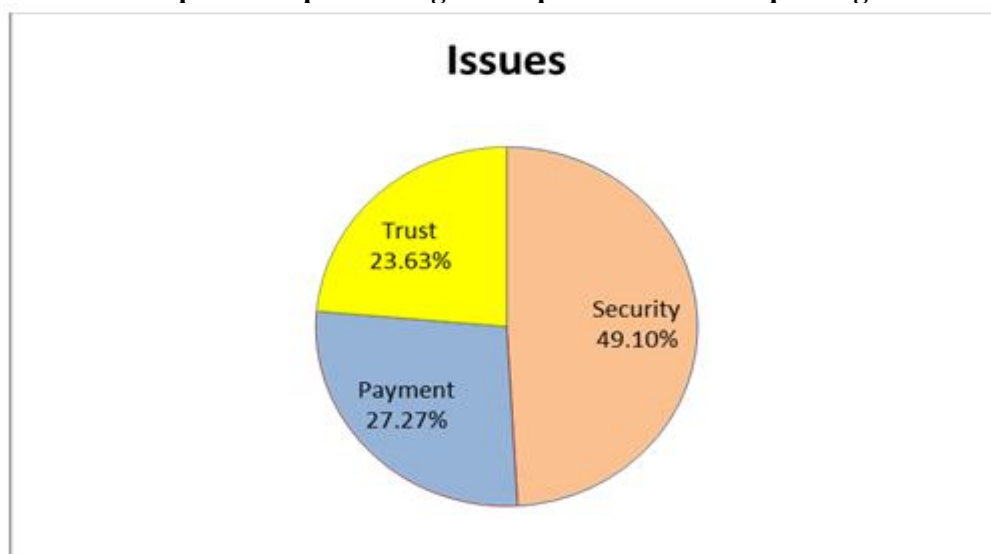
The service availer feels that the payment might not be prompt or secure. About 15 respondents (27.27%) had issues concerning Payment.

- **Trust**

Trust issues would be faced when the vehicle is being parked at a residence.

Problems would not only persist between avalier and availee but also with neighbours. About 13 respondents (23.63%) had issues concerning trust.

**Graph-2: Graph showing the respondents issues in parking**



**Payment**

Payment would be one of the major reasons why this solution would work.

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Payments could be done through wallets and other modes of payment.

The availer would be getting paid in the ratio of 2:1.

For example: let us assume that payment for an hour is Rs. 30/-

The availer gets Rs. 20/- and the business gets Rs. 10/-

### **ADVANTAGES OF SMART PARKING**

#### **Convenient parking space**

As the parking space would be pre-booked and assured it would be convenient and there would be no confusion. It would be safer as the parking would be allotted at a residence or institutions like convention halls, schools and colleges etc.

#### **Easy money**

People can earn hourly by providing parking space when not occupied. So when you are leaving to office or anywhere out you can list your parking space free clicking a checkbox.

#### **No traffic rules violation**

As the vehicles are provided with relevant parking spaces it helps in reducing violation of traffic rules by parking at un-authorized parking places. When people don't get parking they tend to park at No-Parking area and end up getting their locked by police.

#### **Saves time**

Searching for a place to park in the city is time consuming work. But through our application the parking space will already be allotted. Time is being saved as you don't have to find a place to park.

#### **Reduces traffic congestions and confusion**

People struggle driving vehicle searching for parking space. As the parking space is already being allotted you will not have to stop the vehicle and search for parking space which creates traffic congestions.

### **CONCLUSION**

Since the income level and standard of living has increased. The automobiles have been more affordable, now most individuals own their own vehicle as banking industries has made it easy for the people to buy vehicle on EMI. People are trend adaptive and people prefer driving their own vehicle to wherever they go. As the numbers of vehicle are continuously increasing the traffic and parking issues are also rising. With very limited resources our solution can be used as a convenient parking strategy to solve the parking problem. And the application will be user friendly and easy to operate which could be used by majority of the individuals. Pilot testing to be done in order to study financing strategy.

### **REFERENCES**

- (2017, november 21). Retrieved from Citizen Matters: [bengaluru.citizenmatters.in](http://bengaluru.citizenmatters.in)
- (2019). Retrieved from indiapopulation2019: [www.indiapopulation2019.in](http://www.indiapopulation2019.in)

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## HUMAN RESOURCE (HR) RECRUITMENT AND CHALLENGES IN THE INDUSTRY 4.0 FRAMEWORK

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### ABSTRACT

*'Industry 4.0', known also as the fourth industrial revolution is likely to impact the professional field of Human resources (HR). The new emerging reality of Automation, and digitization is expected to bring about changes in all aspects of business management. Already, the corporate world is abuzz with concepts such as: Redefining sourcing and recruitment, Virtual Reality (VR) in Onboarding, removing redundancies in HR operations, Redefining learning for making it more relevant, Employee engagement apps etc. Corporates of today would require a successful 'Smart HR Recruitment 4.0' strategy to cope up with the challenges of Industry 4.0. Emerging technologies such as Internet of Things (IOT), Big Data, and Artificial Intelligence (AI) has already begun to automate most HR processes, thereby resulting in efficient and leaner HR teams. Both organization structures and leadership style changes would be required for efficient and successful Smart HR 4.0 implementation. Thereby allowing HR departments to play a more strategic role in the overall organization growth. This paper discusses such changes that have happened in the recruitment function and how the HR profession can effectively address the challenges of Industry 4.0.*

*Keywords: Industry 4.0, Smart H.R. Recruitment, Emerging technology, HR.*

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### AN OVERVIEW OF RECRUITMENT

In simple terms, recruitment has been a “process of finding and hiring the best-qualified candidate (from within or outside of an organization) for a job opening, in a timely and cost-effective manner”. (1) Traditionally it has been done by analyzing the requirements of a job, attracting employees to that job, screening and selecting applicants, hiring, and integrating the new employee on board to the organization.

Broadly speaking, end to end recruitment sees to **attracting, screening, selecting and onboarding** (2) a suitable candidate for an existing vacancy. The steps encompassing in it can be seen in the form of a flowchart later. Apart from those steps, recruiters or the recruitment function may involve in preparing offer letters as well as inducting them once the candidates join the organization. Interviews, as a part of recruitment, maybe undertaken by in-house managers, members of the HR /recruitment team or certain experts. It may be also be done by recruitment firms, search firms and consultants.

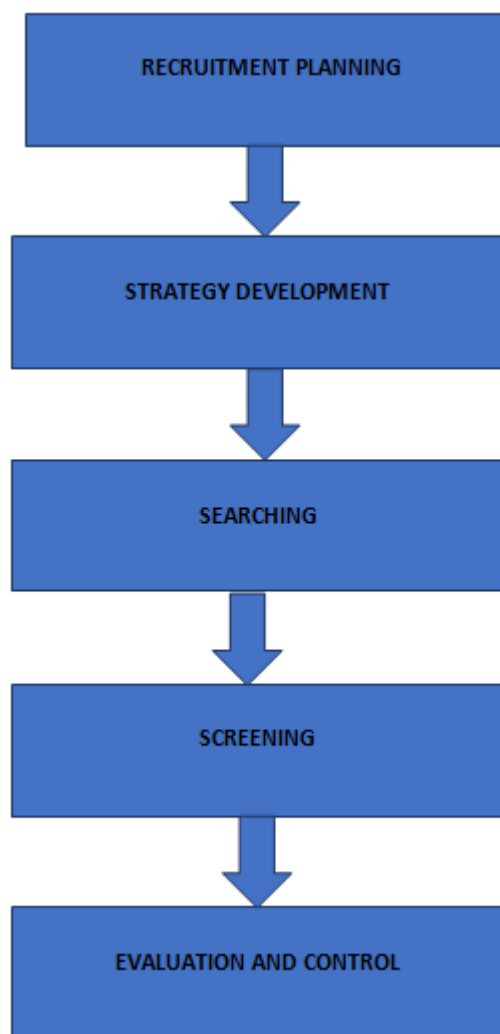
### BASIC DEFINITIONS OF RECRUITMENT

Recruitment, also referred to as 'Staffing', can be regarded as a procedure of collecting of suitable people for filling open positions in a company. It can be regarded as the preliminary stage of the entire system. Some scholars have defined it thus: (3)

- a) According to **Edwin B Flippo**, “Recruitment is the process of searching for prospective employees and stimulating them to apply for jobs, in the organization”.
- b) In the words of **Yoder**, “Recruitment is a process to discover the sources of manpower to meet the requirements of the staffing schedule and to employ effective measures for attracting that manpower in adequate numbers to facilitate effective selection of an efficient working force”.
- c) “Recruitment is the process [of] discovering potential for actual or anticipated organizational vacancies”. - **DeCenzo and Robbins**.
- d) As per **William B. Werther and Keith Davis**, it is the “discovering of potential applicants for actual or anticipated organizational vacancies.....”.

### RECRUITMENT PROCESS- A FLOWCHART

The process of recruitment is embarked upon once the job prerequisites have been understood and evaluated. It involves searching for such candidates who could be encouraged to apply for the vacancies that the company has. A typical recruitment process would consist of the steps mentioned in the flow-chart (4) as discussed earlier. It can be found in the following page:



## HISTORY OF RECRUITMENT

The earliest example of recruitment can be traced to identifying those labourers who were instrumental in building the Pyramids in Egypt and the Great Wall of China. (5) As civilization developed, the concept of choosing one's vocation started to gradually emerge. At that juncture, the industrial revolution brought about a plethora of changes in the way work was being conducted. Many non-governmental enterprises began to enter the market which consequently affected the hiring function. Hitherto, it used to happen at the base level and a major change occurred in the form of hiring that populace who had an expertise or specialization in a particular trade. In some cases, it used to happen face to face and, in some instances, the applicants were subjected to tests. This was to see if they knew the work they were expected to perform if hired. When enterprises were not able to get people from the vicinity of their operations, they resorted to hiring outstation people. At times, they would transfer their existing manpower to those locations where their facilities would be located.

At times, a written test would be administered to incumbents. If they 'passed it', they would be made to face an interview. But prior to the interview stage lay the problem of checking if the answers posed in the questionnaire were desirable and accurate! Therefore, recruitment was turning out to be a cumbersome affair apart from time consuming. In India, local recruitment was the norm followed, those days, for industries that had been set up either by the British or local entrepreneurs. Since the fight for freedom was on, not much emphasis was placed on the labour class or the conditions that they worked in. The situation was no different in the Western world as it faced periodic and internal strife. The World War I (1914-1918) and The Second World War (1939-1945) added to the woes of the populace and the labour class. The former at least saw to the emergence of the present-day job recruitment. Here, advertisements were placed by recruitment bureaus so that eligible men could enlist themselves for serving in the armed forces. All these incidents saw to recruitment emerge as a function post the 1950's in the Western World which subsequently had an impact on India which had attained its independence few years prior.

Having seen certain mentioned issues in recruiting, the last decade of the previous [20<sup>th</sup>] century saw the emergence of online job boards. These saw to easing the recruitment process as it eliminated the 'paper and



pen' interface as well as reduced involvement of the HR department workforce. Technology saw to streamline the entire process as well as saw to shortlisting and subsequent selection become easier. Few companies would actually send out forms that incumbents could fill in as a registration form.

The norm, especially from the dawn of the new millennium [ 21<sup>st</sup> century] has been the usage of '**Talent Acquisition systems**'. These systems are cloud based and hence, execution and maintenance become a relatively easier process. Though it involves significant monetary investment, it sees to tests being evaluated instantly once they have been completed.

Before the advent of technology in recruitment, companies had to resort to traditional techniques to attract suitable manpower to join them. Some of these are still in vogue and are listed herewith: (6)

**Paper AD's:** Apart from the being the easiest way to recruit, advertisements (AD's) are known to be equally effective.

**Job postings at employment agencies:** Employment agencies are typical places where job aspirants would visit to find a job.

**Temporary agencies:** They can be referred to as temp agencies or temp staffing agencies. Apart from shortlisting suitable incumbents based on experience, they make the recruitment job easier for companies.

**Internal hiring:** This technique is adopted by firms to encourage those individuals who are already part of the organization by placing them in jobs that are existing. By this, the individual would know the position for which they are being hired for as well as the work that is expected out of them.

## DARK AGES OF RECRUITMENT

The era before the advent of the facsimile (FAX) machines, Internet, job portals, social media etc. to facilitate recruitment can be termed as the '*dark ages of recruitment*'. (7)

Recruitment, as a function, had always been carried out quite effectively even before this phase. And it still has been even today without any disruption in the present. However, those recruiters who worked in that critical 'era' underwent these challenges listed below and emerged successful despite the rigour:

**Qualifying a job order:** Any Job Description (JD) that is typical of the recruitment that happens in today's scenario was not in existence back then. Recruiters had to get it via the telephone or by meeting the hiring manager/ client face to face!

**Telephone screening:** This is used to be the norm of the day back then. Recruiters used to efficiently screen potential candidates over the phone most times. Those who didn't fit the bill were dealt with empathy and offered direction at times!

**Selling candidates:** The onus of recruiters back then was to call up a prospective candidate and 'sell them in' when it came to the opening. All this was done by merely going through the Curriculum Vitae (Cv)/ résumé of the candidate.

**Urgency!:** This was in the case of walk-in candidates wherein recruiters would try all the tricks in the bag to ensure that the job incumbent went back with a job offer in hand. They would ensure all possible ways to 'ensnare' candidates so that they didn't walk up to a competitor [recruiter] and avail placement from them! All this and more were done just to ensure that the client got the person they were looking out for without any time lag.

**Memory!:** A recruiter back then was blessed with a memory befitting an elephant when it was related to their candidates. This was in the case of both potential and placed ones! With minimal assistance from technology, they could rattle out relevant details required either by the hiring company [client] or internal manager.

**Down time.:** Once the sun set on that particular day, the recruiter called closed his work accordingly. Since there were no hand-held devices to disturb them, they could go back home and spend time with their families or as they pleased. They didn't have to worry being disturbed by their boss or client regarding the status of the opening till the next morning while they came back for work!

## OBJECTIVES OF THE PAPER

This paper has been written keeping in mind the following objectives:

- To trace the history of recruitment.
- To examine how recruitment was done during the 'dark ages of recruitment'.
- To become aware of 'Industry 4.0' and consequently HR recruitment 4.0.

## ANALYSIS OF DATA

This paper has been written after analyzing the conditions pertaining to traditional recruitment and issues that need to be addressed in the Industry 4.0 framework. All this has solely been done in the form of secondary data analysis that was available in the form of documents, published reports, etc. It made aware of the first industrial revolution which happened from the 18th century and till the early 19th century. Steam was being used as a source of producing energy which got supplanted by electricity during the second industrial revolution which emerged from the later part of the 19th century to the second half of the 20th century. Automation became prominent during the latter half of the previous century and it has been affecting the recruitment in different ways. Apart from bringing an integral part of the 'Industry 4.0', secondary data analysis has made it aware that 'bots', 'cloud', big data' analytics, Artificial Intelligence (AI), IoT, VR, to name a few have become a part of the daily life and corporate jargon.

## CHALLENGES IN RECRUITMENT

Lack of skillsets is one of the major issues that companies face when they have to hire either a person or people for a vacancy. This has a direct bearing on the Human Resource function. Some vital and generic challenges that recruiters face in the current '4.0 age' or have faced are listed herein: (8)

**Communication skills** have always been a vital part of any job and gauging it is a part of the recruitment vertical under the Human Resources (HR) function. Most often, this is neglected during the 'first cut'. Though aspirants maybe tech-savvy, it is necessary to keep in mind that communication skills have to be assessed on priority.

There could be instances of a significant **gulf existing** between skills required for a particular opening and that which exists in the candidate. A proactive approach, therefore, has to be ensured by the HR department and/or the hiring team.

Some industries have known to have **high attrition percentages**. To ensure the hired candidate sticks on to the job, the recruiter has to beforehand gauge whether they would remain in the job on a long-term basis or just for a few weeks. For this, efficient onboarding has to be ensured as research has revealed has a direct correlation to retention!

The tendency of both current employees as well as prospective ones has always **work for a "big-name"** in the industry. Hence, they may submit their candidature to such enterprises. This makes Human Resource of those small names to come up with strategies to bring about an appeal in prospects as well as stay competitive in the job market.

## RECRUITMENT IN THE SOCIAL MEDIA ERA:

Technology has brought about both pros and cons to the staffing function. In our country, though technology has already made its debut, certain one's that are vital for carrying out recruitment tend to be obsolete. Boolean search and job portals appear to be the only option for sourcing suitable candidates for vacancies. Social media hiring is yet to catch up. Even now, new age recruiters are being trained by giving them ghost written scripts that they blurt out while they call prospects. At the same time, head honchos of enterprises are still debating whether to earmark a budget for technology so that it aides in fast paced recruitment! As a result, unreceptive incumbents are targeted and, in most cases, recruiters find it difficult to handle voluminous data.

At the present, recruitment has to be keep itself abreast of changes occurring in the digital era. For this, they may have to resort to the following so that they are able to attract the right talent among the job seekers: (9)

a) **Targeted recruiting ads:** Just as how one tends to search for a particular product upon seeing an ad, one will have to do the same for getting the appropriate candidate for the 'open position'. From the recruiter point of view, the ad has to be posted keeping in mind the Job Description (JD), the correct key words and other relevant details. If these are taken care, they save precious time.

b) **Investment on Artificial Intelligence :** AI, as it is referred to as, is known to considerably reduce hiring time for corporates. Natural language processing (NLP) and machine-learning algorithms are known to make the available openings to the public with considerable ease.

c) **Search Engine Optimization (SEO):** Social media platforms such as Facebook for Business and LinkedIn Recruiter can be cited as examples that are SEO enabled and aid job aspirants to apply for jobs by being 'mobile-optimized'.

Social media like **Facebook, LinkedIn and Twitter** has made it possible for prospective employers to reach out to incumbents. It has become a reality and a boon for companies starting from this century onwards. This

kind of recruitment is carried out just like another function of the enterprise. Some of them also social media to gauge the skillsets of prospective employees as well as to conduct reference checks. Certain advanced tools have in fact enabled companies to foresee, evaluate and act on the data that they get of candidates. Example of **LinkedIn** can be cited here wherein it provides data of all possible candidates who maybe keen on joining and/or to which employer they have joined! All these and more have seen to increase in productivity of the recruitment team and HR department as a whole.

- It is evident that the last few years has seen a plethora of changes in the recruitment function. Apart from sweeping changes in technology, one can see the same in candidate behaviour as well. All these have contributed to the emergence of certain changes in recruitment especially in the digital marketing space. These have helped in carrying out candidate evaluation successfully and they are viz: (10)
- **Candidate experience:** The onus of corporates is to ensure a personalized communication strategy to candidates. If a prospective candidate feels good about a particular company, it means that they view it as a powerful 'brand'. This in turn sees to enhancement of the profit of the business.
- **Digital:** It is necessary for companies to adapt to the digital mode of recruitment so that suitable talent maybe attracted. Apart from the Cv/ resume, companies tend to look into the social media accounts, website, blog etc. of aspirants to gain insights about them.
- **Employer brand:** It is evident that hunting for the right person for the right job is indeed a challenge. Competition is rampant and this brings about the need for employer branding. If a strong brand is developed, it becomes easy for the corporate to reach to the right prospects. This brings about the need for an effective Employee Value Proposition (EVP) to be in place. The EVP sees to stressing the Unique Selling Proposition (USP) of the company thereby bringing awareness about its salient plus points.

#### FEW FUTURE TRENDS IN RECRUITMENT 4.0:

From the recruitment point of view, Industry 4.0 and Recruitment 4.0, few trends have emerged. These are known to have a significant impact on recruitment practices on a global scale and samples of them are: (11)

Around 65% of the current school going populace does not have job functions as of now! This is because those jobs are yet to be created for them!

The renowned auditing firm PwC, through its report, predicts that the forthcoming year [2020] will see to widespread digitization. A huge jump has been predicted in the case of defense and aerospace sector wherein they are expected to reach 76% from the present 32%.

In America, Industry 4.0 is set to assume the status of an industry very soon! Certain businesses are earmarking a whopping US\$907 billion annually towards it. They expect at least 55% return of the outlay!

#### CONCLUSION

In closing, it maybe said that Smart HR 4.0 or transformations in either Industry 4.0 or Recruitment 4.0 are necessary for both companies and industry alike. These technologies though may appear as challenges, will certainly ensure radical changes in the HR function. A lean HR department would enable both the department and those associated with it to play a role that will be strategic in nature. This paper, though basic in nature, highlights the role of Industry 4.0 as well as Recruitment 4.0 and how changes in technology have brought subsequent changes in the recruitment function.

#### REFERENCES

- Recruitment (n.d). Retrieved February 10<sup>th</sup>, 2019, from <http://www.businessdictionary.com/definition/recruitment.html> (1a) Ibid.
- Definition for recruitment (n.d). Retrieved February 10<sup>th</sup>, 2019, from <https://www.definitions.net/definition/recruitment>
- Ahaduzzaman, M. (2018), Recruitment Definition By Others [Online] Available at <https://www.bbalectures.com/recruitment-definition/>
- Recruitment Process (n.d). Retrieved February 12<sup>th</sup>, 2019, from <https://businessjargons.com/recruitment-process.html>
- Engstrom, E. (2018), The Evolution of Recruiting [Infographic] [Online] Available at <https://recruiterbox.com/blog/evolution-of-recruiting-infographic>

- 
- Modern and Traditional recruitment methods (n.d). Retrieved February 12<sup>th</sup>, 2019, from <http://www.kbic.com/blog/blog/recruiting-executive-search/modern-recruitment-methods-vs-traditional-recruitment-methods/>
  - Savage G. (2016), WHAT YOU CAN LEARN FROM THE ‘DARK AGES’ OF RECRUITMENT [Online] Available at <http://gregsavage.com.au/2015/04/21/what-you-can-learn-from-the-dark-ages-of-recruitment/>
  - Matthews K. (2018), Recruiting in the age of the cyber security skills gap: challenges to overcome [Online] Available at <https://www.information-age.com/recruiting-in-the-age-of-the-cyber-security-skills-gap-123476988/>
  - Caramela S. (2018), Hiring in the Digital Age: 3 Modern Recruitment Trends to Adopt [Online] Available at <https://www.businessnewsdaily.com/6975-future-of-recruiting.html>
  - THE FUTURE OF RECRUITMENT: SOURCING TALENT IN THE DIGITAL AGE (n.d). Retrieved February 13<sup>th</sup>, 2019, from <https://www.talent-works.com/2017/02/09/the-future-of-recruitment-sourcing-talent-in-the-digital-age/>
  - Bhaskar V. (2017), Industry 4.0 and Future of HR [Online] Available at [https://www.linkedin.com/uas/login?session\\_redirect=https%3A%2F%2Fwww%2Elinkedin%2Ecom%2Fpulse%2Findustry-40-future-hr-varun-bhaskar&trk=author-info\\_\\_follow-button](https://www.linkedin.com/uas/login?session_redirect=https%3A%2F%2Fwww%2Elinkedin%2Ecom%2Fpulse%2Findustry-40-future-hr-varun-bhaskar&trk=author-info__follow-button)

**CONTEMPORARY FINANCIAL RISK MANAGEMENT STRATEGIES FOR EMERGING STARTUPS IN INDIA: A STUDY ON THE POTENTIAL FUTURE STARTUP ECOSYSTEM OF INDIA****Dr. Sachita Yadav<sup>1</sup> and Akash Rao<sup>2</sup>**Associate Professor<sup>1</sup> and Student<sup>2</sup>, School of Commerce & Management, Garden City University, Bangalore**ABSTRACT**

*With the fourth Industrial revolution said to be dominated by Automation, Artificial intelligence, & robotics to name a few, Startups in India have a major opportunity to lead & dominate the revolution. But for Startups, raising capital through Venture Capitalists (VC) is becoming increasingly difficult. A recent study, "Entrepreneurial India," by the IBM Institute for Business Value and Oxford Economics in 2018, found out that 90% of the Indian Startups fail in India within five years of its inception. Lack of innovation & future funding accounted as the major reasons for Startups failing in India. The assessment of current & future risk by the Startups is vital for the success of any new venture. Financial Risks associated with Startups are volatile & investment fluxes in the Startup ecosystem are dynamic.*

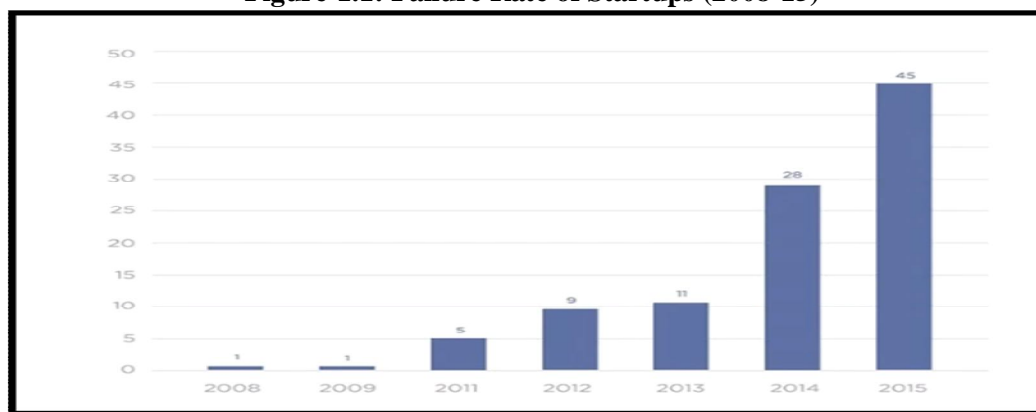
*The research paper tries to bring out the relation between the major financial risks associated with the Startups & how the financial risk assessment strategies can influence the capital funding for the Startups. In addition to this, the paper aims at building a model for financial risk management for Startups which reduces the potential inability of the Startups to find future funding to survive the market volatility. The outcome of the research paper can help the emerging Startup Ventures in India to tackle their Financial Risks & effectively handle the shakeup arising from the potential uncertainties.*

*Keywords: Venture Capitalists, Innovation, Financial Risk, Ecosystem, Volatility.*

**INTRODUCTION**

In the past few years, Indian startups have come into their own driven by factors such as emerging market needs, massive funding, technological progress are to name a few. India stood firm on to its position as the 3rd largest start-up ecosystem in the world, with the future start-up base in India expected to cross 7500, a growth rate of 12-15% from 2017. With the fourth Industrial revolution said to be dominated by Automation, Artificial intelligence, & robotics to name a few, Startups in India have a major opportunity to lead & dominate the revolution. But for Startups, raising capital through Venture Capitalists (VC) is becoming increasingly difficult. A recent study, "Entrepreneurial India," by the IBM Institute for Business Value and Oxford Economics in 2018, found out that 90% of the Indian Startups fail in India within five years of its inception. Figure 1.1 is showing the failure rate of Indian Startups during the period 2008 to 2015. The rate of failure is continuously increasing in India, which is not a good sign.

Finance is said to be the 'life blood' of any organization & managing the funds is vital for any firm's existence. Anticipating the future associated with any organization is practically impossible to achieve but preparing to face uncertainties is within its ambit. Financial Risk Management & Risk Management in general is one such practice which results in managing the risks associated with financial uncertainties such as liquidity risks, Operational Risks, Market Risks, Currency Risks, and Credit Risks. Implicating the techniques associated with these risks not only builds the optimal capital structure of the organization but also improves the risk preparedness of the firm.

**Figure-1.1: Failure Rate of Startups (2008-15)**

Source: Inc42

## RISK MANAGEMENT

The definition of risk management according to IS31000 is given as “The systematic application of Management policies , procedures & practices to the tasks of establishing the context, identifying, analyzing ,treating , monitoring & communicating risks with a view to reducing the negative or alternatively enhancing the positive impact on the organization.”

Entrepreneur abilities are the most important determinant to attract investment, says Amit Raphael, Glosten Lawrence and Muller Eitan (1990). Business angels contribute largely to the largest pool of equity capital available for startup says Mason Colin. Shane Scott and Cable Daniel (1981) quote that investors face high risk when selecting entrepreneurs because in later parts these entrepreneurs make turn opportunists and that entrepreneurs vary in ability to identify and exploit opportunities.

“Risk Management” is the art and science of thinking about what could go wrong, and what should be done to mitigate those risks in a cost-effective manner. Unforeseen circumstances and their negative consequences are the very essence of risk. If we could predict the future, there would be no uncertainty, and there would be no risk. The flip side of risk is opportunity. There is a direct relationship between risk and reward: the greater the potential upside, the greater the risks involved. (As an aside, it’s worth noting that the converse is not necessarily true: situations that involve great risk sometimes have little or no upside. These are stupid risks to take.)

## RISK - REWARD PERCEPTION OF NEW VENTURES

On of the long lasting research topic in the area of entrepreneurship & new business venturing has been the understanding of the major factors behind the success & failure of new ventures. This is particularly relevant for high-tech startups, given that these firms follow high-risk and high-reward strategies that will either lead them to vast success or failure. This is well crafted strategy that will suit the business model of the Venture Capital firms which are involved in their funding. The success & failure of new ventures is analyzed with the quantitative approaches based on their financial data & correlations with elements that can be conjectured to have a role such as the entrepreneur’s ability, the company’s core competencies, and the characteristics of the relevant market.

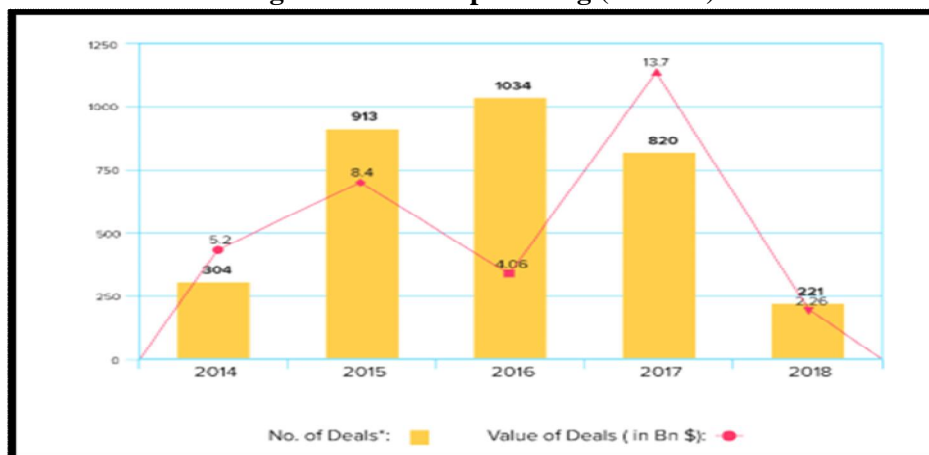
## EMERGENCE OF VENTURE CAPITALISTS IN STARTUP ECOSYSTEM OF INDIA

Venture capital is precisely visualized as ‘your ideas and our money’ concept of developing business.

Sabrinathan (2017) in his research paper “Venture Capital and Private Equity Investing in India – An Exploratory Study” asserts that the venture capital industry has grown vertically & in depth as well as sophistication in fund management practices. Venture capital has the ability to support startups as well as existing enterprises across the spectrum that have the promise & potential by providing them funding through the various stages of development. Figure 1.2 showed the startup funding from the year 2014 to 2018. There was a stead downfall in the funding and number of deals in the year 2018. So, there is a need to understand the reason behind this. So, there is a need to check the financial performance of the startup.

There are various concepts (working capital management, receivables management and payable management) that have been used in the paper to evaluate the performance of the startups in India. The explanation of all the concepts is mentioned below:

**Figure-1.2: Startup funding (2014-18)**



Source: Startups Funding Report, 2018

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**WORKING CAPITAL MANAGEMENT**

Working Capital Management can be termed as the management of current liabilities & current assets as well the interrelationship between them (Mathur, 2010). Mathur (2010, p.12) refers to working capital funds as a company's "life blood", saying that companies "can survive without making profit but cannot survive without working capital funds". Shortage of working capital is one of the major problems faced by companies & is a potent reason for a company's failure.

In the article "Working Capital Management: A must for any Start-up", Morrow (2012) highlighted the importance of Working Capital Management during the growth phase of start-ups. In growth phases, increase in sales almost requires the increase in assets- especially in current assets (Inventory, accounts receivables & cash).

**RECEIVABLES MANAGEMENT**

Companies can improve their profitability and cash flow by "reducing the number of days for which their accounts [receivable] are outstanding" (García-Teruel & Martínez-Solano, 2007, p.164; Tauringana & Afrifa, 2013). But recent studies across startup ecosystem have showed the delay in collecting the outstanding from customers due to which the working capital cycle is delayed. The late payment of trade debts is "often associated with the relative power positions of suppliers and customers" (Paul & Boden, 2011, p.733). In situation such as recession & economic slowdown, the outstanding suffers further when the companies are forced to give a time leeway for customers to clear their outstanding with firms.

**PAYABLES MANAGEMENT**

Payables Management is associated with the negotiation powers of a entity with its suppliers. New entities need to utilize the supplier credit in the most optimal way possible for striking an balance between liquidity, cash management & transaction costs. For new entities, supplier credit is the most viable option than a bank loan which is a time consuming process resulting in the stretch of liquidity to longer time periods (Berger & Udell, 1998). Berger and Udell (1998)

In their study, they conclude that when the maturity period strikes the start-ups, their dependence on supplier credit is either reduced or diminished, probably due to sufficient cash from the revenue generated by sales.

**RESEARCH METHODOLOGY****Statement of Problem**

Risk Management is one of the essentials associated with startups operating in India due to the external environment. Risk Management not only derives way at anticipating uncertainties but also prepares the startups on tackling these uncertainties. Financial Risk Management is the management of Risks associated with liquidity, volatility & Cash management. Certain Techniques are to be assessed for finding optimal solutions for tackling the risks in a way that the startup can plan & afford to implement. The research paper has focused on bringing out the financial crunches faced by startups in a short run which can lead to their collapse & try to suggest techniques which will help them utilize the funds in manner which can cover their risks without under-utilization or over-utilization of funds.

**RESEARCH OBJECTIVES**

- To find out the reasons for failure of Startups in India.
- To analyze the influence of Financial Risk Management in the Startups of India.
- To suggest some techniques for efficiently managing the Financial Risks.

**DATA COLLECTION**

The data has been collected from multiple case studies, as they have given new insights for comparison & description purposes. According to Saunders et al. (2009), case studies are best suited for exploratory research, therefore, suitable for this research.

**ANALYSIS & RESULTS**

**Case Study 1: Studying the Impact of Weak Liquidity Risk Management in Startups (with reference to Shotang.com)**

**Shotang.com**

**Launched:** 2013

**Headquarters:** Bangalore

**Founders:** Anish Basu Roy and Anterpreet Singh

**Category:** E-commerce

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**Funding:** \$ 6.2 Mn

**Status of Operations:** Shutdown

### COMPANY BRIEF

Shotang was a B2B online marketplace which connected retailers, distributors & manufacturers to explore, transact & manage their business online using this platform. The core products of its operations were mobile & apparel. It earned revenue through commission paid by distributors per transaction.

### REASON OF FAILURE

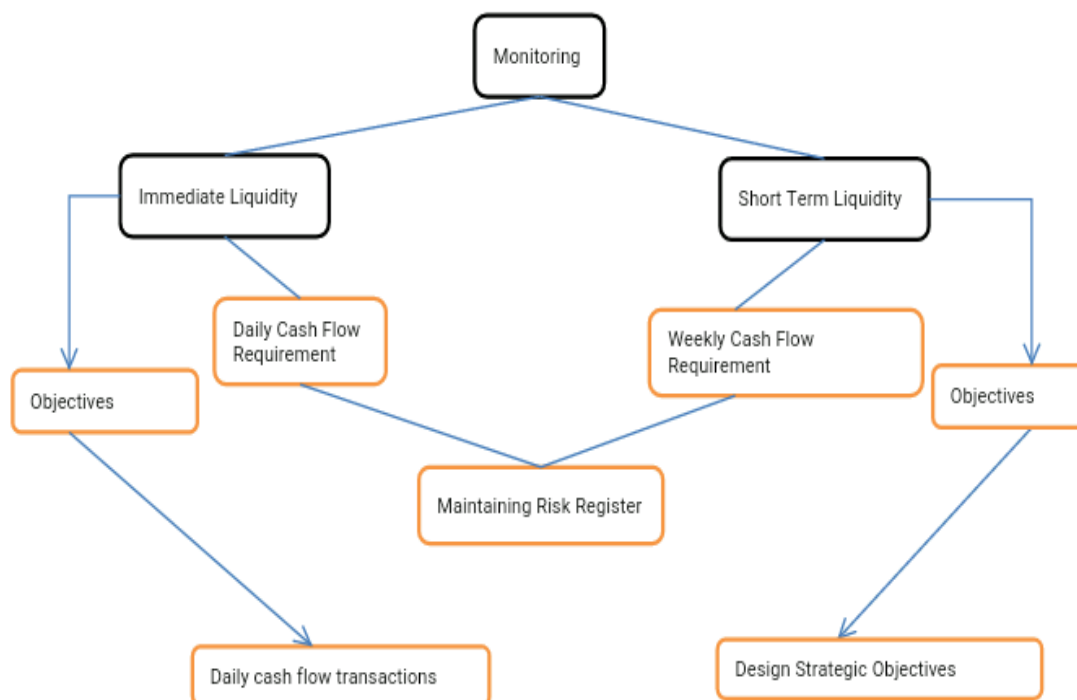
During its peak, Shotang had raised \$40 Mn (Rs.279.7 Cr) as per the market valuation. The company had last raised \$864 K(Rs. 6.8 Cr) from Patamar Capital in February 2018. But fierce competition from Amazon, Flipkart & Paytm Mall made the entity loosen its market share. Weak Cash flow Management & Liquidity led to severe Cash Crunch in the company

### ANALYSIS OF FAILURE

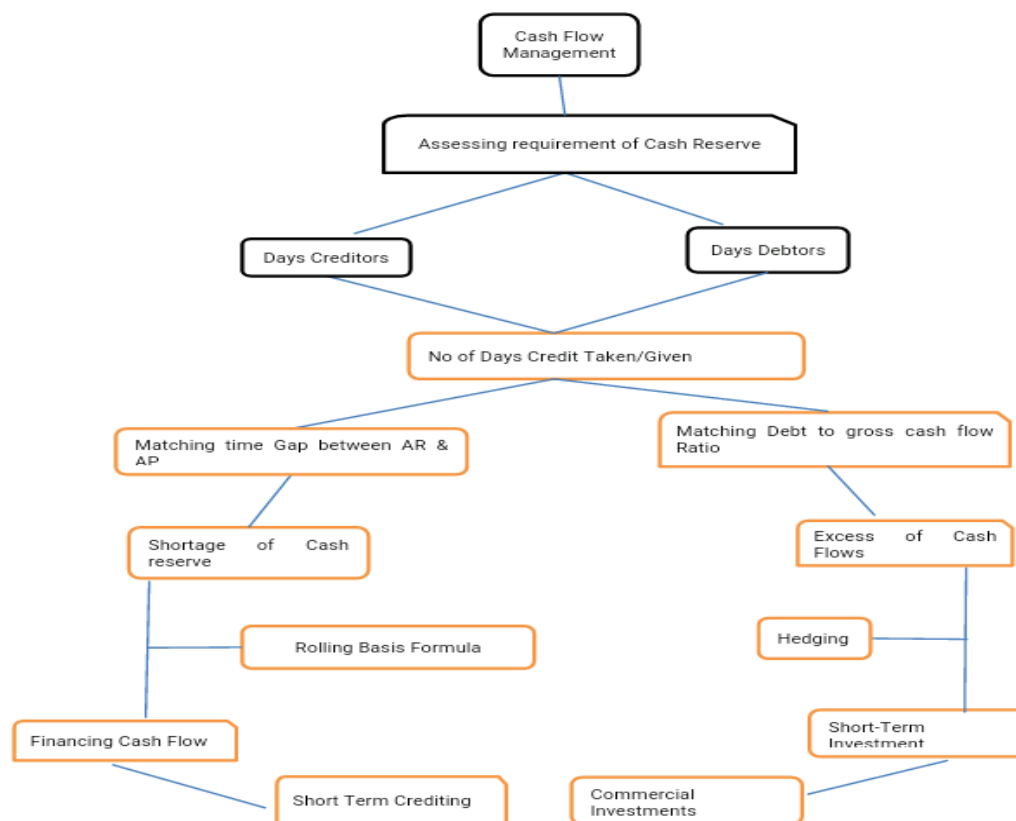
Shotang's business model was concentrated on bringing together all the elements of the supply chain ecosystem and creates significant synergies of convergence for retailers, lenders, distributors, manufacturers, and logistics services on the same platform accessible to all the stakeholders. Through the online /app portal, retailers benefited the most by higher access to more suppliers, more products, better prices & structured credit.

The traditional supply chain gave the 'supplier credit' option from the wholesalers/supplier to all the retailers which extended for a period of 3-6 months. Shotang's business model concentrated on connecting the wholesaler with retailers with a limited 'supply credit' time frame. The time gap between the Accounts receivables & Accounts Payables required sufficient liquidity in the operations of Shotang which exposed its vulnerability in the 5 years of its operations when the firm formally announced its shutdown & also had to borrow funds to pay its debts. The Accounts receivables or Debtors can turn into bad debts in unexpected situations which is a risk to the liquidity of the entity. In addition to this, Shotang also provided delivery & warehouse facilities to the suppliers & retailers which eased the operation of retailers & suppliers but also required enormous amounts of cash burn by the entity. The Risk of Inventory wastage & cancellation of the deals from the parties involved unavoidable liquidity risks resulting in its shutdown.

### MODEL FOR IMMEDIATE & SHORT TERM LIQUIDITY RISK MANAGEMENT FOR ENTITIES



\* In the above model, Monitoring the Liquidity Risks is the first step to assess & predict the Liquidity Risks within the enterprise. If the liquidity requirements are for a short duration (i.e Daily), then it requires the firm to record the cash flows in Risk register on a daily basis. The Risk Register categorizes the Risk, its effects, the extent of its effect & its requirement of neutralizing.

**CASH FLOW MANAGEMENT**

### Case Study 2 : Scope of Credit Risk Assessment & Operational Risk Management in Startup Companies

#### Just Buy Live

**Founded Date:** 2015

**Headquarters:** Mumbai

**Founders:** Bharat Balachandran, Sahil Sani

**Categories:** Consumer, Internet, Logistics, Retail

**Funding:** \$120 mn

**Operating Status:** Closed

#### COMPANY BRIEF

Just Buy Live, was a B2B platform which acted as an e-distributor connecting retailers or shopkeepers with consumer brands across multiple categories such as FMCG goods, electronics, cosmetics etc. Just buy Live, also offered unsecured credit to Small & Medium enterprises on its portal which eased working capital management for small retailers. In August 2017, Just buy Live, had raised \$100 Mn (INR 699.25 Cr) Series B funding from a Dubai-based investment firm, Ali Cloud Investments to spread its operations in the country. During this period, the funding round was seen as the single largest fundraisers for a B2B e-commerce entity.

#### REASON OF FAILURE

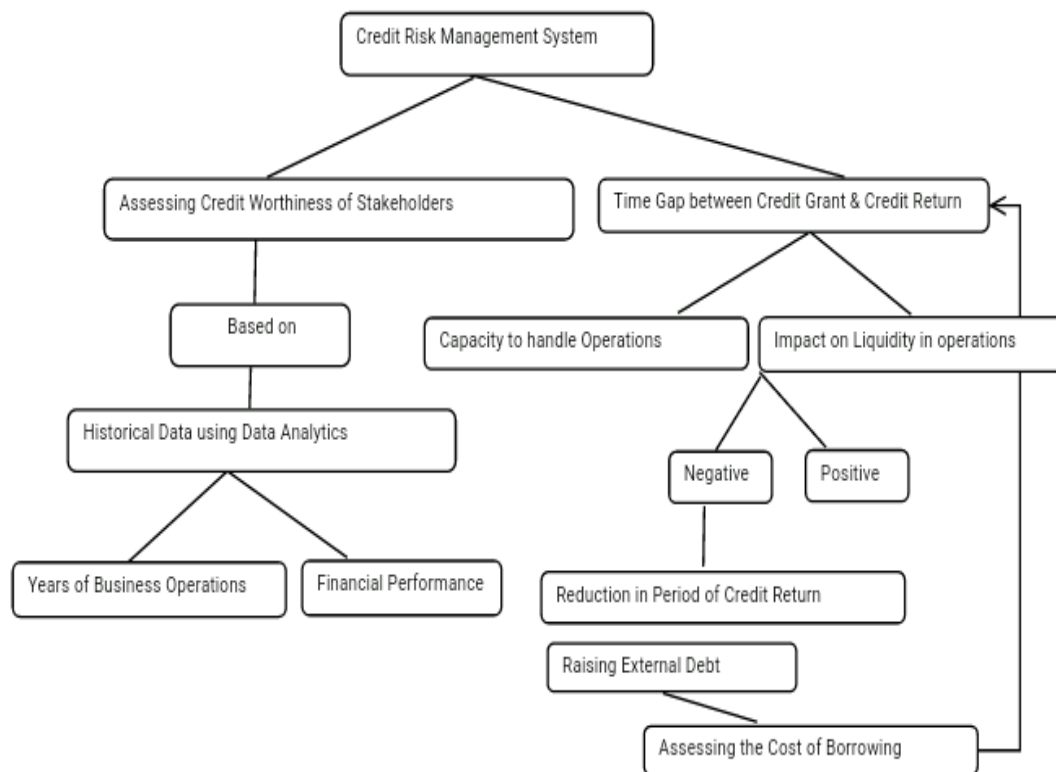
The model behind Just Buy Live, was to avail consumer brand goods to retailers or shopkeepers instead of them going to various wholesalers of different brands. For a B2B platform which provides delivery of consumer goods to shopkeepers required excess of working capital. With Just Buy Live, providing unsecured credit to Small & Medium Enterprises for certain period required rising of short-term capital to pull its liquidity wheel. Failing to do so, the entity was unable to meet its working capital requirement & pay timely salaries to its employees indicating its weak WCM

#### ANALYSIS OF FAILURE

Just Buy Live, as an entity gave options such as 'unsecured credit' option to the retailers who had business interest with them. The credit facility availed by most of the retailers/shopkeepers burdened the cash flow management in its operations. Assessing the credit worthiness of the obligor is crucial to analyze the credit quality which has a lasting impact on the financial statements which is used a tool by Financial institutions to grant credit or short term loans.

The Risk- Reward perception for Startups is very high & optimistic. Managerial decisions such as unsecured credit lending can always have a backlash unless the entity is equipped with emergency funds such as cash deposits, insurance or any other current asset which can reduce its operational risks to minimal. Without having a higher proportion of liquid assets which can balance the credit risks, the entity has a higher possibility of becoming insolvent & defaulting its obligations. Dependence of only a single source of finance is not pragmatic & can lead to riskier equations when it comes to daily operational requirements (cash flows) which was a vital cause for the failure of Just Buy Live.com

#### Model for Credit Risk Management using Historical 4.0 CONCLUSION



Enterprise Risk Management (ERM) is one of the newest trends that Startups all over the globe are implying for analyzing its risk appetite. The capacity of the firm to take risks & measuring the Risk-Reward proportion is essential for maintaining its cash flows in a short run & credit worthiness in the long run. One of the impacting reasons for higher number of failures among Startups in India is flawed business models & lack of future funding from Venture Capitalists.

Financial Risk Management is one of the essential requirements for any business as it has a lasting impact on future funding & Operational Management.

Seed Funding is the starting point for any Startup but reinvestment or further rounds of funding on the same entity by Venture Capitalists or Angel Investors is based on the performance of Startup through their balance sheets. Maintaining an optimal balance sheet by keeping a right proportion of liquidity & debt will predict its profitability in future. External volatility is the factors which cannot be overturned by the firm but preparedness for volatility can minimize the risks.

India is seen as one of the main riders for Industry 4.0 revolution & startups can lead the revolution only if the survival rate is more than failure. Risk Management & Financial Risk Management in particular can help the new entities to have a long run in the market without any severe disruptions in its operations.

#### REFERENCES

- Antonina Kunze, Pille Peri (2015), Working Capital Management in Start-ups - An Exploratory Research ...
- <https://lup.lub.lu.se/student-papers/search/publication/7456161>,
- Arpita Ghosh , February (2013) An Empirical Investigation into Enterprise Risk Management in India, INDIAN INSTITUTE OF MANAGEMENT CALCUTTA WORKING PAPER SERIES WPS No. 722 / February 2013, [https://www.iimcal.ac.in/sites/all/files/pdfs/wps\\_722\\_0.pdf](https://www.iimcal.ac.in/sites/all/files/pdfs/wps_722_0.pdf)

- 
- Bhatt, Yash & Tomer, Neha. (2017). FINANCING ENTREPRENEURSHIP VENTURES.
  - Cantamessa, Marco & Gatteschi, Valentina & Perboli, Guido & Rosano, Mariangela. (2018). Startups' Roads to Failure. Sustainability. 10. 2346. 10.3390/su10072346.
  - Dr.Mamta Jain & Ms Purva Ranu Jain (2018), VENTURE CAPITAL: GLOBAL AND INDIAN PERSPECTIVE , International Journal of Latest Trends in Engineering and Technology Vol.(9)Issue(1), pp.124-130 DOI: <http://dx.doi.org/10.21172/1.91.19> e-ISSN:2278-621X
  - Enterprise Credit Risk Management Scott Aguais and Dan Rosen,2001 (<https://www.z-riskengine.com/media/1030/enterprise-credit-risk-management.pdf>)
  - Elements of Financial Risk Management Second Edition Peter F. Christoffersen
  - FAA System Safety Handbook(2000), Chapter 15: Operational Risk Management December 30, 2000
  - M Haritha, Mrs. (2012). Role of Venture Capital in Indian Economy. IOSR Journal of Business and Management. 4. 46-70. 10.9790/487X-0424670.
  - Priyanka Shorewala , Priya Chaudhary (2016), "Why Indian Startups Fail?-Do's and Don'ts",
  - IOSR Journal of Business and Management (IOSR-JBM) e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 18, Issue 2 .Ver. IV (Feb. 2016), PP 12-16 [www.iosrjournals.org](http://www.iosrjournals.org) DOI: 10.9790/487X-18241216 [www.iosrjournals.org](http://www.iosrjournals.org)
  - Role of Venture Capital in Indian Economy ,Mrs.M Haritha, ,Mr. Ravi V,Mr. Maruthi Reddy,(Sep,-Oct. 2012)IOSR Journal of Business and Management (IOSRJBM)Volume 4, Issue 2, PP 46-70

**WEBSITES**

- Entrepreneurial India- How startups redefine India's economic growth
- <https://d1iydh3qrygeij.cloudfront.net/.../Entrepreneurial%20India%20IBV%20mid%20...>
- E-distributor Just Buy Live suspends ops nine months after claiming
- <https://techcircle.vccircle.com/.../e-distributor-just-buy-live-suspends-ops-nine-months...>
- 2018 In Review: 10 Of The Biggest Startup Failures In India - Inc42
- <https://inc42.com/features/2018-in-review-10-of-the-biggest-startup-failures-in-india/>
- Venture Intelligence(2018)
- <https://www.ventureintelligence.com/downloads/pe-trend-report-2018.pdf>

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**SEED PRIMING WITH TiO<sub>2</sub> NANOPARTICLES, BOON TO RECENT AGRO BASED PRACTICES**

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**ABSTRACT**

*Nanotechnology is emerging out as the greatest imperative tools in recent agro-world and predictable to become a driving economic force in near future. In order to promote sustainable nano agriculture, biocompatible Anatase nanoparticles (TiO<sub>2</sub>) on seed germination have been efficiently practiced. However, nano priming is a novel method to elevate seedling vigor, improvement of germination percentage, germination index, mean time germination and seedling growth. Keeping the researchers work into consideration, the following review emphasizes on employment of Anatase nanoparticles on certain medicinal plant species namely Salvia mirazayanii, Alyssum homolocarpum, Sinapis alba, Carum copticum, Nigella sativa and food crops like Parsley (Petroselinum crispum). Nano-priming technique is studied on concentration dependent manner using nano-sized TiO<sub>2</sub> followed by characterization of TiO<sub>2</sub> which is examined by X-ray Diffraction (XRD) and Transmission Electron Microscopy (TEM). Simultaneously seed priming using Carbon nanotubes for Caucasian alder (Alnus subcordata), Silver Nitrate nanoparticles for rice (Oryza sativa), wheat (Triticum aestivum), barley (Hordeum vulgare) and Zinc Oxide nanoparticles for rice (Oryza sativa), also captivates keen insight in improved seed germination in agro crops. Based on the results revealed by the researchers, it reveals that an increase in concentration of nano primed material using TiO<sub>2</sub> nanoparticles invigorates the percentage of germination, germination index and vigor index in all the species mentioned above, proving nano priming as an ideal approach towards improving seed production in the escalating agro field.*

*Keywords: Nano priming, nanoparticles, agro-world, seed germination, seed vigor.*

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**INTRODUCTION**

With the progression of Nanotechnology in various fields, researchers have studied the effects of nanomaterial on plant germination and growth with the objective to promote its applications in agriculture (1). One of the efficient technique to enhance seed germination rate and percentage, steadier and faster seedling emergence, and resistance against biological pests and environmental stresses is seed priming through different nano materials and solutions. The percentage of seed germination depends on the permeability of the seed coat and the amount of water available in the germination circumference (2). The ninth most abundant element and the second most abundant transition metal in the earth's crust is Titanium. The important aspects of Ti based compounds on plants include enhancement of the yield, improvement of some essential contents in plant tissues, increase in peroxidase, catalase, and nitrate reductase activities and enhancement of the chlorophyll content. It has been reported that the germination rate and the germination and vigor indexes of spinach with Nano sized TiO<sub>2</sub> treatments are improved in comparison with bulk-TiO<sub>2</sub> treatment.

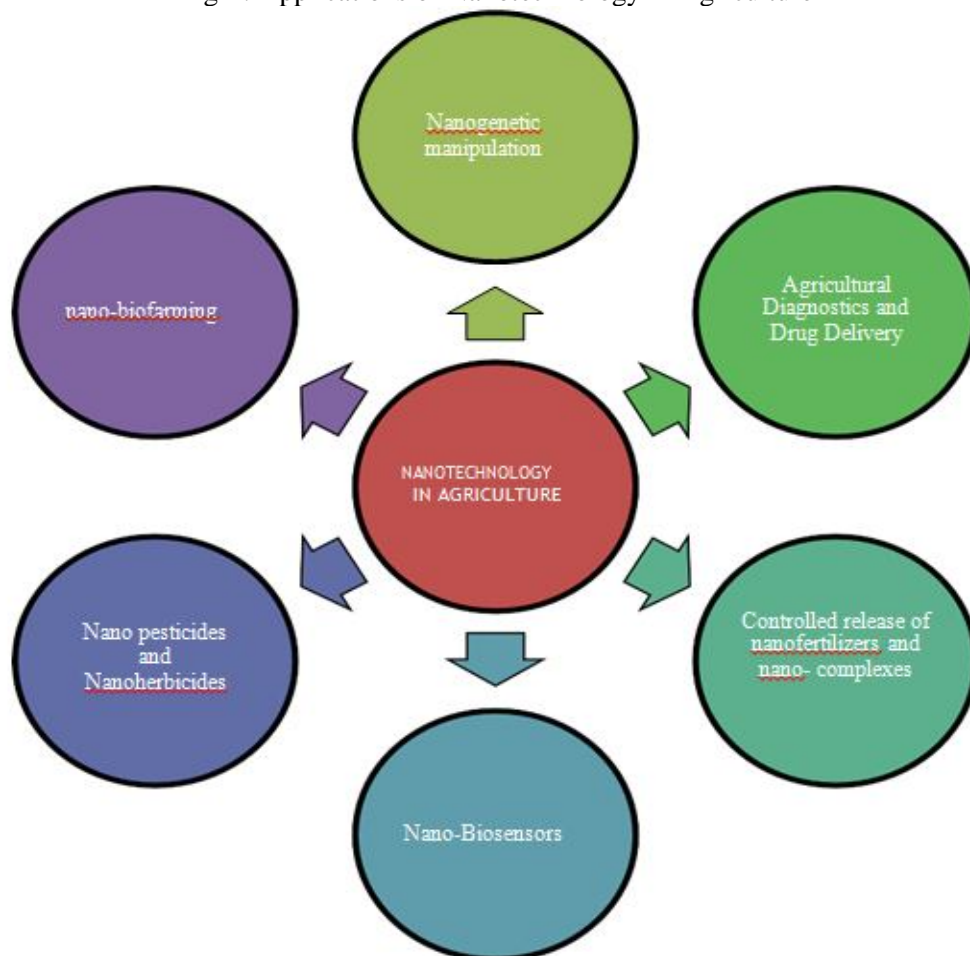
Parsley is one of the most important vegetable whose seeds take a long time to germinate, especially under unfavorable environmental conditions. The germination percentage of parsley seed is as low as 55–75 % in these conditions, thus leading to smaller seedlings. However, uniformity and rapidity of seed germination and emergence are essential to increase yield, quality, and profits in crops (3). Parsley proves to be a great example in which nanotechnology can be applied to solve germination related issues hence resulting in it better yield. Similarly, a few studies have been done on the effects of nanoparticles on several medicinal and aromatic plants. The effects of nano-TiO<sub>2</sub> and non-nano-TiO<sub>2</sub> on the germination and growth of naturally aged seeds were studied (4) reported that nano-TiO<sub>2</sub> in a suitable concentration can promote the seed germination of wheat in comparison to bulk TiO<sub>2</sub> but, in high concentrations, had inhibitory or any effect on wheat. Along with TiO<sub>2</sub> nano particles, other reported nanomaterials in agriculture are carbon nanomaterials namely single walled carbon nanotubes (SWCNTs) and multi walled carbon nanotubes (MWCNTs). Their effects have been studied in seeds such as tobacco, tomato, barley, corn, soybeans, cotton and maize etc. Meanwhile for the rice seeds, apart from MWCNTs also have been investigated. keeping the above reviews in view, we aim to find out the phytotoxicity or positive effects of different concentrations of nano sized TiO<sub>2</sub> on seed germination parameters and seedling growth of some commercially important plants.

**Nanotechnology in agriculture: an overview**

Contributions of nanotechnology in agriculture are increasing day by day in order to achieve higher and more stable yields of crops. The properties and possibilities of nanotechnology, having great applications in

agricultural include high reactivity, enhanced bioavailability increased bioactivity, effective adherence and surface effects of nanoparticles (5).

Fig-1: Applications of Nanotechnology in Agriculture



Nano biofarming enhances crops yield and nutritional values as well as augments environmental remediation. Gene manipulation in the agro practices are possible using nanoparticles, nanofibers and nano capsules. The nanoparticles that find utmost applications in agriculture are Silver, Silicon dioxide, Potassium, Iron and Magnesium.

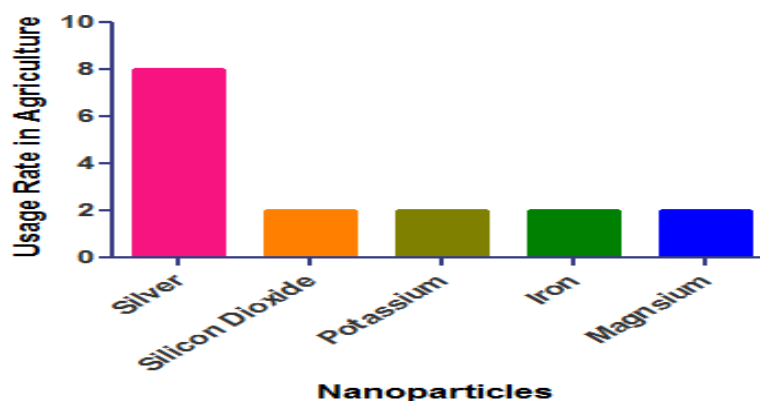


Fig-2: Nanoparticles in Agriculture

Nano drug delivery smart systems deliver precise quantities of nutrients or other agrochemicals which in turn monitor and minimize pesticide and antibiotic usage for crop improvement. Slow- release fertilizers are excellent alternatives as nutrients to soluble fertilizers which are released at a slower rate throughout the crop growth. Plants are able to take up most of the nutrients rather than wasting them by leaching which can be achieved by using nano zeolites. Nano biosensors are utilized for the detection of analytes like urea, glucose, pesticides etc., monitoring of metabolites and detection of various plant pathogens. Soil moisture and temperature are important parameters in terms of crop production. Hence irrigation management systems should get accurate updates about these parameters at the root level of plants.



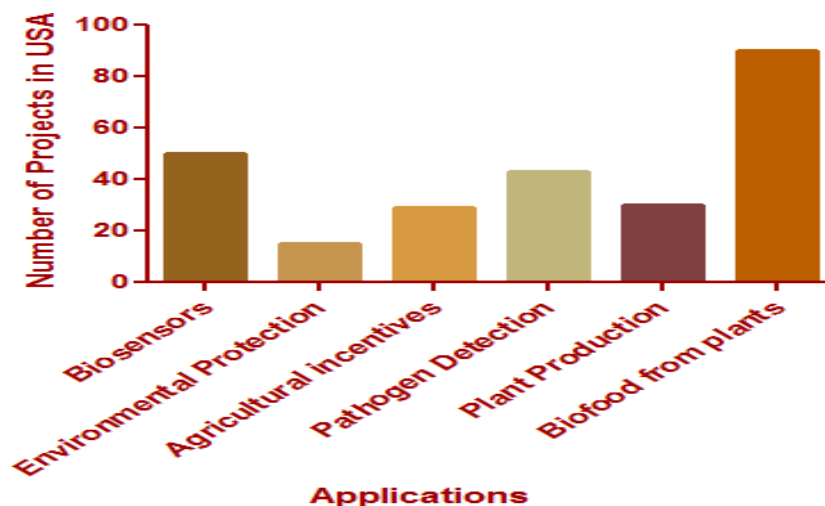


Fig-3: Different applicative Agri- Nanotechnology Projects in USA

MEMS (Micro Electro Mechanical Systems) cantilever beams coated with a water sensitive nanopolymer and on chip piezo resistive temperature sensors are exploited for monitoring temperature and moisture. Similarly pesticides inside nanoparticles are being developed that can be time-released or have release linked to an environmental trigger 6). Nanotechnology improves their performance and acceptability by increasing effectiveness, safety as well as ultimately reducing health care costs.

#### Limitations of current treatment regimes

Agriculture is the largest interface between humans and the environment but is also the major cause of climate change and ecosystem degradation. Pesticide use has dramatic consequences both in developed and developing countries. The chemicals used in the pesticide induce oxidative stress leading to generation of free radicals and alterations in antioxidants scavenging enzymes. Synthetic pesticides are the main cause of bringing about resistance in these pests. Use of pesticides as a seed treatment agent is becoming a regular practice. Also, the most widely used fertilizers contain ammonium chloride, calcium cyanamide, potassium sulfate, synthetic urea, calcium oxide, potassium ammonium sulfate etc. Calcium cyanamide is reported to be the most harmful fertilizer towards seed germination. In some instances, synthetic urea has marked effect on seed germination. Germination risk generally increases with increasing salt index in particular containing more ammonia (7). Nowadays seeds coated with sodium alginate increases the permeability which leads to loss of nutritive substances (artificial endosperms), dehydration risks and detrimental effects on seed conversion and plantlet growth (8). Encapsulation results into improper maturation of embryo and hence reduces the viability of the plants. It imposes difficulties of sowing these encapsulated seeds in soil or commercial substrates such as vermicompost under non-sterile conditions. Hence sustainable agriculture aims at long term maintenance of natural resources and agricultural productivity with minimal adverse impact on the environment through some alternatives to control these detrimental effects.

#### Development in treatment regimens using Nanotechnology: Past and Present

The growing population of the world demands the surge in production of agriculture output but the increasing plant pathogen and pest problem hampers the production thereby generating pressure on the government and non-government agencies to adapt new technology to fulfil the food production goals. It is necessary to improve the techniques for a significant contribution in agricultural practice (9). Use of chemical fertilizers increases crop productivity but is not a suitable option for the long run as it disturbs the soil, mineral balance, and decrease its fertility hence rendering the seed germination. To fulfil these demands government has shifted focus towards nano approach in agro based research. It started with nano herbicides and nano pesticides and the field has spread across since then with different nano materials finding different applications in agriculture with their own benefits. Currently nano capsules have shown controlled release and slow degradation of active ingredients making them more potent in controlling the plant diseases and pest as well as stimulating the seed germination properties. Nano emulsions are developed to improve solubility and spreading capacity of pesticides by dispersing into two liquid phases. These nano emulsions lead to greater spreading ability, wettability and superior mechanical stability in comparison with normal pesticide. Recently nano pesticides which were previously available in the market have been modified help to reduce their toxic effects of and provide target specific control of pests thereby minimizing the adverse problems to agriculture such as environmental imbalance, food security and food productivity. Pre-treating seeds with nano fertilizer markedly accelerates germination measurements, stem length and diameter, elongation of secondary and primary roots,



and number of secondary roots thus increasing the moisture content of seed which in turn increases germination percentage and rate. Additionally, all the amount of nano fertilizer covered by plants via slow and continuous release of fertilizer produces stronger seedlings (10). Zeolites are natural alumina silicates that are beneficiary in agriculture due to its porosity, cation exchange capacity, molecular sieving, desorption and selectivity of ammonium and potassium cations. Zeolites are nowadays employed as fertilizers, chelating agents and stabilizer due to their ability to loose and gain water reversibly without the change of crystal structure. These Nano techniques also pose adverse effects on the environment and biological systems when used in higher concentrations by generating free radicles leading to DNA damage. Hence there a need to switch to a more advanced, reliable, and ecofriendly technique that enhances the seed germination. One such technique is nano priming which emphasizes on use of nanoparticles to prime the seeds with the purpose of increase the germination properties. The seed germination responses of five different aromatic medicinal plants, *Salvia mirzayanii*, *Alyssum homolocarpum*, *Sinapis alba*, *Carum copticum*, *Nigella sativa* and food crop like *Petroselinum crispum* with different  $\text{TiO}_2$  nano particles treatments in appropriate concentrations accelerates the germination process (11).

**Seed priming-** An important tool in agro industry Seed priming is a technique that partially hydrates seeds in natural or synthetic compounds under specific environment to a point where germination-related metabolic processes begin. Seed priming improves the seed quality, seedling establishment, crop yields and also increases the tolerance to environmental stresses (12). Seed priming improves the germination of weak, damaged or aged seeds even under adverse environmental conditions. Increased germination rate by seed priming technique may be due to increased rate of cell division in the root tips of seedlings from primed seeds. The vacuum created inside the seed as a result of priming makes water flow easier, thus contributing to tissue hydration. The positive effects of priming are associated with a wide range of metabolic and physiological improvement. The germination traits of the primed seeds are higher than those of unprimed ones under normal and drought stress conditions (13). Hence seed priming marks a remarkable position in nano agro industry

**Ti compounds:** A priming tool for nanotechnology The Ti compounds enhance the yield of various crops thereby improving the essential elemental contents in plant tissues. Ti uptake as a nutrient by roots is found to be more effective than spraying it on the leaves. The germination rate, percentage and vigor indexes increases with nanosized  $\text{TiO}_2$ .  $\text{TiO}_2$  nanoparticles are used for improvement of physiological and morphological characteristics of crops.

Application of  $\text{TiO}_2$  nanoparticles on food crops promote plant growth, increase the photosynthetic rate, reduce disease severity and enhances yield by 30%. (14) Priming with  $\text{TiO}_2$  nanoparticles improves the plant efficacy and reduces the incidence of fungal and bacterial diseases.  $\text{TiO}_2$  nanocomposites stimulate the plant physiological defenses.

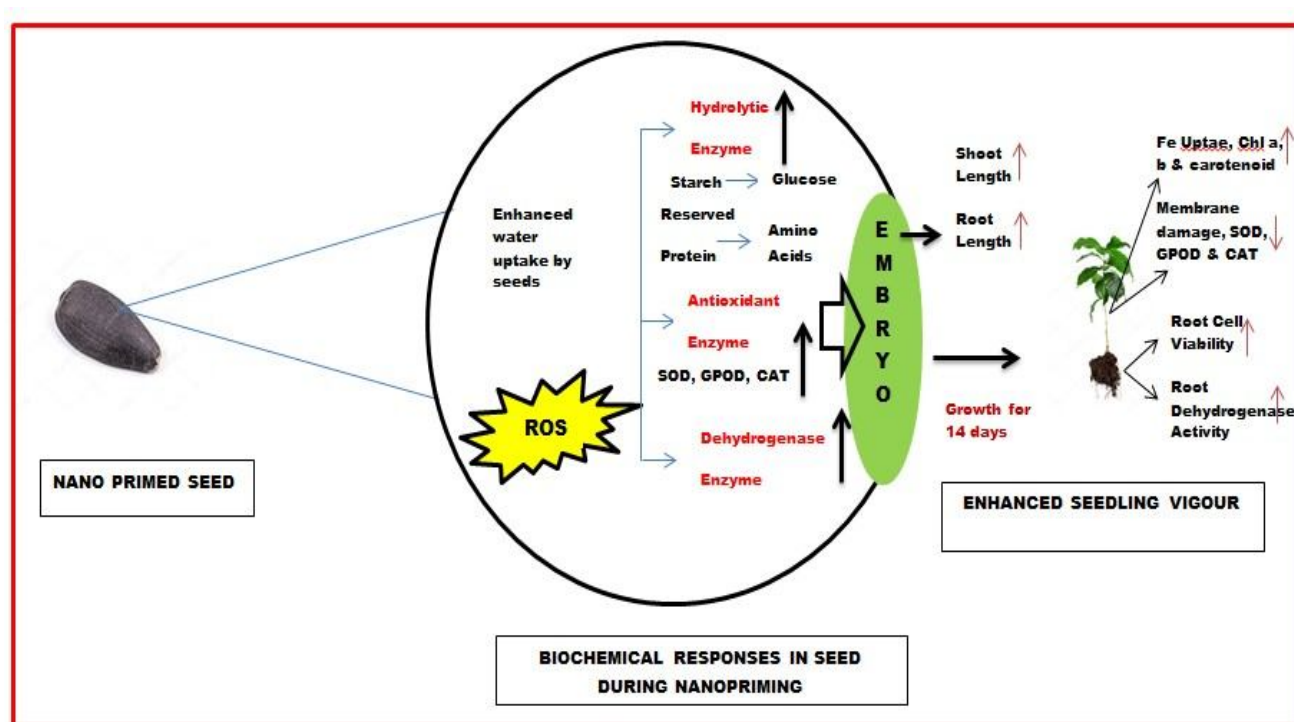
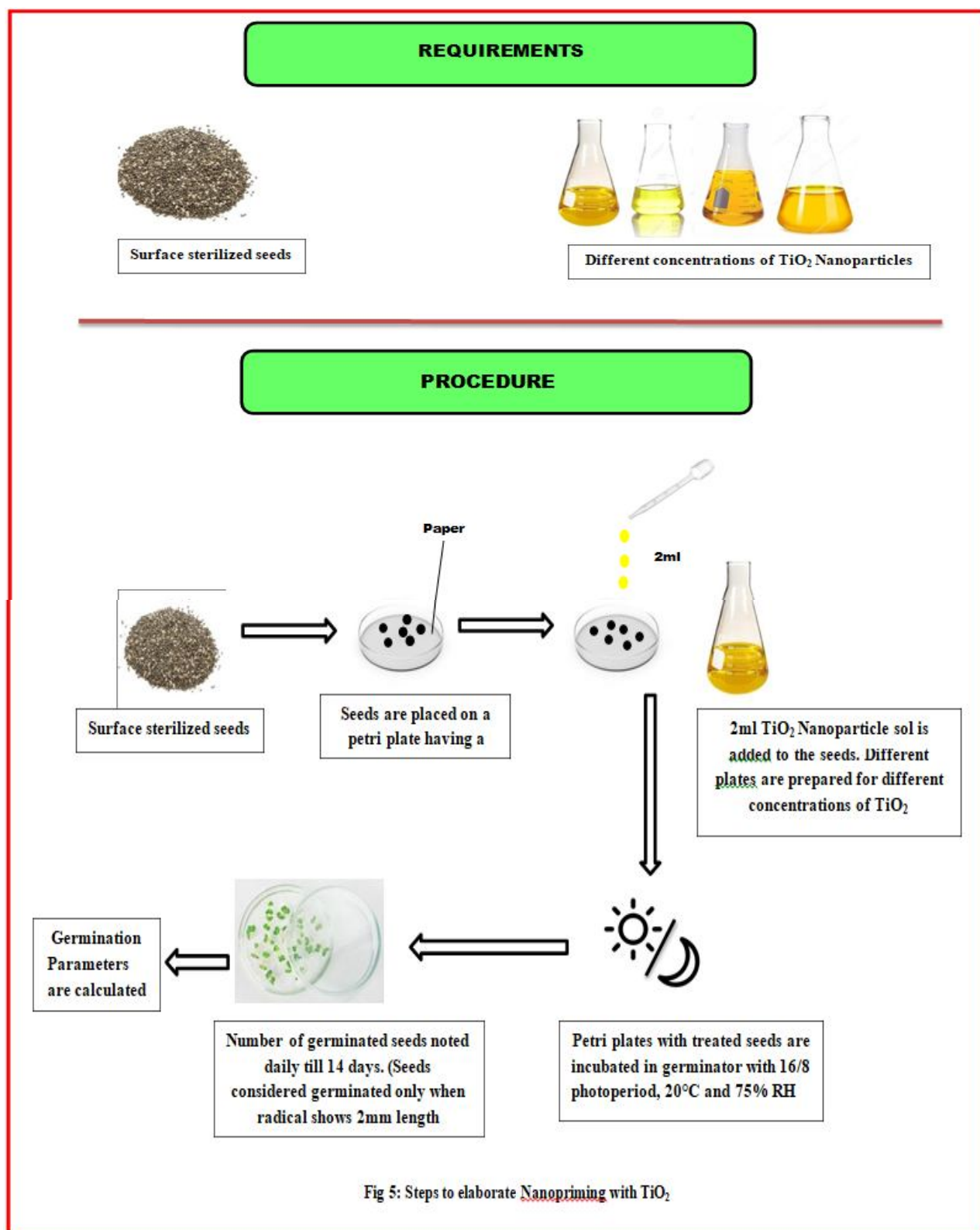


Fig-4: Biochemical reactions in a seed due to nano priming

Seeds to be germinated are surface sterilized using ethanol, sodium hypochlorite (NaOCl) and washed with sterile distilled water to remove the traces of NaOCl. Stable  $\text{TiO}_2$  suspensions of different concentration are obtained by an ultra-sonication treatment of  $\text{TiO}_2$  nanoparticle powders dispersed in water. The sterilized seeds are placed on paper in Petri dishes and nanoparticle solution is added in the increasing concentration. Distilled water is used as a control. Petri dishes containing seeds are transferred to germinators with 16/8 h photoperiod,  $20 \pm 2^\circ\text{C}$  temperature and relative humidity of 75%. Number of germinated seeds is noted daily for a period of 14 days. Seeds are considered germinated when the radicle shows at least 2 mm in length. The germination characteristics such as germination percentage, mean time germination, germination rate, germination index and vigor index are then calculated based on their formula (15)



Using TiO<sub>2</sub> as a nano priming agent a lot of research has been conducted on several plants and their germination parameters have been checked and it has been concluded that use of TiO<sub>2</sub> can increase germination efficiency of all variety of seeds.

Nano priming: A prime tool for seed germination Nano priming agents escalate seed germination of various plants by increasing seedling vigor, seedling growth and improvement of germination percentage (16) This method also enhances the activity of  $\alpha$ -amylase, which results in higher soluble sugar content in turn improving the seedling growth. Different mechanisms underlying nano priming-induced seed germination includes creation of Nano pores which enhances water uptake, rebooting ROS/antioxidant systems in seeds, generating hydroxyl radicals for cell wall loosening, and nano catalyst for intensifying starch hydrolysis. Nano priming of seeds with nanoparticles remarkably foster the seed germination due to penetration of nanoparticles through the seed coat which leads to the activation of embryo. Nano priming results in boosting resistance of various seeds against stress conditions, thus increasing seed tolerance. The germination properties of nano primed seeds are higher than that of the unprimed ones. Nano primed seeds also enhances the expression of genes (17). Due to these multiple significances the graph of using nano priming in agriculture is rising at a steady rate Conclusion and future prospects Nano priming is a recent advanced technique utilized to improve the germination characteristics of seeds proving a boon to agriculture. According to the research conducted till date we can state that Titanium dioxide Nano primed seeds show an increased penetration power, facilitating the entry of water and oxygen into the cells thereby increasing the absorption of nutrients, a parameter that is responsible for the stimulation of the germination properties. The seed germination and vigor index responses of several aromatic medicinal plants like *Salvia mirzayanii*, *Alyssum homolocarpum*, *Sinapis alba*, *Carum copticum*, *Nigella sativa* as well as the food crops parsley are assessed with different concentration of TiO<sub>2</sub> nanoparticles, which led to the acceleration of their germination characteristics. Alongside other nano-materials like carbon nanotubes, zinc oxide nanoparticles, Silver nanoparticles have also shown positive results for various crops by enhancing their germination capacity. It is necessary to access the harmful effects if any for such nano materials in future and also study the necessary solutions for them. Since Nano priming is still a nascent field, ample research yet needs to be carried out to negate its possible harmful effects on the seeds and plants. It is also imperative to spread awareness about the concept and its benefits to ensure a complete switch from chemical based seed treatment agents to nano priming.

## REFERENCES

1. Khot LR, Sankaran S, Mari Maja J, Ehsani R, Schuster EW (2012). Applications of nanomaterials in agricultural production and crop protection: A review. *Crop Protection* 35:64-70.
2. Khodakovskaya M.V., de Silva K., Biris A.S., Dervishi E., Villagarcia H. (2012): Carbon nanotubes induce growth enhancement of tobacco cells. *ACS Nano*, 6: 2128–2135.
3. Elahe Hashemi Dehkourdi, Mousa Mosavi (2013) Effect of Anatase Nanoparticles (TiO<sub>2</sub>) on Parsley Seed Germination (*Petroselinum crispum*) In Vitro
4. Reyhaneh Azimi, Hassan Feizi, Mohammad Khajeh Hosseini (2013) Can Bulk and Nanosized Titanium Dioxide Particles Improve Seed Germination Features of Wheatgrass (*Agropyron desertorum*) 5(3):325-331
5. utiérrez FJ, Mussons ML, Gatón P, Rojo R 2011 Nanotechnology and Food Industry. Scientific, Health and Social Aspects of the Food Industry, In Tech, Croatia Book Chapter.
6. Nair R, Varghese SH, Nair BG, Maekawa T, Yoshida Y, Kumar DS 2010 Nanoparticulate material delivery to plants. *Plant Sci.* 179: 154 163.
7. M.D. Craighead: Effects of Fertilisers on Seed Germination in New Zealand
8. Micheli M, J Microencapsul.(2002) Effects of double encapsulation and coating on synthetic seed conversion in M.26 apple rootstock.
9. Hemraj Chhipa (2017) Nanopesticide: Current status and Future Possibilities
10. Antar Badran (2018) Effect of Nano-Fertilizer on Seed Germination and First Stages of Bitter Almond Seedlings' Growth Under Saline Conditions
11. Mehrnaz Hatami\*, Mansour Ghorbanpour and Hossein Salehiarjomand(2014): Nano-anatase TiO<sub>2</sub> Modulates the Germination Behavior and Seedling Vigority of some Commercially Important Medicinal and Aromatic Plants 53-59

- 
12. Sheteiwy Mohamed Salah, Guan Yajing, Cao Dongdong, Li Jie, Nawaz Aamir, Hu Qijuan, Hu Weimin, Ning Mingyu & Hu Jin (2015) Seed priming with polyethylene glycol regulating the physiological and molecular mechanism in rice (*Oryza sativa* L.) under nano- ZnO stress
  13. Min Yan, Seed (2015) Priming stimulate germination and early seedling growth of Chinese cabbage under drought stress, Volume 99, Pages 88-92
  14. Sheteiwy Mohamed Salah, Guan Yajing, Cao Dongdong, Li Jie, Nawaz Aamir, Hu Qijuan, Hu Weimin, Ning Mingyu & Hu Jin (2015) Seed priming with polyethylene glycol regulating the physiological and molecular mechanism in rice (*Oryza sativa* L.) under nano- ZnO stress
  15. Mehrnaz Hatami\*, Mansour Ghorbanpour and Hossein Salehiarjomand (2014) Nano-anatase TiO<sub>2</sub> Modulates the Germination Behavior and Seedling Vigority of some Commercially Important Medicinal and Aromatic Plants 53-59
  16. D. Rahimi, D. Kartoolinejad, K. Nourmohammadi, R. Naghdi (2016) Increasing drought resistance of *Alnus subcordata* C.A. Mey. seeds using a nano priming technique with multi- walled carbon nanotubes 6: 269–278
  17. Hanan M. Abou-Zeid<sup>1</sup> and Yehia Moustafa<sup>2</sup> (2014) Physiological And Cytogenetic Responses Of Wheat And Barley To Silver Nanoprimer Treatment volume 2 issue-5

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**INDUSTRY 4.0 FRAMEWORK FOR CHALLENGES IN CURRENT MARKETING STRATEGIES OF HANDICRAFT PRODUCTS AND ITS IMPLICATIONS**

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**ABSTRACT**

*Industry 4.0 framework is changing the scenario of business globally. Internet of things and Artificial Intelligence are taking over the conventional model of business. Marketers are facing various major challenges and struggling more in order to sell their product and services in the real time market environment. With changing needs of customers and volumes of information available about a particular product of service, customers are forced to do good amount of research in choosing a product or service. This brings greater challenges to the market research professionals to design their strategy. The reasons are many to quote as manufacturers and producers are not satisfied with financing and marketing aspects of handicraft products. Education level, poverty are some of the recognised problems where artisans to depend on an agents to market their finished products, supply of raw materials and financial requirements. The success of any products depends on personalized and customization of services to customers and effective marketing strategies. As it is well known that rural areas are not more exposes to medias and online marketing strategies, facing problem in effective marketing of handicraft products and not aware about current marketing tools in order to make it effective implementation as they depend on agents for market information. This research paper will focus on identifying industry 4.0 framework marketing strategies using and implementing in the handicraft sectors and crating awareness among the artisans. The study based on collection of secondary data as sources of information. As study is conducting only in handicraft products the outcome will not be generalized to any other sectors in the market.*

*Keywords: Manufacturers, Poverty, Customization, Marketing Strategies, Handicraft Products.*

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**INTRODUCTION**

In India cultures and traditions are represented in many ways. It includes the way people dress up, language, values, attitudes and societal norms. Taking into consideration of dress up people have many types and trends. When taken trends as an example teenage to old age customers find many choice according to their requirement. Handicraft is another product represents its own culture and tradition having an impact on all age group in the market. Decorating a home, fashion jewellery, collage, paper cutting, pottery and many other have more demanding nature in the current market trend. Even though these handicrafts products are not finding a proper and effective marketing trend but the skills and efficiency of artisans and craftsmanship are not going waste. In the present scenario of industry 4.0 framework globally, and liberalization and privatization having created market for all the major commodities in the countries, the handicrafts products also grab the opportunities of globalization and finding a way in the global market. Personalization of the handicraft products requirement and accessibility to national and international market makes handicraft product sectors more demanding. In such a circumstances competitions also increased in many part of the globe especially in China and Asian countries. The All India Handicraft Board which was established in 1952 assisted the respective state governments in setting up their Design and Technical centres in Tamilnadu, Kerala, Andhra Pradesh, Manipur, Tripura, Haryana, Goa, West Bengal and many other states. The craftsmen and artisans jointly work to get new design and they strive to blend tradition with fashion touch. The designer needs to get update regarding changing customer needs especially the foreign market requirements. When artisans and craftsmen finding difficulty in procurement of all factor of productions in producing different types of handicraft products, they also find difficulties in marketing them, as they face problems in promoting the products. The urban promotion strategies are differing from that of semi-urban and rural markets. Depending up on the place where products need to be get promoted the strategies need to be framed accordingly. Some of the current marketing strategies including rural areas are, exhibitions, retailers, Melas, Van Campaign, Huts and now a e-marketing in booming.

**NEED OF THE STUDY**

The future of business is going to be Artificial intelligence and machines being overtaking human resources and targeting profitability, flexibility and creative products. Handicraft products will have a greater challenge to showcase their uniqueness. The prime position acquired by Handicraft products in the Indian economy, next to agriculture sector. Generation of employment is also more in the form of entrepreneur and start-ups. Handicraft products are not only the marketable products but also it represents many culture, tradition and heritage of the country. Designs are blended with current fashion touch the artisans faces many problems in marketing this as

low investment, low returns, small scale operations, lack of financial resources, advertising, publicity and promotional activities are not undertaken in large scale. The different corporation should save the artisans from these problems by exploitation of middlemen's, and providing purchasing products at remunerative prices by the government. Craftsmen development and awareness programmes need to be conducted by the government centres in order to make movement of handicraft products in both traditional and modern method.

### **LITERATURE STUDY**

**Waquar Ahmed Khan and Zeeshan Amir (2013):** In their study more elaborated on handicraft marketing strategies of artisans in Uttar Pradesh and its implications. This research paper basically focused on marketing concept of four P's i.e., Product, Place, Price and Promotion. The research is based on only secondary sources of information where research referred more research journal, articles and books. They emphasised more on different marketing strategies used and implemented in Uttar Pradesh and having an impact on sales and distribution of handicraft products. Some of the promotional strategies are network marketing, online marketing, cooperatives, government centres and others.

**Ms. Neha Nagori, Dr. Karunesh Saxena (2012):** In this research paper the researcher focused on Marketing of Rural Handicraft Products through retail format. This study is based on both primary and secondary data. The researcher also adopted effective statistical tool for data analysis in order to get accurate results. The study discloses the effectiveness of the retailers in the rural area in order to mobilize the handicraft products.

**Darakhshan (2011):** In this study the researcher output the significance of handicraft for the economic development of the country including various types of products like, hand woven articles, shawls, fashion jewellery. These are all considered as potential back bone of the country economic and creating market for export to other areas of the world.

### **OBJECTIVES OF THE STUDY**

- To know the various methods of current marketing trends available in marketing handicraft products in general.
- To know the key marketing facilities provided by various government centres.
- To know the marketing trend this has more impact on fast moving of handicraft products.

### **RESEARCH METHODOLOGY**

This research is Exploratory type of research as research is based on secondary sources of data like collection of data from various research journals, articles, websites, books and some available government data.

### **LIMITATION OF THE STUDY**

- The study conducted on for short duration of time.
- The collection of data is mainly depends only on secondary data.
- As explorative type of research is adopted, a further research may get only limited base for their study.

### **MARKETING STRATEGIES IN HANDICRAFT PRODUCTS.**

To discuss important aspects of handicraft products, consider major marketing mix like; Product, Price, Place and Promotion.

**Products:** As all know a product is a bundle of physical and intangible attributes which satisfy the needs and wants of customers. Here the physical attributes of the handicraft products are actual final products where customer purchases it along with intangible attributes like its colour, design, form, features, brand and packaging. Colours, design and forms are tailored and personalized according to the taste and preferences of the individual customers, Brand, features and packaging also have impact on the products.

**Price:** Price is a very sensitive marketing mix. Due to less investment on handicraft products, producer cannot quote less prices for the products. It depends on the target audience and market segmentation to decide price of the products. If the target customers are more and market size is large then producer could take a chance of fixing more prices and target customers are limited and segmented market size is less, then they could fix minimal prices. When the condition like producers cannot decide on target customers and market segment size product prices depends on cost plus profits which will be having penetration to the market and slowly attracting the customers.

**Place:** Distribution is concerned about making availability of products to all the needy customers. The normal distribution channels like manufactures, wholesaler, retailers and jobbers may not work in the distribution of



handicraft products as it is a small sector. Some of the ways to distribute the handicraft products are; Producers sell their articles directly to the customers, handicraft producers may sell to nearest dealers which may have connectivity with the customers, handicraft producers may sell to government centre like different state centres which comes under 'All India Handicraft Development Corporation', and lastly the producers may depends on some co-operative societies also to mobilize their products.

**Promotion:** It is gap bridging tool used in marketing. Promotion mix involved advertising, publicity, sales promotion and personal selling.

**Advertising of Handicraft Products:** The small scale operation of the artisan and craftsman does not encourage them to depend on advertising of products individually. Some of the promotional activities include; trade fair, exhibitions, melas, hoardings in some important place may be undertaken by the government corporations.

#### SOME OF THE ADVERTISING STRATEGIES CURRENTLY HAVING MORE IMPACT ARE

**Trade show:** Which is very familiar in urban and semi-urban places where large number of customers are gathered and encouraged to fast move of handicraft products.

**Exhibitions:** One of the most effective tool of promotion especially for handicraft products where various varieties of products are exhibited and also sales. Most of the time the manufacturers participates in the exhibition and sell the products directly to the customers, where manufacturer are more benefitted without a middlemen.

**Melas:** The face of exhibition is mela where having familiar with most of the rural customers. This is mostly conducted during a time of any festival in that particular place for a particular duration of time. This helps to create awareness among the rural customers on availability of handicraft products. As it is not much costlier products, the rural customers also come forward to make a purchase.

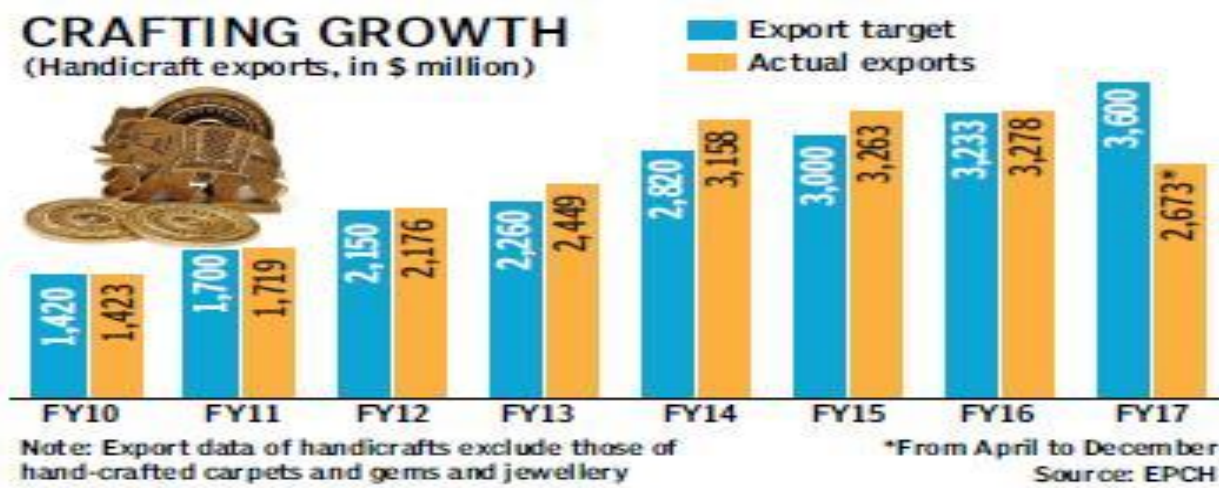
**Hoardings:** Place allotment and price of the hoarding are costlier when compare to any other form of promotion. These activities are undertaken by government corporations to encourage the handicraft sectors.

**Online:** Very much suitable for current marketing condition and cheapest and fastest method of promotion to reach large number of customers in short duration. Many service providers are quoting reasonable and economical price to get promotion of handicraft products through online. Some of the web also developed in order to promote and to undertake selling activities of handicraft products. Some of the examples are Sampada, Gaatha, Hands of India, Aaraa by Avantika, The Khadi cult and many others.

#### SOME OF THE OTHER TRENDS OF MARKETING HANDICRAFT PRODUCTS ARE

- Tents and small open shops near bus stands, railway stations and metro stations where mobility of the customers are more.
- Displays and sale of handicraft products specially fashion jewellery in beauty spa.
- Mobility of handicraft products near schools and colleges especially the hand bags, stationary, backpacks, files and other products.

#### Potentiality of Handicraft Products in Global Market



The above graph represents export of handicraft products from the financial year 2010 to financial year 2017. When compared with export target and actual export every financial achieved the actual exports and in financial year 2013, 2014 and 2015 consecutively increased between targeted and actual export figures. It is a replica of growth and potentiality of handicraft products and where it shows the responsibilities of the respective government to take a step forward to do modification and improvement in this sector.

### **REQUIREMENT OF SMART INDUSTRY IN HANDICRAFT SECTOR**

As study reveals that there is a potential improvement and increase in export process of handicrafts products to different countries of the globe, it is necessary to think in way of taking revolutionary decisions of 'Smart Industrialisation of Handicrafts Sector'. Industry 4.0 majorly used across Europe, particularly in German manufacturing industries.

Since 1970, India and all over the world have adopted the process of automation and robotic technologies. General adaptation of information technology and communication is a required part of all manufacturing industry to develop production, in logistic and supply chain management. The reason for increasing productivity and maintaining quality with limited time due to increase in population in country like India.

Handicrafts products also come under the umbrella of Small and Medium Scale Industry. When personalisation and customisation is possible in handicraft products, real time and fast flow of information is required to face the competition in the market environment. In the same way India need to take few steps forward to make manufacturing success story in Industry 4.0. The growth of Smart industry based on effectiveness of IOT and IIOT. Even though Indian IOT is emerging now it is a critical part of India to transform India into digital knowledge driven economy.

Industry 4.0 involves Human-machine engagement. This is possible in the sector of handicraft products. As production of handicraft products depends on involvement of more humans to gather real time and big data the concept of Industry 4.0 may have more impact. Not only in the production process, in the field of advertising and promotion, the handicraft using internet. Make use of internet and IOT may bring revolutionary impact and changes in this sector.

Innovation, effective globalization, product flow, greater flexibility in changing environment, effective utilization of resources are some of the benefits' of industry 4.0. On the other hand challenges faced in India to make effective implementation of Industry 4.0 are problem in training, lack of research, strong network infrastructure and efficient cyber security. First and foremost India has the essence of speed in order to grab the opportunities, increase the competitiveness and gradually implementing the strategies in all the sectors of Industry.

### **FINDINGS**

- The export of handicraft products from India increased by 1.65 % during April-November, 2018.
- Export of some handicraft products like Shawls 77.50%, Woodwares 23.57 % and miscellaneous by 19.74% shows positive growth in the global market.
- Handicraft products are exported across top 10 destinations which includes US, the UK, the UAE, Germany, France, Canada, Australia, Netherlands, Italy and LAC (Latin American Countries)
- Indian government increased incentives to 7% from 5% for handicraft products which will help exporters to recover input costs through Merchandise Export from India Scheme (MEIS)
- The apex government body EPCH (Export Promotion Council for Handicrafts) were established which operates and control of the Ministry of Textiles, Government of India.
- Increase in gold price now and then, fashion jewellery demands are increasing rapidly
- Trends are very temporary in nature, the fashion products are changes its design very frequently and there is no universally accepted design followed.
- Plan of 4<sup>th</sup> industrial revolution may have greater impact in the handicrafts sector as to mobilize the products in all over the globe in order to face the competition on real time information basis.

### **SUGGESTIONS**

- There is an issue of Intellectual Property Rights (IPR), hence most of the artisans and craftsmen's are very sensitive in sharing designs and tools used.



- Uniform pricing system to be implemented as it differs from place to place and depends on various forms of promotional activities.
- Government has to step forward in the field of Research and development of Handicraft sectors as it is operating in small scale, in order to bring changes in this sector which helps in reaching top spot in global market.
- For most of the handicraft products merely no competitors, no alternatives and threats of new entrants is also less. Utilize this situation effectively for effective positioning of handicraft products.
- Collaboration with other countries to upgrade the design and framework of handicraft products where it creates demands itself in the market.
- The handicraft sector utilizes both online and offline channels of sales.
- Government of India has to take step forward to transform to digital India infrastructure as it helps rapid growth of the entire industrial sector.

### CONCLUSION

As the journey of the research state that handicraft is a potential market in the Indian economy where it is having scope for entering in to the global market in the name of Export. Many strategies are framed in order to protect the hard work and efficiency of artisans and craftsmen under the Intellectual Property Rights. As compare to the last decade's people are much educated towards all other sectors including the handicrafts. The only lacking is less investments, less cost on advertising and promotional activities making handicrafts to struggle in the market environment with that of the competitors. This study basically reveals that some of the current marketing trends like, trade show, online marketing, exhibition, fairs and melas have impact on mobilization of handicraft products in the market as these strategies eradicate some level of intervention of middlemen and where manufacturers or producers will get better opportunities to get better returns on their investments. These awareness need to be created among the customers as well as producers (artisans and craftsmen). The developmental activities need to be implemented by government centres and cooperatives by taking an initiative for awareness creating programs.

### REFERENCE

- 1) <https://stitchcraftmarketing.com/2018-craft-marketing-trends/>
- 2) [https://www.researchgate.net/publication/320238121\\_MARKETING\\_CHALLENGES\\_OF\\_HANDICRAFT\\_RETAILERS\\_IN\\_CHANGING\\_ENVIRONMENT](https://www.researchgate.net/publication/320238121_MARKETING_CHALLENGES_OF_HANDICRAFT_RETAILERS_IN_CHANGING_ENVIRONMENT)
- 3) [www.isca.in-ISCA-RJMS-2012-057](http://www.isca.in-ISCA-RJMS-2012-057)
- 4) [www.ijmtpublication.com](http://www.ijmtpublication.com)
- 5) <https://www.omicsonline.org/open-access/the -sector-of-handicrafts-and-its-share-in-indian-economy-2223-5833-1000s3-009.php?aid=83355&view=mobile>
- 6) <https://www.ibef.org/exports/handicrafts-industry-india.aspx>
- 7) <https://www.ststista.com/statistics/624202/export-value-of-handicrafts-india/>
- 8) <https://www.financialexpress.com/market/commodities/handicrafts-exports-rise-8-3-to-2-67-bn-overall-textile-garment-sector-trend/514842>
- 9) Kotler,P., Marketing Management, Thomson Press (India) Ltd, New Delhi(2005)
- 10) Anitha, K R(2012), ' marketing Channel Length in rural India: Influence of the external environment and rural retailer buyer behaviour' International Journal of Retail & Distribution management Volume: 40 Issue:3

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## A REVIEW OF INDUSTRY 4.0 APPLICATIONS THROUGH SMART TECHNOLOGIES BY STUDYING EXAMPLES FROM THE AUTOMOBILE INDUSTRY

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### ABSTRACT

*The Industry 4.0 was introduced in World Economic Forum in 2015, and now every industry is in race towards adoption of newer technologies to stay ahead of the competitors by addressing customer requirements and to achieve sustainability in their operations for surviving in the dynamic market. Hence it is necessary to look from people, process and machine perspective how Industry 4.0 is going to have an impact on them. The critical success factors probably can be categorised into technical, organizational, project management, control systems and sustainability.*

*The data generated by the implementation of various technologies give the organizations the capability to optimize processes using technology while in constant search for waste reductions and unstable flow paths. This can have a huge impact on government institutions, manufacturing companies and customers alike. Awareness needs to be generated about the benefits and gaps of these technologies in addition to their applicability, nuances and other labour impact issues while doing a study of the probable models. While Industry 4.0 is proved to be beneficial in developed countries in terms of competitive advantage, it has caused certain labour issues and other concerns.*

*Keywords: Technological advances, Industry 4.0, Information*

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### INTRODUCTION

With the advancement in technology and information systems, it has led to new demand levels from customers of all industries, resulting in an increment in the production systems to provide a rapid and efficient response. The technological tools seek to meet constantly and efficiently customer demand with the organizational structure that works with synergy and add maximum value to the production. The reorganization of operations is not to mark a radical change in the functioning of the organization but to adopt technology and management to the new level of operating systems. Martínez, Lara, Saucedo, Fierro, & Vasant (2017) suggested that keeping in mind the challenges to be met, the key to adapt the logistical means and determine its scope. That is the reason why logistics must be known as an essential part of business today. In the fourth wave of technological advancement- the rise of new digital industrial technology known as Industry 4.0, a transformation that is powered by nine foundational technology advances. Rüßmann, et al.(2015) mentioned that the industry4.0 will make it possible to gather and analyses data across machines, enabling faster, more flexible, and more efficient processes to produce higher-quality goods at reduced costs. This will increase manufacturing productivity, foster industrial growth, and modify the profile of the workforce. With rising environmental concerns and businesses facing more volatility, complexity and risk every day than ever before there is a dire need to adjust to this volatile environment through leveraging the data that is readily available through the use of technology and staying ahead of the game by attaining sustainability in business towards people, process and machines. Hence, an exploratory research is intended for understanding different models available.

### OBJECTIVES

- To study some of the applications of technologies of Industry4.0
- To do a comparative study with secondary data of such technologies as implemented by certain automobile players

### LITERATURE REVIEW

Rüßmann, et al. (2015) mentioned in his research paper that the nine pillars of technological advancement are (1) Big data analysis. (2) autonomous robots for example- Kuka, a European manufacturer of robotic equipment, offers autonomous robots that interact with one another. (3) Simulation, for example- example, Siemens and a German machine-tool vendor developed a virtual machine that can simulate the machining of parts using data from the physical machine. Thus, it lowers the setup time for the actual machining process by as much as 80 percent. (4) Horizontal and Vertical System Integration, for example- instance, Dassault Systems and Boost Aero Space launched a collaboration platform for the European aerospace and defense industry. (5) The Industrial Internet of Things, for example- Bosch Rexroth, a drive-and-control-system vendor, outfitted a production facility for valves with a semiautomated, decentralized production process. (6) cybersecurity (7) The cloud (8) Additive Manufacturing for example- instance, aerospace companies are already using additive

manufacturing to apply new designs that reduce aircraft weight, lowering their expenses for raw materials such as titanium. (9) Augmented Reality.

Industry 4.0 serves as an important model to global operating companies for integration of smart machines, products and production resources into manufacturing systems and the integration of cross-industry value networks. Kagerman, Anderl, Gausemeier, Schuh, & Wahlster (2016) mentioned that the experts in this field of study expected the resulting productivity gains to significantly increase their global competitiveness and strong manufacturing industry in different nations. Industry 4.0 is majorly associated with the smart products, internet platforms and new business models. Kagermann, Anderl, Gausemeier, Schuh, & Wahlster(2016) also mentioned in their research article that in a country like China the government initiatives like made in China and the internet plus establishes a contextual link between networking, integration and accompanying the new business model. The author also mentioned the Germany and US context where the two countries are currently the leading suppliers of industry 4.0 solutions, also highlighted the risk of developing products that lack market relevance. In India's context, the service sector has grown over the last few decades, the initiatives like make in India aims to increase the manufacturing capabilities and technological upgradation. The opportunities to MNC's to set up low-cost plants in India which will contribute in the manufacturing sector. Iyer (2018) mentioned in his article that the industry 4.0 could play a major role in boosting the manufacturing industry's share in the country's GDP from 17 to 25 percent by 2022.

The Internet of Things (IoT) is a system of connected people, devices, and services, allowing the computers, sensors and actuators to facilitate the products and services by reducing cost and improving the efficiency of existing systems. Internet of Things connects everything in the smart world. (Zhu et al ,2015) in their research paper described the six elements of IOT- identification, communication technologies, computation, services and semantic. Functioning of different IoT applications and service requirements for these applications, need to be better understood. Zhu et al, (2015) also mentioned that the IoT's procedures are used to reduce the greenhouse effects of existing applications and services but by further optimization, the greenhouse footprints of IoT can be reduced further. IOT has many applications, one of them is in health care. To redesign the modern health care with technological, economic and social prospects. IOT itself is a new trend in next-generation technologies that can impact the whole business spectrum and can be thought of as an interconnection of unique smart objects and devices with today's internet infrastructure. Medical care is one of the most attractive areas of IoT application, having the potential to give rise to many new medical applications as remote health monitoring fitness programmes, elder care and chronic diseases. Islam et al, (2015) said that the IoT network for health care is one of the most vital elements and supports access to the IoT backbone, it facilitates the transmission and reception of data and enables the use of health care tailored communications. The healthcare system which is IoT based can be applied to a wide spectrum of applications including pediatric care, elderly patients, the supervision of chronic diseases and numerous other applications to give ease to the patients using the health care system.

Islam et al, (2015) mentioned an example where a Chinese firm has developed mi Platform, an integrated all-in-one medical imaging and information management platform supporting cloud-based image storage, computation, web-based 3D image, post-processing and visual image and integrated telemedicine competence.

Industry 4.0 has enormous economic potential and despite that the Small and Medium-sized Enterprises (SME's) in the industry remain relatively cautious about it. Schröder(2016) mentioned after analyzing that around 5 percent of the SME's are thoroughly networked and only a third of them are taking the steps in that direction or at least have plans to do so. The expansion of industry 4.0 depends upon the company size, the circulation and deployment of new technologies among large companies is higher than that of the SME's. It is not easy for the SME's to access the technological solutions in their business due to lack of resources. Four out of ten SME's do not have a comprehensive Industry 4.0 strategy compared to the large companies, SME's tend to worry about opting wrong standards and data security. The main challenge for the SME's is to create a flexible organizational structure and to boost their employees. The Experience and qualifications of the employees must be deployed in the introduction of Industry 4.0 to reflect on the production process and bring improvements. Schröder (2016) also mentioned in his research article that the percentage of manual and hybrid activities is much higher in SME's. They produce majorly for niche markets and often have a high degree of specialization. A qualified workforce is paramount for the introduction, development and utilization of industry 4.0. The technical knowledge required is very high for each phase. Schröder (2016) mentioned that it or so takes around a hundred and ten days to fill a vacancy in storage occupations. The industry requirement is very high in due to the implementation of these complex technologies and thus it takes more time to fill the vacancy to give the right position to the right candidate. The field of application of supported Industry. Mohamed (2018) said

that the most challenging aspects for the organizations that wish to adopt this new approach are touch skills and qualifications of their workers concerning the problem-solving skills, failure analysis, the ability to deal with constant changes and completely new tasks. Mohamed(2018) also mentioned the benefits including virtual and augmented prototyping which provides a full understanding of product features and benefits, facilitating the interactive exploration of all products functionalities between every stakeholder.

## RESEARCH METHODOLOGY

A secondary data study has been conducted to understand the usage of the Industry 4.0 technologies in the automobile industry. A comparison has been derived of the technologies used by them through this review

## COMPARING TECHNOLOGIES IMPLEMENTED BY PLAYERS IN THE AUTOMOBILE INDUSTRY

Industry 4.0 can also be referred to as digitalization in production, it has opened new opportunities demand levels from customers of all industries, resulting in an increment in the production systems to provide a rapid and efficient response. The technological tools seek to meet constantly and efficiently customer demand with the organizational structure that works with synergy and add maximum value to the production. The reorganization of operations is not to mark a radical change in the functioning of the organization but to adopt technology and management to the new level of operating systems. Industry 4.0 has open new opportunities for the entire BMW Group production system enabling fulfilment of individual customer wishes and enhancing the flexibility and quality of production processes. Digitalization in BMW group is ahead of its production system in- Smart data analytics, smart logistics, innovative automation and additive manufacturing.

**Table-1: A Comparison Between Technologies used by BMW and Mercedes**

TECHNOLOGIES /COMPANIES	BMW	Mercedes
Advance Predictive Simulation	The predictive analytics helps to detect and fix vulnerabilities in the model before they cause problem in series production [1]. The IBM SPSS is used by BMW to combine and analyse data gathered by numerous tests derived on prototypes. Using this program all the available data can be analysed and any abnormalities if present can be detected	Using IBM SPSS software, now able to analyze the data obtained in the production process and gain insights into the key factors that influence quality of the products in each process step allowing early and targeted process adjustments [2]. This allows to increase the productivity and shorten the manufacturing process.  Machine learning/machines assist their users [3]: The path to be followed by lightweight robots can be generated by “demonstration”, i.e. the worker leads the robots and the machine learns the path
Virtual and Augmented Reality	BMW has launched an android app that uses Google’s new Tango technology enabling people to use their smartphones to view lifelike 3D models of BMW cars [6]. Tango uses combination of smartphone cameras, sensors and infrared waves. BMW hopes that it will increase its sales.	The actual status of the process is visually overlaid on the design specification over a monitor. This procedure is used for factory planning, during assembly testing using virtual components and for the manufacture and commissioning of equipment components and production facilities [3]. virtual assembly installs parts in a vehicle with amazing realism. By testing with an avatar, experienced employees can assess how the relevant job might best be carried out, or whether design changes are necessary
3D Printing	BMW has been producing and researching in additive manufacturing techniques. In the last decade it has successfully produced 1 million parts and is expected to produce 200,000 components in year 2018 [9]. BMW group uses 3D	The challenge for Mercedes was the non-availability of spares for their classic cars. 3D printing helped restart old cars by 3D printing genuine spare parts. They named this as “Future meets Classic” [10]. They have been using additive manufacturing from more than 25 years now. Mercedes only prints spare

	printing to manufacture window guide rails, fibre optic guides and water pump pulley. Rolls Royce has about 10 3D printed parts in its product line. BMW uses HP's Multi Jet Fusion Technology 3D printer.	parts for classic vehicles and trucks whereas they haven't used this technology in their production line. Mercedes uses Big Rep 3D printer to print spare parts.
Smart logistics	BMW group are global leaders in industrial innovations. BMW is focusing on applications such as logistics robots, autonomous transport systems at plants and digitalisation projects for end to end supply chain management. Staff can control logistics processes from mobile devices such as smartphones and tablets and use virtual reality applications to plan future logistics [14].	Mercedes Benz US van plant implemented smart logistics to reduce delivery time significantly. The manufacturing process includes cutting edge technologies such as driverless transport systems and paperless documentation  [15]. Paperwork is greatly reduced because of RFID. RFID helps to find the location of any component any time without any human contact. This helps the logistics and production employees to easily adopt to the process changes.
Human-Robot cooperation	Spartanburg US plant of BMW is the first production facility in the world to implement human robot cooperation directly in series production [18]. The main reasons for using autonomous robots are completing highly repetitive work scopes, which require considerable strength. Thanks to the fully automated process, the rolling power applied to the fixing process can be measured exactly. As a result, the processing quality can be monitored on a permanent basis	Daimler AG with collaboration with KUKA AG, a systems integrator and robotics manufacturing company developed human robot cooperation for achieving production worker and manufacturing process optimization in the Mercedes Benz division [19]. This interaction makes it possible to introduce trendsetting manufacturing concepts where the robot can act as the worker's third hand.

TECHNOLOGY /COMPANY	VOLKSWAGEN	PORSCHE
Advance Predictive Simulation	The data is generated with complex processes which include logistics and flow of goods, key financial figures, demand and consumption. This work is carried out by machine learning systems developed specifically for the purpose [4]. The algorithms with data are fed and then analyzed to draw conclusions and make corrections. The predictive analysis makes corporate processes even more efficient.	Advanced analytics and machine learning give a new approach to digital quality management [5]. Porsche is now able to address and optimize all relevant quality dimensions at the same time as Improved quality, Reduced costs by automated quality testing and augmentation, Enhanced yield through pattern recognition and root-cause analysis and Increased speed through online interaction with customers. Automated quality inspections can reduce resources up to 60%. Automated elimination of false defects and deviations can improve product quality by 20%. Data-driven control of process parameters can improve yield up to 50%. Pattern recognition along digital thread can reduce rework up to 20%. Augmentation of rework can improve productivity up to 30% [5].

Virtual and Augmented Reality	<p>Augmented reality is used to ensure that virtual data is visualized with actual proportions and sizes, meaning that the data can be assessed more effectively by the designer. MARTA–innovative service support tool for the Volkswagen XL1 [7]. This technology frontier is lightweight design, aerodynamics and state of art technology. It requires development of classic repair instructions showing employees how to task step by step with relevant information.</p> <p>The use of virtual technologies means that a considerable number of variants can be shown, modified and assessed at a very early phase of the process, thereby reducing the time and costs required for the overall process.</p>	<p>Mission E Augmented Reality app allows the user to see different views of the Mission E concept study [8]. The augmented reality technology offers us ways to depict complex technical aspects of the new vehicle technology vividly and emotively. The concept vehicle can be virtually placed in a room, the augmented reality application provides animations that simulate the vehicle's aerodynamics, X-ray views bring the drive and battery technologies to life by giving a glimpse beneath the lightweight body. Also, the vehicle can be displayed virtually in the customer's preferred colour, it is even possible to go on a test drive using augmented reality in the interactive driving mode.</p>
3D Printing	<p>The car manufacturer implemented additive manufacturing in the year 2014 with the manufacturing of jigs, fixture and tools [11]. Apart from these, it also provides personalization of few parts to the customers such as gear knobs, keys etc. this helps them gain competitive advantage over others. Volkswagen uses HP Multi Jet for customizing parts and for tools and jigs it uses Ultimaker 3D printer.</p>	<p>Porsche also face the same problem as the Mercedes, the non-availability of spare parts for their classic cars [12]. 3D technique helped them find a solution to their problem by producing the extremely rare parts for their classic cars. Porsche is currently testing over 20 components using additive manufacturing for their present fleet of cars. They implemented this in 2017. Porsche uses HP Multi Jet 4200 3D printer same as its sister company Volkswagen [13].</p>
Smart logistics	<p>Volkswagen group is the first company in the world to introduce VR technology in its production and logistics department. It creates the ideal environment for cross brand and cross site collaboration. This technology can be used for logistics training where it can enable several participants at once to understand the logistics process and get the outcome of future logistics [16].</p>	<p>Porsche automobiles acquired PTV Planung Transport Verkehr for getting software related to transport and logistics. IT develops software for smart logistics and transportation. According to Porsche more than 1 million logistics trips are planned per day using the software developed by PTV [17].</p>
Human-Robot cooperation	<p>The Human Robot Cooperation has become a reality. The robots help in adhesive application which is abbreviated as KLARA [20] supports the installation of roofs made of carbon fiber reinforced polymer in Audi models. An illuminated ring indicates when KLARA has precisely applied</p>	<p>They are pioneering a new generation of robot, one that can work side-by-side with humans. New robot's metal muscles wear a sensitive skin, capacitive sensing allowing the skin to feel when a human is nearby or in contact [21]. As the robot handles heavy lifting, its human workmate can simultaneously take on tasks that demand</p>

	adhesive over a length of more than five meters. The robot then signals that the roof is ready for installation. The employee takes the roof with the aid of a handling device and installs it in the car. The level of precision that the robot gives can't be achieved by humans.	dexterity, flexibility and intelligence.
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## CONCLUSION

4.0 technologies lie in production and to a lesser extent in auxiliary activities, such as logistics, maintenance and product development, these value creation processes should receive more support to boost economic use of industry 4.0. Schröder (2016) mentioned that the state support provided in Germany for a specific industry 4.0 projects is at least 450 million euros for a period of five to seven years. The industry 4.0 has a visible economic potential of networked production in basic technologies available. The technological advances give rise in productivity for SME's too, but to realize the potential they require a more flexible organizational structure. The management of SME's should try to find out how much smart their product range can be made, and which new business model can emerge from that as smart products can increase the proportion of value added from the product sales.

The above tables are a comparative study by reviewing the different car manufacturers in Germany and the technologies they have implemented in their factories, manufacturing process or in marketing their product. The technologies used in the analysis are Advance Predictive Simulation, Virtual and augmented reality, 3D printing, Smart logistics and Human-Robot cooperation. These technologies are discussed as per their usage in different car manufacturing companies as BMW, Mercedes, Volkswagen and Porsche. The technologies implemented are part of the Industry 4.0 process though some companies term it as Smart manufacturing process. These technologies help in increasing the production rate, making the process more efficient, best utilization of resources, better analysis of customer/market, more flexible production system and making the process intelligent as it is managed by both humans and machines.

## REFERENCES

- Islam, S. R., Kwak, D., Kabir, M., Hossain, M., & Kwak, K.S. (2015). The Internet of Things for Health Care: A Comprehensive Survey. IEEE Access.
- Ayer, A. (2018). Moving from Industry 2.0 to Industry 4.0: A case study from India on leapfrogging in smart manufacturing. Journal of Industrial Information Integration, 8.
- Kagermann, H., Anderl, R., Gausemeier, J., Schuh, G., & Wahlster, W. (2016). Industrie 4.0 in a Global Context. acatech STUDY.
- Martínez, J. A., Lara, M. P., Saucedo, J. A., Fierro1, T. E., & Vasant, P. (2017). Industry 4.0 framework for management and operations: a review. Journal of Ambient Intelligence and Humanized Computing.
- Mohamed, M. (2018). Challenges and Benefits of Industry 4.0: An overview. International Journal of Supply and Operations Management, 256-265.
- Rüßmann, M., Lorenz, M., Gerbert, P., Waldner, M., Justus, J., Engel, P., & Harnisch, M. (2015). Industry 4.0: The Future of Productivity and Growth in Manufacturing Industries.
- Schröder, C. (2016). The Challenges of Industry 4.0 for Small and Medium-sized Enterprises. a good society –social democracy.
- Zhu, C., Leung, V. C., Shu, L., & Ngai, E.C.H. (2015). Green Internet of Things for Smart World. IEEE Access.
- News, I. (n.d.). Analytics magazine. Retrieved from Analytics magazine: <http://analytics-magazine.org/predictive-analytics-drives-production-maintenance-at-bmw>
- Corporation, I. (2014). Daimler Group. Retrieved from presidion: <https://www.presidion.com/case-study-daimler-group>

- 
- Group, D. (n.d.). Daimler. Retrieved from Global Media Site: <https://media.daimler.com/marsMediaSite/en/instance/ko/Industrie-40--Digitalisation-at-Mercedes-Benz-The-Next-Step-in-the-Industrial-Revolution.xhtml?oid=9272047>
  - 2019, V. A. (2018, June 26). Volkswagen. Retrieved from Volkswagen [https://www.volkswagenag.com/en/news/2018/06/volkswagen\\_group\\_data\\_scientist.html](https://www.volkswagenag.com/en/news/2018/06/volkswagen_group_data_scientist.html)
  - Consulting, P. (2017). Digital Machinery Decoded.
  - Shead, S. (2017, January 05). business insider. Retrieved from business insider: <https://www.businessinsider.in/bmw-hopes-googles-augmented-reality-tango-technology-will-help-it-to-sell-cars/articleshow/56354170.cms>
  - 2019, V. A. (n.d.). Volkswagen. Retrieved from Volkswagen: <https://www.volkswagenag.com/en/group/research/virtual-technologies.html>
  - Porsche. (n.d.). newsroom. Retrieved from newsroom: <https://newsroom.porsche.com/fallback/en/products/porsche-mission-e-augmented-reality-app-ar-technology-future-cooperation-google-digital-15079.html>
  - Scott, C. (2018, November 20). BMW Surpasses One Million 3D Printed Automotive Components. Retrieved 2018, from 3dprint.com: <https://3dprint.com/230237/bmw-surpasses-one-million-3d-printed-automotive-components>
  - Iftikhar, U. (2018, November 23). MERCEDEZ-BENZ RESTARTS CLASSIC CARS WITH 3D PRINTED PARTS. Retrieved from 3dprintingindustry: <https://3dprintingindustry.com/news/mercedes-benz-restarts-classic-cars-with-3d-printed-parts-144169/>
  - Vries, C. d. (2017, June 21). Volkswagen Autoeuropa: Maximizing production efficiency with 3D printed tools, jigs, and fixtures. Retrieved from Ultimaker: <https://ultimaker.com/en/stories/43969-volkswagen-autoeuropa-maximizing-production-efficiency-with-3d-printed-tools-jigs-and-fixtures>.
  - Wolfsburg. (2018, November 11). Ready for mass production: Volkswagen uses the latest 3D printing process for production. Retrieved from Volkswagen: [https://www.volkswagenag.com/en/news/2018/09/volkswagen\\_3d\\_printing.html](https://www.volkswagenag.com/en/news/2018/09/volkswagen_3d_printing.html)
  - News, p. (2018, December 02). Porsche Classic supplies classic parts from a 3D printer. Retrieved from Newsroom: <https://newsroom.porsche.com/fallback/en/company/porsche-classic-3d-printer-spare-parts-sls-printer-production-cars-innovative-14816.html>
  - Desk, A. P. (2018, November 30). Autocar Professional. Retrieved from <http://www.autocarpro.in/news-international/bmw-group-expands-use-of-innovative-industry-40-tech-in-production-logistics-41465>
  - Garnsey, S. (2018, September 11). Automotive Logistics. Retrieved from <https://automotivelogistics.media/news/mercedes-launches-us-van-plant>
  - Rogerson, S. (2017, July 06). IMC web site. Retrieved from <https://www.iotm2mcouncil.org/volkvr>
  - Rogerson, S. (2017, June 20). IMC web site. Retrieved from <https://www.iotm2mcouncil.org/porsptv>
  - Release, P. (2013, September 10). BMW Group. Retrieved from <https://www.press.bmwgroup.com/global/article/detail/T0209722EN/innovative-human-robot-cooperation-in-bmw-group-production?language=en>
  - Daimler Web Site. (2012, December 04). Retrieved from <https://media.daimler.com/marsMediaSite/en/instance/ko/Human-robot-cooperation-Innovative-Cooperation-between-Workers-and-Robots-at-Mercedes-Benz.xhtml?oid=9917300>
  - Volkswagen Web Site. (2017, August 03). Retrieved from <https://www.volkswagenag.com/en/news/2017/08/KLARA.html#>
  - Benelux, r. (n.d.). robotics benelux. Retrieved from robotics benelux: <https://www.roboticsbenelux.com/en/news/90-porsche-takes-the-largest-collaborative-robot-in-use-from-comau-a-huge-step-in-the-collaboration-between-people-and-robots-in-a-production-area>
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**LIVING WITH ARTIFICIAL INTELLIGENCE: OUR PAST, PRESENT, AND THE FUTURE**

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**ABSTRACT**

*For millennia people have wondered what makes the living different from the non-living. Beginning in the mid-1980s, artificial life has studied living systems using a synthetic approach: build life in order to understand it better, be it by means of software or hardware. Artificial intelligence (AI) is already widely employed in various roles, and ongoing technological advances are encouraging more widespread use of AI. We are rapidly moving towards a workplace where people interact with machine on a routine basis. With the advent of artificial intelligence (AI) and the chatbots that it powers, technology is now interwoven into many of our everyday job tasks. AI will help a lot in the upcoming future technology as It will make machines more secure and intelligent by executing in algorithms that will help machines 'think' over that particular field in which it is held upon. However, there can be many future flaws relating to Artificial Intelligence. This review paper dives into the advances that led to the development of artificial intelligence, its current standing, and point out the problems and opportunities it may have in the future.*

*Keywords: Artificial intelligence, android medics, innovations, interwoven technology, algorithm.*

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**INTRODUCTION**

The research field of Artificial Intelligence (AI) is concerned with making machines –particularly computers – do things that require intelligence when done by humans. In the 60 years of its existence, it has celebrated dramatic successes and equally dramatic failures. Today, AI has become an important and essential part of technology and industry and provides solutions to some of the most complex problems in computer science. Nevertheless, in terms of its original goal – to create true human-level intelligence in machines – Strong AI has not succeeded yet and perhaps never will. Today, AI researchers are able to create computers that can perform jobs that are difficult for persons like logic, algorithmic solving, path planning, or playing chess. However, they are still struggling with developing a computer that is capable of carrying out tasks that are simple to do for humans like perceiving the environment, assessing complex situations, and taking everyday life decisions. Approaches in the past have mainly concentrated on creating intelligence in computational devices by developing programs that exhibit some kind of “behavior” or “skill” that resembles specific facets of human (or animal) behavior or skills. Investigating the structures, information processing principles, and functions in the brain that lead to the emergence of such behavior and skills was so far generally out of scope of AI technology. For this reason, today's computers and AI programs have simply very little in common with actual brains and minds.

**OBJECTIVES**

- To become familiar with the criteria that distinguishes humans with artificial intelligence.
- To provide you with concrete examples of AI in everyday life.
- To highlight the growing presence of AI in the near future.

**DESIGN OF THE STUDY**

Many literatures were reviewed to obtain knowledge on how Artificial Intelligence helped us till date and how helpful and leading it could be in the upcoming years.

This is a literature review paper which pulls together information on AI and machine learning, its' impact on the future, and implications for safety and health

**HISTORY OF AI**

The intellectual roots of AI, and the concept of intelligent machines, may be found in Greek mythology. Intelligent artifacts appear in literature since then, with real (and fraudulent) mechanical devices actually demonstrated to behave with some degree of intelligence. After modern computers became available, following World War II, it has become possible to create programs that perform difficult intellectual tasks. From these programs, general tools are constructed which have applications in a wide variety of everyday problems.

Since the invention of computers or machines, their capability to perform various tasks went on growing exponentially. Humans have developed the power of computer systems in terms of their diverse working domains, their increasing speed, and reducing size with respect to time.

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A branch of Computer Science named *Artificial Intelligence* pursues creating the computers or machines as intelligent as human beings.

### PHILOSOPHY OF AI

While exploiting the power of the computer systems, the curiosity of human, lead him to wonder, “*Can a machine think and behave like humans do?*”. Thus, the development of AI started with the intention of creating similar intelligence in machines that we find and regard high in humans.

Artificial Intelligence (AI) consists a set of computational technologies that designed to sense, learn, reason, and take action. AI has already been integrated in many applications including automating the business processes, gaining insight through data analysis, and engaging with customers and employees. Furthermore, with the technological advancement in mobile computing, artificial neural networks, robotics, storage of huge data in internet, cloud-based machine learning and information processing algorithms etc. application of AI has been integrated in many sectors including transportation, service robots, health care, education, low-resource communities, public safety and security, employment and workplace, and entertainment etc

### PRESENT APPLICATIONS OF AI

AI has been dominant in various fields such as

**Gaming** – AI plays crucial role in strategic games such as chess, poker, tic-tac-toe, etc., where machine can think of large number of possible positions based on heuristic knowledge.

**Natural Language Processing** – It is possible to interact with the computer that understands natural language spoken by humans.

**Expert Systems** – There are some applications which integrate machine, software, and special information to impart reasoning and advising. They provide explanation and advice to the users.

**Vision Systems** – These systems understand, interpret, and comprehend visual input on the computer.

**Speech Recognition** – Some intelligent systems are capable of hearing and comprehending the language in terms of sentences and their meanings while a human talks to it. It can handle different accents, slang words, noise in the background, change in human’s noise due to cold, etc.

**Handwriting Recognition** – The handwriting recognition software reads the text written on paper by a pen or on screen by a stylus. It can recognize the shapes of the letters and convert it into editable text.

**Intelligent Robots** – Robots are able to perform the tasks given by a human. They have sensors to detect physical data from the real world such as light, heat, temperature, movement, sound, bump, and pressure. They have efficient processors, multiple sensors and huge memory, to exhibit intelligence. In addition, they are capable of learning from their mistakes and they can adapt to the new environment.

**Human resources and recruiting** - Another application of AI is in the human resources and recruiting space. There are three ways AI is being used by human resources and recruiting professionals: to screen resumes and rank candidates according to their level of qualification, to predict candidate success in given roles through job matching platforms, and now rolling out recruiting chat bots that can automate repetitive communication tasks

### ARTIFICIAL INTELLIGENCE BENEFITS IN THE HEALTHCARE INDUSTRY

**Fast & Accurate diagnostics:** Some diseases require immediate action otherwise they will become more severe. In the case of AI, the neural network of the brain is look alike, has the ability to learn from previous cases. After some studies or research on artificial neural networks, researchers says that it is scientifically proven that these networks can diagnose fast & accurate some other diseases includes eye problems, malignant melanoma etc.

**Reduce Human errors:** Profession of doctor is very sensitive, they have to take care of each & every patient. In a day they can see a lot of patients which can be very exhausting because it requires attention and knowledge of the patient. Sometimes due to lack of activeness, human error may threaten the patient safety. To overcome this AI as a super human spell checker will assist doctors by eliminating human error & relieve them of monotonous & time-consuming tasks.

**Cost Reduction:** With the emerging technologies including artificial intelligence, the patient can get medical assistance without visiting hospitals/clinics which results in cost cutting. AI assistants provide online care & assist patients to add their data more frequently via online medical records etc.

**Virtual Presence:** This technology also known as **Telemedicine** which allows specialist to assist their patients who live at remote locations. Using a remote presence robot, doctors can engage with their staff & patients in hospitals/clinics & assist or clear their queries.

### **FUTURE EXPECTATIONS FROM AI**

As the curtain rise for 2019, do expect to see major changes in how organizations use Artificial Intelligence (AI) in the new year. AI has shown immense potential to make our lives much easier, a fact which does not stop in our homes, as businesses constantly come up with new ways to use AI to engage with customers, make processes easier and pull revenues to new highs. The effectiveness and popularity of AI-powered chatbots in recent years has catapulted an increased interest in how artificial intelligence is deployed to improve the results of ad campaigns.

Forrester Research says that 2019 will see the rise of new digital workers with an increased competition for data professionals with AI skills. What is next in business for AI and how can it further boost the success of businesses in the new year, here is what to expect from Artificial Intelligence in future

### **Virtual Agents**

Many businesses, large and small have begun to deploy AI-powered chatbots in their business and organizations to answer website visitors' questions, help customers check out and qualify sales leads. The new-year 2019 will expect to witness phenomenal advances in AI-powered customer services. Companies will not only use chatbots but they will create virtual agents with a face and personality to match to handle complex tasks to drive business, like, Autodesk's virtual agent Ava has a female face with a voice that speaks emulating the company's brand. Ava is much more successful than its predecessors because the team has invested time in creating its persona. Come 2019 and expect to witness more companies investing in life-like AI-powered virtual agents which will be entrusted to carry on engaging conversations with customers.

### **Speech Recognition**

Amazon's Alexa became a big hit with consumers in 2018, making living easy and offering an easy option to search information on the web. Get set for 2019 and expect to see a lot more speech recognition tools as 66.6 million Americans are projected to be using speech or voice recognition technology by 2019. Giants like Sony, Hisense and TiVo have unveiled TVs that can be controlled by voice, and even home appliance makers such as Delta, Whirlpool and LG have added Alexa's voice recognition skills to assist people control everything in their homes. The new -year will see more companies and products adopting speech recognition technologies.

### **Smart Recommendations**

Whenever an online shopping is done you will be inundated with recommendations based on items you have previously purchased or browsed. Brace yourself for smarter retail recommendations in 2019 as Artificial intelligence will be able to recommend products based on sentiment analysis in addition to your browsing history. Expect more personalized and guided shopping experiences in the new-year.

### **Image Recognition**

AI has made it possible to teach computers how to see, acquire, process and analyze data from visual sources! Surprised? Image recognition is all set to cause a disruption in the new year. Expect image recognition to detect license plates, diagnose diseases, and allow for photo analysis to complete payments or other verifications. Image recognition can also help businesses redefine their marketing. Expect image recognition to become a big bet in 2019.

### **Cyber Defens**

Cybercriminals have actively targeted software-as-a-service (SaaS) platforms, cloud infrastructure and internet of things devices making tech security a menace for business owners. In 2019, expect artificial intelligence to be more powerful in fighting off cyber threats and prevent potential hackers. Companies including Darktrace have deployed artificial intelligence and machine learning technologies to detect online enemies' real-time and identify cyber threats before they spread. AI is empowered to pick up abnormal activity indicators and defend your system early before the threat becomes uncontrollable.

### **The rise of digital workforce**

Robotic process automation (RPA) will create the new digital labor force. Till now, firms have been treating emerging technologies distinctly; including RPA for automation and AI for intelligence. To create breakthrough opportunities, RPA in addition to AI technology will turbocharge an organization's

innovation efforts. Firms which have already deployed AI building block technologies such as text analytics and ML with RPA features will drive greater value for digital workers as analytics steps up to play a dominant role. Chatbots bossing around RPA bots; internet-of-things (IoT) events that trigger digital workers; and text analytics will be the tech trend of 2019.

### **Medical field changes**

Even with the advent of third-wave AI, computers are unlikely to replace the diagnostic role of physicians in the near future. AI programs are still too limited, for example, to assess a wound for infection by synthesizing aesthetic observations such as heat, color, smell, pain level and drainage.

AI is now sufficiently sophisticated to automate many of a physician's tedious, repetitive tasks, however. It can, for example, reduce the time required to analyze a bacterial swab and recommend a suitable antibiotic prescription. This gives the physician more time and mental energy to perform higher-level functions such as patient education and clinical assessment.

The potential healthcare applications for AI technology are numerous and exciting. Healthcare providers are exploring the application of AI programs to insurance verification, skin cancer diagnostics, the analysis of lab results and medical record data analysis. We're only now beginning to explore the depths of healthcare innovation that may be unlocked by continued advancements in AI technology.

As AI applications become increasingly integrated with medicine, more and more people will gain access to high-quality, efficient healthcare.

### **FINDINGS**

It's likely that the upward trend in capabilities of AI systems will continue; that systems will eventually become capable of solving a wide range of tasks (rather than a new system having to be built for each new problem), and that the adoption of AI within many industries will continue. Evidence suggests AI is currently unable to reproduce human behaviour or surpass human thinking; it's likely to stay a complementary workforce tool for a very long time to come. However, steady gradual improvements in AI could reach a point where AI exceeds current expectations. The continued development of AI will depend on moral public opinion regarding the benefits and acceptability of it, on businesses continuing to gain competitive advantage from using it, and continued funding for research and development of it.

So, does AI present opportunity or danger? Will machines take all the jobs or create more than they destroy? Opinions on this are divided, and the reality is likely to be somewhere in between the two extremes

### **CONCLUSIONS**

Artificial intelligence (AI) is awakening fear and enthusiasm in equal measures. Some have likened the advances in AI to "summoning the devil" and there are concerns that AI threatens to end humanity. AI can scare people, perhaps due to the science fiction notion that machines will take all of our jobs; 'wake up' and do unintended things. However, where some see danger, others see opportunity!

It is difficult to determine where this technology might create new jobs in the future, yet easier to see which tasks AI might take from humans. It's likely that any routine, repetitive task will be automated. This shift to automation has happened for centuries, but what is different today is that it affects many more industries. It's likely that we will adapt to technological changes by inventing entirely new types of work, and by taking advantage of our uniquely human capabilities.

### **REFERENCES**

- Brown, A. (17 December, 2018). Brief history of AI. 5.
- Encyclopedia, S. (July 12, 2018). *Philosophy in AI*, 10.
- Kumar, H. (2018). AI in everyday life. *Journal of IT*, 7.
- Maincent, N. (2017). AI . *conclusions and predictions on AI*, 2.
- Mukherjee, S. (2018). *applications of AI in Business*, 6.
- Patidar, S. (june12, 2018). AI in future. 8.
- Weldon, D. (2018). Expectations from artificial intelligence in future. 7.

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**DATA ANALYTICS IN TALENT MANAGEMENT: A GAME CHANGER**

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**ABSTRACT**

*With the emphasis on businesses being driven by Artificial Intelligence, Robotics, Machine Learning and Cloud computing bringing a greater responsibility to the Business and Management to utilize and incorporate these technology into HR system. HR Analytics being the latest technology used across most of the IT Companies globally which starts with collecting, managing and analyzing big data which is stored in various forms within the organization. HR Analytics brings in clarity in employee trends in various areas either in recruitment, retention management, training and development, compensation management, performance appraisal or productivity. Organization can really make a difference if they use this data during the Talent Management process for analyzing, identifying right candidates for a job fitment. The bottom line of any organization cannot be successful until the workforce related decisions are backed up by data analysis. The objective of this paper is to understand the role of HR Analytics in Talent Management process. And analyze the collected data through primary research to propose recommendations and suggestions which will be showcased through a model helping organizations to take strategic decisions in their Talent Management process.*

*Keywords: Analytics, Recruitment, Talent Management, Artificial intelligence*

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**INTRODUCTION**

Organization today is becoming highly competitive in terms of processes, policies and decision making capabilities. Right from finding talent, training them, retaining the best talent, skilling them and giving them career opportunity, HR function has a hard role to play. Innovative tools and latest technology has been employed to capture data and analyzing the data base and decisions are being taken accordingly by management. With the introduction of HR analytics, which believes decisions can be taken based on available relevant data, HR processes are aligned to business goals. This paper examines how HR analytics facilities and fine tune improvement in the process of managing the top and talent workforce in bringing higher productivity to the organization. Through data analytics, the goal is to transform large complex masses of data into knowledge and, in this way, help the decision-making process of HRM by helping to make more accurate and data-driven decisions and also to make a forecast about the future, not just describing the past. There's no doubt that any business which can attract the right talent and manage talent effectively, utilize capacity effectively, engage their employees and retain employees is taking itself up for success. Organization has begun to realize that with sophisticated technology available they can use the available big data to arrive at concrete decisions on talent hiring. Use of extensive data, analysis and predictive models and fact based data in talent management predicts future top performers and highlight the risk of early leaving and successfully plan the successor. Talent hiring is no longer a mere manual system of calling candidates based on the resume. A much more work goes into this which includes matching the resume with much more comprehensive algorithm and existing data on the position required. Analytics will also support with finding suitable match of candidates based on the social media activity of the candidates, background check and throw the result to the HR Department whether to call the prospective candidates for interview. Job candidates profile can be matched with existing similar top performers candidates within the system. By using algorithm and existing employee performance pattern, Data analytics will throw decision on hiring the right people at right position.

Big data is transforming large complex data into knowledge and which will help organization in taking strategic decision making related to people. HR Analytics data will not only predict the behavior of people but also showcase their trends and patterns in which they may behave.

Organization is moving from data management to Evidence Based Decision. Data is collected related to people, productivity, age, experience, performance, gender, absenteeism, sales, revenue, knowledge, people effectiveness, recruitment, training, etc. Evidence based data is pulled out and analysis is done based on true facts and figures. HR Analytics is still struggling at their initial stage in gathering, collecting relevant data to be predicted for the future and Management rightly use this data for business decision making.

**UNDERSTANDING HR ANALYTICS MODEL**

The HR data and information is stored in every organization and was used for day to day administrative function. Whether it is recruitment, identifying training and development needs within the organization, measuring the performance of every employee, understanding why an employee leaves the organization, HR

was providing all data stored since a longer time and was managing complete gamut of HR function. Although without hiring of talent people and training of employees the company won't see progress, the fact remained that the company has always see HR Dept as a support and administrative function.

The big question was how to change this mindset and be a part of company's main revenue stream. With the advancement of technology and Big data coming through various sources, HR was able to showcase how it can add value to the overall revenue stream and improves company bottomline. Since HR was managing the complete people management process for the organization, it was indeed very critical to be a part of revenue stream to prove its existence and effect on business to be strategic partner.

HR was forced to validate their role in the strategic role in talent acquisition. Data driven and Predictive model came into picture and with advancement in technology in analytics, HR Analytics was developed and data was shared with management which acted as a tool to access performance of employees, critical hiring decisions, retention management and so on.

Following are few areas where HR analytics can add value to talent hiring:

- Job candidates can be matched with existing employees who are top performers.
- Helps reduce time and effort for selection of right candidate for the job.
- Grooming top talent for better performance and removing poor performers and control cost.
- Helps in plugging skill gaps which helps during talent management process.
- Data analytics can help manage attrition by ensuring fair compensation to the new employee. Data collected from other sources, industry standard and benchmarking help HR decided best compensation structure for the new joiners.
- Gives insight to behavior analysis to understand employee behavior pattern. This can be used by HR department understand most likely people who may leave.
- But it was all not so easy to implement. Analyzing HR data required software which will analyze Behaviour, Pattern, Trend of employees from historic data. Available data was no longer used to just describe the situation or why it was happened but also data would predict the future of the above challenges.

## **REVIEW OF LITERATURE**

Gavin Walford-Wright, William Scott-Jackson, (2018) paper aimed to study the opportunities that have been created through technological advancement in the talent acquisition industry and how this links to strategic HR Management and business strategy. It focuses on how an organisation can embrace the world's leading technology and compose a unique technology stack to overcome its challenges in talent acquisition. The analysis of the data shows a significant improvement in all the key metrics related to the talent acquisition process after the implementation of "Talent Rising" model. The role of a recruiter and the talent acquisition team has radically changed and has now become an internal strategic partner with aligned interest, an advisor to the organisation. There is an increase in the use of new media/technology to attract candidates and with the increase in millennial candidates entering the workforce, social media will be increasingly important in talent branding and attraction; the digital by default generation is already here. Andrew Mayo (2018) studied different areas of talent management and how HR metrics and analytics can be harnessed to make those areas more effective. He considered three areas for the application of metrics and analytics – data about individuals, the effectiveness and efficiency of talent processes and the extent of the supporting culture.

Geeta Rana, Alok Kumar Goel, RenuRastogi, (2013) stated that the functioning of an organization largely depends upon several remarkable components, with the talented employee occupying the central role for the accomplishment of organizational goals. In this context, organizations are making more investment into talent development initiatives, which currently is a challenge. The purpose of this paper was to examine the talent retention practices in Bharat Heavy Electricals Limited (BHEL), a Navratna PSE of the Government of India. Effective talent management practices help the Indian public sectors in general to retain their best talent. At BHEL, talent management practices are focused on competencies, knowledge, learning and increased broad group engineering and technology transference.

According to Alice Snell, (2011) Up to 70 percent of a company's value is tied up in the skills and experience of its employees. All too often, however, business executives and Human Resource (HR) departments have very little insight into how to use this asset for better business outcomes. This paper aimed to look at the importance of effective talent metrics and to examine the problems organizations face when trying to develop talent

intelligence. His Findings state that Despite the business value that accurate, accessible talent intelligence can provide, the research finds that there are significant differences between those talent metrics that organizations consider important and the data to which they have access. A legacy of disparate technology systems and a focus on measuring efficiency rather than effectiveness are the primary reasons for the lack of talent intelligence among many businesses.

Rakesh Sharma, Jyotsna Bhatnagar, (2009) in their paper worked on drawing lessons on how building a talent management strategy based on competency profiling becomes a critical impact area within the field of strategic HRM. They found that the talent mindset has helped the organisation in recruiting the best talent from the best pharmaceutical organisations. The attrition of the top and valued talent segment has come down. Some of the key positions have been filled through succession planning.

Peter Cheese, (2008) paper discusses the importance of talent management to strategic success, in order to identify the challenges in building talent power and to explore how to overcome those challenges. The paper asserts that an organization needs to put in place key processes in order to retain and actively multiply talent. They include: maintaining visible leadership that is focused on talent; encouraging and rewarding line managers for nurturing talent; and modernizing HR and training to identify, develop and deploy talent to the best effect.

## OBJECTIVES

1. To study the importance of HR Analytics in Talent Management
2. To analyse the role of HR Analytics in Talent Management

## RESEARCH METHODOLOGY

Present research is descriptive in nature. Primary and Secondary data has been collected for the purpose of research. Primary data collection is by administering questionnaire to the respondents. The questionnaire has 10 parameters to be tested keeping in mind the research objectives.

30 Respondents are chosen for the study and convenience sampling technique is being employed. HR Heads and HR Managers of IT and Non IT companies and CEO and Business Heads are the sample. Selection of Sample includes collection of Database of HR and CEO/Business Heads from Linked-in and social media websites. Data collected is analyzed based on the position and the nature of profile respondent is handling in his current organization and geography which will be used to determine the methodology for data collection. Introductory mail is sent to the respondents to take their consent. Respondents are then personally called to explain the purpose of this research

The below methodology is used while collecting primary data from the respondents.

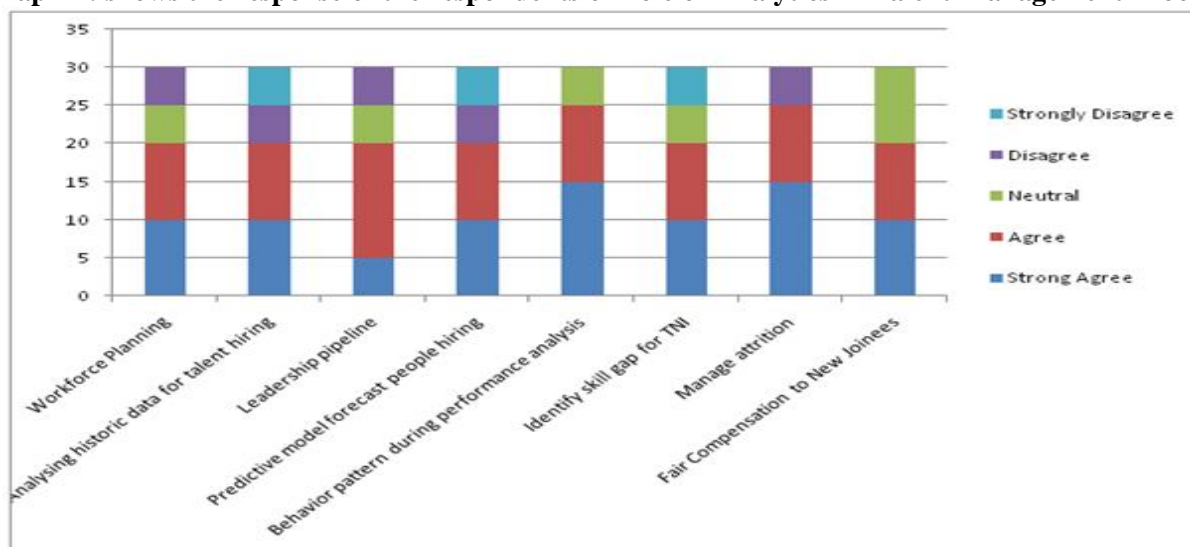
Personal Interview – Conducted personal interview with the respondent at their office.

Telephonic Interview – Telephonic interview conducted in case of non-availability of the respondent. Filled questionnaire after taking inputs from the respondent is sent to their mail ID for approval

Mail – After telephonic interview mail is sent by the respondent with their inputs.

## RESULTS AND DISCUSSION

**Graph-1: shows the response of the respondents on role of Analytics in Talent Management Process**



Respondents were asked about the role of analytics in their organizations in the areas of Workforce planning, Analysing historic data for talent hiring, leadership pipeline, Predictive model forecast hiring, behaviour pattern during performance analysis, identifying skill gap for TNI, Manage attrition and fair compensation to new joins.

#### **FOLLOWING ARE THE FINDINGS FROM THE STUDY**

**Existing usage of HR Data in Talent Management** – Hiring is always been a core HR function in every organization and is not limited to just interview and selection. HR was hiring candidates on various parameters and using newer benchmark to assess capability and compensation. Right from performing background verification of previous companies to capability hiring and comparing the best fitment into the organization.

#### **POST HR ANALYTICS INTERVENTION**

HR Analytics has gone one step ahead and got involved in the business operation by analysing why is this position important and how will it create value to the organization. Capability hiring was at the core. Predictions was made based on historic data on how existing employees with required qualification and experienced have performed or under-performed and their capability matrix and educational qualification. By throwing this result to the HR, Hiring of candidates was much easier. It can be said that HR Analytics is more proactive rather than reactive.

**HR Data in measuring the performance-** Performance of employees was at the core to the success of the organization. HR department has started reviews taken from various reporting structure of an employee and shared the data with the management. Appraisal was purely based on the review which the supervisor has given to his subordinate.

#### **Post HR Analytics Implementation**

HR Analytics has changed the concept and started capturing data from day one the employee has reported the organization. Monthly performance, trends and employee behaviour was captured and the data was put up in the software which would then analyse performance , success factors and behaviour and skill areas which helped organization in forming a right opinion about the employee .

**HRA in Learning & Development** - Training was done assumption and based on the need identification. TNI used to be circulated to all the employees and their reporting managers to understand what and how much training is required by every employees. There was never used to be any concrete measurement of Training requirement.

#### **Post HR Analytics Implementation**

With HR analytics the process of L & B has become much more easier. Skill data was available with HR and which was used to highlight necessary training requirement. Organization need not go on intuition and gut feeling to select necessary training needs.

**HRA in Attrition Management-** Data thrown by the HRM was only limited to people left the organization and why they left. It was a post-mortem job by HR which helped the organization to ensure that those issues are taken care properly,

#### **POST HRA IMPLEMENTATION**

HR Analytics predictive modelling has cut down the post-mortem work and helped org with data which says who are the most likely talented people who might leave. This data/ prediction has helped management in a bigger way by counselling such top talent and understanding their current issues.

#### **CONCLUSION**

Data analytics can come as a big game changer for organizations who wanted to really make a difference in their talent management process. Not only in the hiring segment but also employee nurturing, ensuring higher performance and retention data analytics could play a bigger role. Mere guess work can be eliminated completely. Implementation of Data analytics in the area of Talent Management can make hiring and retention decisions more transparent and data driven and will be more quantitative in nature. It's time and trend to incorporate the data into various functions of the organizations in a meaningful way. Facts and figures available in technology driven business should be efficiently used for better management decisions. Talent Management especially is the biggest challenge and the best resource available for the organisations is the data available with them and the capability of deriving meaningful conclusions to address majority of the business issues and concerns.



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**REFERENCES**

1. Gavin Walford-Wright, William Scott-Jackson, (2018) "Talent Rising; people analytics and technology driving talent acquisition strategy", Strategic HR Review, Vol. 17 Issue: 5, pp.226-233, <https://doi.org/10.1108/SHR-08-2018-0071>
2. Andrew Mayo, (2018) "Applying HR analytics to talent management", Strategic HR Review, Vol. 17 Issue: 5, pp.247-254, <https://doi.org/10.1108/SHR-08-2018-0072>
3. Geeta Rana, Alok Kumar Goel, RenuRastogi, (2013) "Talent management: a paradigm shift in Indian public sector", Strategic HR Review, Vol. 12 Issue: 4, pp.197-202, <https://doi.org/10.1108/SHR-02-2013-0012>
4. Jeremy Langley, (2013) "Use data effectively to align people strategy with business goals", Strategic HR Review, Vol. 12 Issue: 5, <https://doi.org/10.1108/shr.2013.37212eaa.004>.
5. Alice Snell, (2011) "Developing talent intelligence to boost business performance", Strategic HR Review, Vol. 10 Issue: 2, pp.12-17, <https://doi.org/10.1108/14754391111108301>
6. Rakesh Sharma, Jyotsna Bhatnagar, (2009) "Talent management – competency development: key to global leadership", Industrial and Commercial Training, Vol. 41 Issue: 3, pp.118-132, <https://doi.org/10.1108/00197850910950907>
7. Peter Cheese, (2008) "Driving high performance in the talent-powered organization", Strategic HR Review, Vol. 7 Issue: 4, pp.25-31, <https://doi.org/10.1108/14754390810880507>

## ADVANCEMENT IN TECHNOLOGIES IN HOTEL FRONT OFFICE

Ranganathan Yadunath<sup>1</sup> and Sheeba Samuel<sup>2</sup>Assistant Professor<sup>1</sup> and Associate Professor<sup>2</sup>, Garden City University**ABSTRACT**

*Hotels have always been adopting new technologies and making advancements to enhance guest experience. Hotel rooms are perishable products which if not sold once cannot be sold ever again. Having such a constraint and also considering the fact of guest satisfaction, hotels have been keen on adapting to the changing environment and adopting new technologies and imbibing it into its system and operations. Being a service-oriented industry and with a lot of human interactions, hotels cannot depend completely on the changing technologies as it severs the personal attention and service which the hotels and hoteliers are known for. For this very reason, hotels have to be careful in choosing the right technology which enhances guest services, facilitates in daily operations and does not affect guest experience. Hotels and lodging operations are one of the oldest businesses in the world. They have been ever evolving and ever changing in their services and facilities with times gone by. Ever since man started travelling, hotels have existed and played a major role in the hospitality business. They have always taken care to ensure that the best products are provided to their customers in return for the money collected. To give the value for the guest expenditure, hotels believe in creating a Wow! Moment each and every time a guest stays at the hotel. Some of the pioneers in the hotel business like Marriott properties, Shangri-La, Hilton, The Oberoi group of hotels and resorts have wonderfully integrated the technology into their systems. The greatest example of this is the biggest conglomerate of the Indian hotel industry- The Taj Group of Hotels, Resorts and Palaces changing the reservation scenario to a new level by bringing out the affiliated reservation network through Central Reservation System.*

*Keywords: Guest satisfaction, Service oriented industry, Personal attention, Wow moment, Conglomerate*

**INTRODUCTION**

Technology is moving at a higher pace as compared to ever before which in turn is changing the presumptions of the guest as well as the face of the hospitality industry. Some of these improvements in the industry are leading to enhanced ways of building infrastructure and staffing requirement. Technology and Hotels go hand in hand. Hotels have always looked into different ways and methodologies to check how technology can be imbibed into their daily operations and that can benefit the guests making their stay a pleasant one, giving them the highest possible services better than what competitors could offer ensuring that their guests come back to them instead of roving for new properties. In the early day of hotel industry, the operations and services were manual in nature. Hotels used to maintain records of room reservations, guest registrations happening at the front desk, all cashiering activities including foreign exchange, paid outs, allowances, generation of various bills and folios were all hand-written. This was a monotonous task of book-keeping followed by all hotels as well increase the work load of the employees and a higher risk of losing data if the records went missing or were destroyed accidentally or knowingly.

Hotel's Front Office used Whitney system for holding registration cards of guest. This was a very tedious process which involved maintaining of the Whitney steel racks which were huge in size and occupied a lot of space. The front desk agent had a tough time in locating the right registration card when the guest came for check-in. As all of the tasks were manual and hand-written, there was a higher chance of human error and this resulted in annoying the guest leading to dissatisfaction. The manual process of billing the various outlet charges into the guest account was complicated as once the bill was signed by the guest, they were stacked and kept and after the shift was getting over, all the bills would be accumulated and handed over to the front office cashier who would then check the respective guest accounts in the book and manually add the charges into each account. If one bill was lost, the guest automatically would be undercharged leading to revenue loss for the hotel. The cashier, while entering the details had to be over cautious to ensure that the correct numerical were entered into the account so that the guest is neither undercharged nor overcharged. To curb these issues, hotels started to look out for alternative measures.

Front Office work culture has taken a drastic turn since the mid-20<sup>th</sup> century. Technology adaptation and implementation in the process and procedures started replacing the manual systems to computerized systems. Hoteliers started reaping the benefits of using technology in numerous ways. Reduction in manpower, error free computing and calculations, optimum usage of time, maximum utilization of available space, multi-tasking of employees, enhanced and improved guest services, standardized operating procedures, record maintenance, data

collection for future use, higher guest satisfactory index were a few of the advantages that the hotel benefitted with the implementation of technology.

### **REVIEW OF LITERATURE**

Robinson (2019) explores the latest trends in technology adopted by the hospitality industry. Where technology is advancing at a rapid pace, it is changing the expectations of both customers and the ways in which the hospitality industries conduct their business. The trends are actually improving the standards of the industry not actually leading to heavy costs but helping the hotels in saving in terms of their electricity consumption. Technology also has led the hotel companies to plan their buildings, infrastructure, organization structure and staffing requirement based on the level of automation being implemented into the system.

Fox (2018) explains about the usage of smart mirrors in guest room bathrooms is revolutionizing technology as well as providing a new level of service to the guests. Where a bathroom mirror was just used to enhance one's beauty, the same piece of material is now enabling the guest to get different forms of information, whether it is about the facilities available in the hotel or activities happening in the city, These smart mirrors are prompting guests to use the hotel facilities thereby generating revenue for the hotel as well as making the hotel save money by assisting in lighting and room temperature.

Neelam (2018) describes the importance of hospitality industry in becoming one of the major contributing industries to the economy of most of the countries and the introduction of IT in the hospitality industry has made it even stronger. The IT sector is revolutionizing the world of hospitality with innovative technologies not only in the operational areas but also with respect to guest services. It has made a landmark setting high standards of benchmark for different advancements in the field of automation and mechanization in the coming years.

Mest (2018) speaks about the new 'Smart Room' concept that is designed to improve guestroom accessibility. This concept room is equipped with salient features that enables the guest to access features of the room with reduced movement. It basically gives the guest a feel of comfort and luxury and a satisfaction for the amount spent on the room. A few hotels have started implementing the smart room concept even though this concept costs the hotel a considerable amount. This is done to give a welcoming feeling to the guest against the drab effect extended by the traditional hotel rooms.

### **RESEARCH METHODOLOGY**

This research is conceptual in nature which tries to explore and find out the importance of implementation of technology and automation in the field of Front Office and Guest Rooms in the hotels. Secondary data was collected from various online sites, the details of which is mentioned in the reference section.

### **STATEMENT OF PROBLEM**

Technology is becoming part and parcel of the hospitality industry. Even though, implementation of technology and automation into its system is going to cost a lot for any hotel management company, it has salient features to its advantage which will lead to generation of revenue as times go by. The initial hesitation of investment can be overcome with the understanding of the benefits that technology can bring to the hospitality industry. It not only improvises the systems, procedures, facilities of the hotel and its rooms, it also brings in a high level of satisfaction to its customers. This eventually will lead to the customers becoming repeat to the hotel and thus leading to revenue generation.

### **OBJECTIVE OF THE STUDY**

The research focuses on how the hospitality industry has to keep on par with the technological advancements, without the adaptation and implementation of technology how hotels would lack behind and be outdated.

It also emphasizes on the impact of technology and the need of it in the hotel industry, as the connection with tech savvy and millennial generation.

### **FINDINGS**

**Reservation Distribution Channels and Systems-** In earlier days, hotel rooms could only be booked by calling up the hotel, going in person to the hotel or by sending a fax. With the improvement in technology, making a room reservation in hotels has simplified. Hotel rooms can now be booked through numerous reservation channels like GDS (Global Distribution System), CRS (Central Reservations System), OTA (Online Travel Agencies), Hotel website and Intersell agencies. Many of the channels like Trivago, Expedia, Ibibo, Orbitz, Make My Trip, Yatra.com, Booking.com, Agoda, SABRE, Galileo International, Worldspan, Amadeus, American Express, Carlson Wagonlit are available to the customers through online interfaces. These channels

enable not only the individual travelers but also OTAs to do a comparative analysis and find out the best rates and facilities that are offered to guests.

**Chatbots-** These are the latest communication technology implemented by the hotel managements which enables a guest to actually communicate with the hotel at just a click of a button. Chatbots are powered by Artificial Intelligence and makes it seamless for a guest to communicate with the hotel personnel. A guest may book a room, have queries answered, get the information on facilities and services of the hotel and also get the minutest of details like confirmation of request for early check-in. It also provides complete information about the various events happening in the hotel as well as in the city.

**Card less Key-** The guest room key has taken various forms ever since hotels have opted for technological transformations to appease their guests. In the initial stages of the lodging industry, the hotels relied on metal keys to open the guest room doors. The disadvantage of this system was that if the key got lost, the hotels had to entirely change the lock and get a new one installed. This type of key involved a lot of safe keeping and also occupied a lot of storage space. An employee had to monitor the handling as well as safe maintenance of these keys. Near field communication (NFC) technology is the millennial generation wireless communication technology that enables the guests to access the guestroom doors and unlock them without the need of having a physical key card. All that a guest needs in order to use this NFC technology is have a smart phone, hotel web-based app and just about 5 meters away from the room door to unlock the room. This technology enables highest order of safety, seamless facility with no interruption, and absolutely no need of carrying the key card. Card less keys have taken various forms and shapes. A few of the technologies to be credited with this revolution are NFC, RFID (Radio Frequency Identification). NFC is a specialized version of RFID technology. Some of the patterns that are being followed are hotel front office sending an OTP to the guest's registered mobile number after the guest checks in using the app. This OTP has to be fed into the room lock with the help of the keypad on the door lock. Hotels have also utilized the credit cards of guests as method of unlocking the guest room doors. The credit card which is used by the guest at the time of check-in becomes the key to access the room. This card needs to be either swiped or inserted for the lock to access the number and open the door. This system is actually revolutionizing the guest room access as it provides a height level of security. Alternatively, there are smart cards which the guest can use to access the guest room doors. Smart cards are cards with built in microprocessor that contain data pertaining to identity, health insurance, bank details etc. These can be used as a multi facility card by an individual and can be programmed by the hotel to use as the guest room key. This also provides a higher level of security as the chances of losing it deliberately by the guest is minimized. Another innovative way to offer keyless experience to guests is through biometric system of guest room access where the device gets activated either through finger print or retina scanning.

**Mobile Communication-** Not only a lay man but also hotels and other organization rely heavily upon the usage of mobile phones, tablets or laptops to interact with their internal as well as external customers. Hotels are using mobile communication to keep their customers updated about any changes like delay in allotment of room to the guest due to non-availability of the category at that particular point of time, various deals on offer like promotional packages for rooms and other facilities or food festivals in the restaurants. This mode of communication is also used to carry out location-based advertising. The hotels have a database of their customers which gives them region wise customer information. In case the hotel wants to carry out marketing for any new product or packages in a particular region, advertising is targeted specifically on the customers who hail from those particular cities. Since a hotel chain has many hotels under its umbrella which is spread over an entire country, targeting specific sector of customers help them in getting their product marketed. The hotels may send mailers, or do text messaging or GPS tagging to reach out to their existing customers. A latest methodology is to target the different segments of market and promote the products through advertising. Based on the age and gender of a person, the advertising can be altered. This used artificial intelligence which is programmed in order to vary based on the demographic environment. For example- An advertisement will change on its own to promote a theme park or kids' play zones instead of any commercial advertisements when a kid is passing by the digital board placed in the lobby. This technology could also be used to track loyalty points from a guest's use of the conference facilities or room service. This opens many doors for hotels who want to offer a more personalized experience at their establishment.

**In-Room technology-** In previous days, the only technology that was available in guest rooms was a television. With the advancement in technology, hotels want to provide all services and facilities to their guests in the click of a button. So, a major focus is given on developing the in-room technology. The television in the room is programmed to feature the various activities that are happening in the hotel, any promotional packages that is currently on offer. It also shows any message left for the guest by a caller and which has been taken down by

the front desk. The guest can also view their bills on the television and settle their bills as the television is interfaced with the Property Management System via the telephone which gives it the access to settle the guest bill. These televisions also provide information about nearby restaurants, car rental services as well as details about shopping streets and malls. Certain hotels provide tablets in the guest room which enables the guest to access room service options as well as place orders. Guest are provided with tabs through which the guest can communicate with the hotel employee in order to get any extra amenities or services.

**Smart Mirrors-** Smart technology is getting smarter every day and changing the experience for guests. Smart mirror doubles as a television and becomes a virtual concierge platform and when it is switched off, it becomes a traditional mirror. They come in either touch or voice- activated models. The hotel can add customized apps for guests to order room service, get entertained, know about the weather condition of the city or the latest news, make any special requests to reception or housekeeping, and also get recommendations for things to do. The mirror has apps that allow the hotel to promote various services that can attract and catch a guest's attention, like special activities in the hotel or restaurant, discounts offered in the bar, thereby making the guest to spend which otherwise they would have never bothered to. As a guest walks into the hotel, the mirror can project the welcome message. On touching the screen, the controls of the entire room pop up. The guest can talk to the mirror and find out about the timings of the various facilities of the hotel like the timings of the gym or swimming pool or an availability of a slot in the spa. You can also place request on the mirror for extra towels.

**Smart Rooms-** These are the latest innovations in the field of hospitality and lodging industry. Accor Group of Hotels have recently revealed a concept of Smart rooms. The technology used in these rooms provide guests with a tablet to that has features to draw the curtains, control the room temperature and lighting. Guests can also tilt the headboards to suit their sleeping pattern. The wardrobes in these room have sliding doors that can be operated with the touch of a button. LED lights that are placed at various foot levels of the room get activated with the movement of the guest. This feature especially helps the guest to move around during night times. Bathrooms have adjustable shower heads that are motion sensed that get activated only in the presence of the guest. One of the new trends in the room includes a customizable atmosphere through which the guest can create a surrounding as per their choice which can be either aroma of coffee or tea, smell of sea breeze or the rain. In addition to just providing the aromas, it also creates an ambience with the digital sound effects.

**Hotel Front Desk Features-** In earlier days of hotel and lodging industry the front desk task was a very tedious process that involved a lot of paper and physical documents. Emerging trends in the industry has caused an ocean of changes in terms of reduction in manual documentation. One such example would be the self-check-in terminals that are placed in the hotel lobby. These kiosks assist the guest in checking in to a room without the need of an employee thereby also reducing the requirement of registration cards and other paper works. Another example that can be mentioned is introduction of digital signatures that can be directly made on the tab which features the guest registration card details. A much more personalized service offered by a few hotels is the process of carrying out the check-in in the room with the help of a smart suitcase. The suitcase contains a small tab with inbuilt PMS (Hotel Software), ID scanner, EDC (Electronic data Capture) with GPRS connectivity which enhances the check-in experience for a guest.

## CONCLUSION

The future of the present hospitality industry is dependent on the advancement in technology which has been evolving as well as revolutionizing the entire industry over the years. The millennial generation are a bunch of smart and tech-savvy people who are just not satisfied with the luxury and comfort offered in the rooms. They are always on the look out of remaining connected and engaged. The concept of smart room, IoT (Internet of Things) are the outputs of the Gen Z. Hotels in the current market are bound to be researching and implementing new developments with respect to technology. The current generation will not be content with basic technological implementations done in the hotel. How much ever the hotel keeps in pace with the changing world, the requirement of the guests will always be one step ahead of it. The research findings come to a conclusion that the hospitality industry has to be in tandem with the ever-evolving technology.

## REFERENCE

- <https://www.trilyo.com/blog/role-of-information-technology-in-the-hospitality-industry/>
- <https://www.aurecongroup.com/thinking/insights/aurecons-successful-hotels/technology-in-the-hospitality-industry-exploring-the-very-latest-trends>
- <https://www.hotelmanagement.net/tech/how-smart-mirrors-are-changing-way-guests-interact-hotel-rooms>
- <https://www.hotelmanagement.net/operate/accorhotels-details-new-smart-room-concept>
- <https://www.clock-software.com/blog/digital-guest-experience-in-hotels-part-two.html>

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**DIGITALIZATION IN THE HOTEL INDUSTRY- AN EXPLORATORY STUDY TO UNDERSTAND THE DIGITALIZATION INVOLVEMENT IN HOTELS**

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**ABSTRACT**

*The study aims to understand the digitalization involvement of hotels in India. The advancement of technology and the internet has transformed the way product and services are offered to the customers. Digitalization helps the hotels to reduce the operating cost through service automation. Digitalization is the emerging phenomena across the hotels. It is important to understand the digitalization involvement in hotels to identify the strength of the Indian hotels to adopt digitalization in the hotel operations. Based on the focus group discussion, an instrument to capture the digitalization involvement of the hotel was developed. The online questionnaire was circulated among the target respondents. Convenience sampling was followed to collect the data. The results of the study identified the digitalization involvement of a hotel in India. Studies exploring digitalization in hotels is limited. The present study contributes to the literature and provides insights into understanding the digitalization in hotels. The results of the study will be beneficial for the hotel owners and general managers to understand the digitalization prevailing among hotels in India. It will also be helpful to plan the digitalization in the respective hotels. This is one of the first study conducted in the Indian context focusing on digitalization.*

*Keywords: Digitalization, Hotels, Involvement, Features, India*

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**INTRODUCTION**

Indian hotel market comprises of hotels from Indian and International brands located in different geographical location. Hotels in India are classified based on the star categorization. The star categorization of the hotels is based on various factors such as location, size of the hotel, number of rooms, F&B outlets, quality of the products and services, etc. The target customers for the hotels are from both the domestic and international market. Hotels usually focus on providing rooms and food & beverage service for the in-house guest as well as for the walk in guest. The standard operating procedure or the service process is continuing to change based on the prevailing trends. The current trend in product and service delivery in hotels focuses on digitalization. High investment is required to introduce digitalization in hotels. Besides, investment customer acceptance of the digitalization and employee training is necessary for the success of the digitalization. Hotels with a high degree of financial freedom can adopt and implement digitalization in hotel operations when compared with hotels having financial constraints. Hotel customer's experiences digitalization in the day to today life and expects digitalization in hotels as well. Hotels which are digitalized will be preferred higher when compared to hotels which are not digitalized. Hence, digitalization acts as a competitive edge for the hotels to differentiate their brands among other hotels. In this scenario, an understanding of digitalization involvement of hotels will help to know the performance of Indian hotels towards digitalization.

**REVIEW OF LITERATURE**

Literature related to digitalization and technology implemented in hotels is discussed below for the present study. Anil Bilgihan et al. (2016) examined the hotel guest preferences of in-room technology amenities. The results indicate that high-speed internet access and guest device connectivity were perceived to be highly important by business travelers in comparison with leisure travelers. Ersem Karadag, Sezayi Dumanoglu, (2009) studied the productivity and competency of information technology in upscale hotels: The perception of hotel managers in Turkey. The findings of the study indicate that the hotel manager's perception about guest related IT applications was highly productive and the manager had appreciated the IT benefits. The study reported that there was a strong relation between IT applications and productivity in the lodging industry. Miyoung Kim, Hailin Qu, (2014) explored travelers' behavioral intention toward hotel self-service kiosks usage. The results found that variables such as perceived usefulness, perceived ease of use, compatibility and perceived risk had a significant direct impact on traveler's attitude towards using hotel self-service kiosk. With regards to traveler's satisfaction, perceived usefulness and perceived ease of use did not have any effect. The main factor "Compatibility" was the important factor which influenced the traveler's attitude towards using hotel self-service kiosks. The perceived ease of use was the second most crucial factor. Traveler's satisfaction was influenced by perceived risk and compatibility. Anil Bilgihan et al. (2011) reported information technology

applications and competitive advantage in hotel companies. The study recommended to consider multiple areas at the time of developing and implementing IT projects in hotels. The approach is required to achieve a competitive edge for the hotels. The authors mentioned four areas which need careful considerations while planning for IT applications in hotels. The areas were a business strategy and IT decision, IT application types, the outcome of IT benefits and style of decision making. Anil Bilgihan et al. (2011) mentioned that technology sophistication, management skills, integration of resources were likely issues while implementing IT decisions in hotels. Anil Bilgihan et al. (2011) highlighted that investments into IT applications in hotel companies could result in IT competencies and capabilities which in turn helps to lower cost, agility, innovation, add value for customers and enhanced customer service. Anil Bilgihan et al. (2011) stated that not all IT investments results in a positive outcome or may lead to sustainability. The authors also noted that the time gap between IT investment decisions and seeing their intended outcomes could be longer. Vanja Bogicevic et al. (2018) investigated Gender and age preferences of hotel room design. The findings of the study indicate that demographic factors such as age and gender moderated the relationship between hotel guest satisfaction and room design style. Vanja Bogicevic et al. (2018) found that younger guest preferred contemporary design style, older guest opted for both traditional and contemporary styles. Male guest preferred room decorated with masculine colors. In contrast, women were satisfied with both masculine and feminine color schemes. Jungsun (Sunny) Kim, Bo Bernhard, (2014) explored the factors that influenced the hotel customers intention to use a fingerprint system. Factors such as perceived usefulness, perceived ease of use, subjective norm, and perceived convenience, perceived data security, perceived property security, and personal concerns influenced hotel customer's intention to use fingerprint technology. Gender and age significant moderating role in the relationship selected factors and intention to use. Cristian Morosan et al. (2016) explored the guest intentions to use mobile apps in hotels. The role of personalization, privacy, and involvement. The study found that predictors taken for the study explained 79% of the variability in the intention to use hotel apps to personalize hotel services. The most influencing predictor was involvement, followed by app-related privacy and perceived personalization. Anil Bilgihan et al. (2011) reported information technology applications and competitive advantage in hotel companies. The study recommended to consider multiple areas at the time of developing and implementing IT projects in hotels. The approach is required to achieve a competitive edge for the hotels. The authors mentioned four areas which need careful considerations while planning for IT applications in hotels. The areas were a business strategy and IT decision, IT application types, the outcome of IT benefits and style of decision making. Anil Bilgihan et al. (2011) mentioned that technology sophistication, management skills, integration of resources were likely issues while implementing IT decisions in hotels. Anil Bilgihan et al. (2011) highlighted that investments into IT applications in hotel companies could result in IT competencies and capabilities which in turn helps to lower cost, agility, innovation, add value for customers and enhanced customer service. Anil Bilgihan et al. (2011) stated that not all IT investments results in a positive outcome or may lead to sustainability. The authors also noted that the time gap between IT investment decisions and seeing their intended outcomes could be longer. Ana Brochado et al. (2016) studied. High tech meets high touch in upscale hotels. The findings revealed that guest valued digital involvement in their hotel experience. The study noted that business travelers and younger generation displayed a higher importance to the latest technologies. SoYeon Jung et al. (2014) investigated in-room technology trends and their implications for enhancing guest experiences and revenue. The results found that installing specific in-room technologies had a significant effect on improving customer experience and improving income. The study also found most commonly installed in-room technologies hoteliers planned to install in the near future. Marco A. Gardini (2007) studied 111 German, Swiss and Austrian four and five-star hotels to examine the hotel responsiveness to reservation inquiries made through hotels corporate websites and to evaluate the hotels online sales performance. This includes email, online booking forms, and request for proposal forms). The study found that the majority of the hotels had lost the opportunity to increase sales due to failure in response to electronic reservation inquiries. Anil Bilgihan (2012) studied accepted pricing points for in-room entertainment technology amenities by guests. The results revealed that the guest preferred most of the in-room technology amenities as complimentary. The study also noted that guests were willing to pay for gaming consoles provided in the rooms. Leonard A. Jackson, (2009) Biometric technology offers the lodging industry new possibilities in the areas of identity assurance and authentication. These relatively new technologies hold promise for practical implementation for both employee and guest-related processes. The significant advantage to using this form of technology over other forms is that users do not have to carry anything around such as magnetic keycards, which can be lost, compromised or stolen. However, there are several legal, social and

cost-related challenges that must be overcome before the technology can be universally accepted and implemented in the industry. Leonard A. Jackson, (2009) reported that issues related to legal, social, cost need to be handled to let the technology accepted universally and implemented in the industry. Jungsun (Sunny) Kim et al. (2017) studied factors affecting customers' intention to use location-based services (LBS) in the lodging industry. The study found that factors such as familiarity coupon proneness and trust positively influenced the customer's intention to use location-based services. The study also examined four dimensions of privacy concerns (concerns of collection, error, unauthorized secondary use and improper access). The results indicate that concerns about data collection negatively influenced the customer's intention to use hotel location-based services. Cristian Morosan, (2013) analyzed the relationship between travel preferences and intentions to use registered traveler biometric systems in air travel. The results indicate that travelers perception of several air travel attributes were linked to their perception to use registered travelers biometric system. Attributes such as in-flight service experience, the efficiency of the pre-flight processing and emphasis on customer's time were beneficial to differentiate between travelers who were favorable and unfavorable towards registered traveler biometric system.

### STUDY OBJECTIVE

The study aims to understand the digitalization involvement of hotels in India.

### METHODOLOGY

A focus group discussion was carried out to develop a measurement scale to capture the digitalization involvement of hotels. The results of the focus group discussion identified 31 digitalization features of hotels. The digitalization features are measured by using 3 points Likert scale. (1 indicates not at all available, 2- somewhat available and 3 –highly available. An online questionnaire was developed for the study. The study population focuses on individuals who are related to the hotel industry from Bangalore city. The sample includes hotel management students, academicians, industry practitioners, and researchers. The respondents for the study were randomly selected by using a convenience sampling approach, and the online questionnaire link was sent to the respondents to participate in the survey. In total, 113 response was received. All the 113 response was taken for analysis.

### ANALYSIS

Descriptive statistics were employed to analyze the reported

### RESULTS

**Table-1: Digitalization in Hotels**

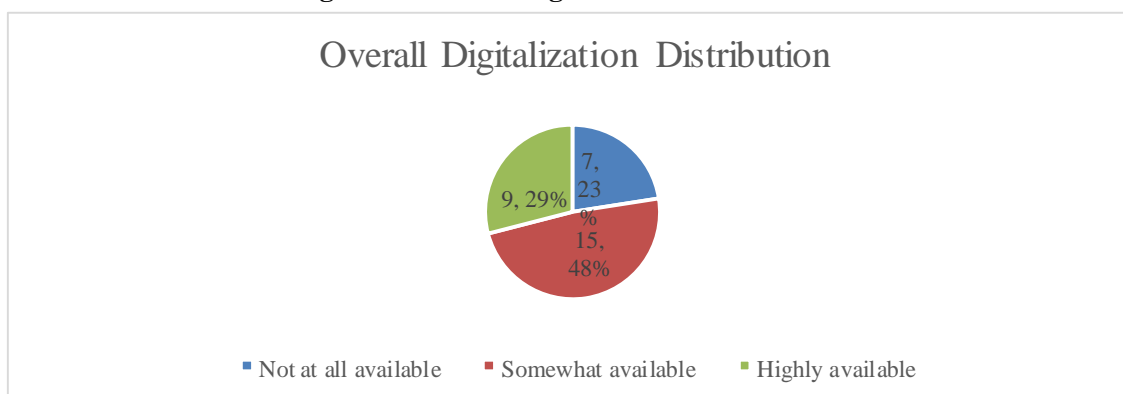
S. No	Digitalization in Hotels	Level of Involvement
1	Utilization of OTA ( Online Travel Agent) for hotel booking	Highly Available
2	Robot in place of Bell Boy	Not at all Available
3	Self-Check-in and Check-out Kiosk	Somewhat Available
4	Automatic Foreign Currency Exchange	Somewhat Available
5	Robots cleaning the guest room	Not at all available
6	Smart Shower	Somewhat Available
7	Smart Faucet	Somewhat Available
8	Voice-activated guest room	Somewhat Available
9	Room Occupancy Sensor	Highly Available
10	Bio-metric bathroom tiles that report on guest's health	Not at all available
11	Face recognition check-in and check out	Not at all available
12	Smart Mirror	Somewhat Available
13	Interactive Wall	Not at all Available
14	Mobile as a guest room key	Somewhat Available
15	Sensor activated thermostats	Somewhat Available
16	Hotel App	Highly Available
17	Digital Door Viewer	Somewhat Available
18	In-room concierge	Somewhat Available



19	Tablets for menu card/ guest comments	Somewhat Available
20	Smartphone which controls the room features	Somewhat Available
21	AI to capture the likes and dislikes of the guest	Somewhat Available
22	Robots to sanitize and disinfect bed linen	Not at all Available
23	Drug-free Relaxation technology	Highly Available
24	Robots to serve Food & Beverage	Not at al Available
25	Chatbots	Somewhat Available
26	Payment Wallets	Highly Available
27	Bio-metric elevator access	Somewhat Available
28	Wifi enabled Switches	Highly Available
29	Sensor Light	Highly Available
30	Digital Customer Review	Highly Available
31	RFID door lock	Highly Available

**Table-2: Digitalization Involvement Distribution**

S.No	Digitalization in Hotels	Level of Involvement
1	Utilization of OTA ( Online Travel Agent) for hotel booking	Highly Available
2	Room Occupancy Sensor	Highly Available
3	Hotel App	Highly Available
4	Drug-free Relaxation technology	Highly Available
5	Payment Wallets	Highly Available
6	Wifi enabled Switches	Highly Available
7	Sensor Light	Highly Available
8	Digital Customer Review	Highly Available
9	RFID door lock	Highly Available
10	Interactive Wall	Not at all Available
11	Robots to serve Food & Beverage	Not at al Available
12	Robot in place of Bell Boy	Not at all Available
13	Robots cleaning the guest room	Not at all available
14	Face recognition check-in and check out	Not at all available
15	Robots to sanitize and disinfect bed linen	Not at all Available
16	Bio-metric bathroom tiles that report on guest's health	Not at all available
17	Chatbots	Somewhat Available
18	Automatic Foreign Currency Exchange	Somewhat Available
19	Smart Faucet	Somewhat Available
20	Voice-activated guest room	Somewhat Available
21	Smart Mirror	Somewhat Available
22	Smartphone which controls the room features	Somewhat Available
23	AI to capture the likes and dislikes of the guest	Somewhat Available
24	Self-Check-in and Check-out Kiosk	Somewhat Available
25	Smart Shower	Somewhat Available
26	Mobile as a guest room key	Somewhat Available
27	Sensor activated thermostats	Somewhat Available
28	Digital Door Viewer	Somewhat Available
29	In-room concierge	Somewhat Available
30	Tablets for menu card/ guest comments	Somewhat Available
31	Bio-metric elevator access	Somewhat Available

**Figure-1: Overall Digitalization Involvement**

## DISCUSSION

The overall digitalization involvement indicates that digitalization involvement of hotels in India is relatively lower. As per the figure:1, it indicates that 48% of the respondents mentioned that digitalization in hotels in India is somewhat available, 29% of the respondents mentioned that highly involved and 23% of the respondents mentioned that certain digitalization is not at all available.

## RESEARCH IMPLICATIONS

The present study provides insights into the involvement of digitalization in hotels in India. It is the first study conducted in the country to understand the adoption of digitalization in hotels in India. The results will be useful to conduct further studies on digitalization. The study results can be compared with studies conducted in foreign countries to know the digitalization adoption of Indian hotels.

## PRACTICAL IMPLICATIONS

The results of the study will be beneficial for the hotel owners and general manager to understand the digitalization involvement of hotels in India. Besides, digitalization service providers and designers can know the areas where digitalization is less adapted to increase the awareness among hotels to adopt a particular digitalization which will improve the efficiency of the operation, maintaining the quality of service and to reduce the cost of the operation.

## LIMITATIONS

The present study is limited to 31 digitalization features of the hotels. The geographical location is restricted only to India. Hotel details such as star categorization, brand name, year of existence were not collected. These details will help to understand the digitalization involvement better and to establish relationships between hotels features and digitalization involvement.

## FUTURE RESEARCH DIRECTIONS

This exploratory study provides a broader scope to conduct further investigations. Details of the hotels such as star categorization, location, size of the hotel, chain or independent hotel need to be collected to establish a relationship with hotel features and digitalization involvement. Similar studies can be conducted in other geographical locations in India or abroad to understand digitalization involvement.

## CONCLUSION

Digitalization is happening in all the sectors, the hotel industry cannot be an exemption. It is essential for the hotels to find ways to introduce digitalization in hotel operations to better meet the needs and expectations of the digital customers and to stay competitive in the market. This study will provide preliminary understanding in this area of research.

## REFERENCES

1. Ana Brochado, Paulo Rita, Ana Margarido, (2016) 'High tech meets high touch in upscale hotels', Journal of Hospitality and Tourism Technology, Vol. 7, Vol. 4, pp.347-365.
2. Anil Bilgihan, (2012) 'A study of accepted pricing points for in-room entertainment technology amenities by guests', Journal of Hospitality and Tourism Technology, Vol. 3, No 1, pp.24-31.
3. Cristian Morosan, (2013) 'An analysis of the relationship between travel preferences and intentions to use registered traveler biometric systems in air travel,' Journal of Hospitality and Tourism Technology, Vol. 4, No.1, pp.23-39

4. Jungsun (Sunny) Kim, Sungsik Yoon, Dina Marie V. Zemke, (2017) 'Factors affecting customers' intention to use of location-based services (LBS) in the lodging industry,' *Journal of Hospitality and Tourism Technology*, Vol. 8, No. 3, pp.337-356.
5. Leonard A. Jackson, (2009) 'Biometric technology: the future of identity assurance and authentication in the lodging industry,' *International Journal of Contemporary Hospitality Management*, Vol. 21, No. 7, pp.892-905.
6. Marco A. Gardini, (2007) 'A Study on the Online Sales Efficiency of Upscale and Luxury Hotels in Germany, Switzerland, and Austria,' in Joseph S. Chen (ed.) *Advances in Hospitality and Leisure* (Advances in Hospitality and Leisure, Volume 3) Emerald Group Publishing Limited, pp.173 – 192
7. SoYeon Jung, Jungsun (Sunny) Kim, John Farrish, (2014) 'In-room technology trends and their implications for enhancing guest experiences and revenue,' *Journal of Hospitality and Tourism Technology*, Vol. 5, Vol.3, pp.210-228.
8. Ersem Karadag, Sezayi Dumanoglu, (2009) 'The productivity and competency of information technology in upscale hotels: The perception of hotel managers in Turkey,' *International Journal of Contemporary Hospitality Management*, Vol. 21, No. 4, pp.479-490
6. Miyoung Kim, Hailin Qu, (2014) 'Travelers' behavioral intention toward hotel self-service kiosks usage,' *International Journal of Contemporary Hospitality Management*, Vol. 26, No. 2, pp.225-245
9. Anil Bilgihan, Fevzi Okumus, Khaldoon "Khal" Nusair, David Joon Wuk Kwun, (2011) "Information technology applications and competitive advantage in hotel companies," *Journal of Hospitality and Tourism Technology*, Vol. 2 Issue: 2, pp.139-153
10. Vanja Bogicevic, Milos Bujisic, Cihan Cobanoglu, Andrew Hale Feinstein, (2018) 'Gender and age preferences of hotel room design,' *International Journal of Contemporary Hospitality Management*, Vol. 3, No. 2, pp.874-899.
11. Jungsun (Sunny) Kim, Bo Bernhard, (2014) 'Factors influencing hotel customers' intention to use a fingerprint system,' *Journal of Hospitality and Tourism Technology*, Vol. 5, No. 2, pp.98-125.
12. Cristian Morosan, Agnes DeFranco, (2016) 'Modeling guests' intentions to use mobile apps in hotels: The roles of personalization, privacy, and involvement,' *International Journal of Contemporary Hospitality Management*, Vol. 28 Issue: 9, pp.1968-1991.

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**A STUDY ON THE CUSTOMER SATISFACTION ON USING THE SMART DEVICES (WITH REFERENCE TO RURAL AREAS)**

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**ABSTRACT**

*This world is a Smart world filled with Smart people and smart devices as well. Smart devices are the electronic devices that are connected to a particular network like Wifi, Lifi, Lan, Bluetooth etc., that can operate some activities automatically. Smart devices are the part of Artificial intelligence which is helping the mankind in many ways. These are designed to support various activities of human kind that may be in the field of Agriculture, Industry, Services and etc.*

*There are so many smart devices we find around such as Tabs, smart phones, Smart lights, Amazon Alexa, Google assistant, etc., This study mainly focuses on the Customer satisfaction on using the smart devices. And also this study focuses on the change of the behavior of the mankind after and before the introduction to the smart devices.*

*Keywords: Smart devices, Modern Life, mankind, electronic devices, artificial intelligence.*

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**INTRODUCTION**

Smart devices are the devices that are electronically worked and are connected to a network like Wifi, Bluetooth, NFC's and etc. These can be controlled from the places where we work. There are smart devices around like Amazon Alexa, Google voice assistant, Wifi enabled cameras, Smart television's, Smart Phones, Smart Lights, Smart Geyser's, Smart Cars and etc. Smart devices can be said as the children of the Artificial intelligence.

There are so many characteristics that are possessed by the Smart Devices like:

- Remote external services access and execution
- It is complete automation
- It works on Sensor
- It has strong sensing
- Awareness

Presently, we can see the smart devices all across the world as well as over all cities, towns and villages.

There are so many advantages and disadvantages of smart devices. The following are the list of advantages that we enjoy from the smart devices is as follows:

**Education**

Smart devices started giving education at our fingertips of the knowledge seekers.

This enhances the rate of learners. For example: MOOCS, BIJUS and etc. The search engines are also providing ample of information from a place where we are of the distinct places.

**Productive apps**

Smart devices consists so many applications which are user friendly and assist any of the illiterate person to seek the information or to get the entertainment or to get the work done.

**GPS**

GPS will help to navigate the routes which are unaware to the person who want to travel. This also helps the areas of defense, fishing and searching new routes. This saves time and money.

**Privacy**

Smart devices restrict the unauthorized people to hack the data or the information stored in that device. Smart devices also has inbuilt features to restrict of stealing the data.

**Increased energy efficiency**

Small devices require less energy to operate when compared to olden day devices. There is a lot of improvement in the present day automated devices.

**Remote control functions**

The most of the modern day devices are controlled remotely. These devices are controlled from the place where we are. It doesn't require human presence near to the device.

**Managing all devices at one place**

There is possibility of centralization of operation of small devices. These devices can be managed with the help of one centralized unit or the remote or the device, which will help us to avoid duplication and burden of carrying the devices along with us.

**Security**

These devices are protected by firewalls, passwords, encryptions and anti-virus software's. Therefore the devices will restrict unauthorized login of the unwanted guests.

The following are the list of disadvantages that we enjoy from the smart devices is as follows:

**Cost**

Unfortunately, though the devices are functioning well and make our work simple but they are expensive.

**Security**

Though, there are methods to avoid software and data threat, still there are unethical professional hackers whose main job is to hacking and stealing the data from the devices.

**Distraction**

There is a lot of distraction with the usage of the smart devices especially with the smart phone that the children and youth use it to the maximum extent.

**Poor Social Interaction**

As and as smart devices are used by the people, it reduces the direct interaction with the public. This would create a lack of harmony and a primary relationship in the society.

**Health Issues**

Due to the continuous usage of the smart devices, there persist the health issues among the users. For example: Eye related issues, mental illness and so on.

**REVIEW OF LITERATURE**

**Chui et al. 2015**, DOI: 10.1109/SMC.2017.8122766 Conference: 2017 IEEE International Conference on Systems, Man and Cybernetics (SMC) The benefits of automation will exceed labor savings; instead, machines amplify the value of expertise by increasing an individual's work capacity and freeing the human to focus on work of higher value.

**Mertens and Barbian 2015**, DOI: 10.1109/SMC.2017.8122766 Conference: 2017 IEEE International Conference on Systems, Man and Cybernetics (SMC) One key challenge of leveraging new IS automation potentials that arise in the context of digitalizing environments is identifying the appropriate level of automation given the contextual decision-making requirements.

**Vagia et al. 2016** DOI: 10.1109/SMC.2017.8122766 Conference: 2017 IEEE International Conference on Systems, Man and Cybernetics (SMC) automation systems are designed to achieve the best fit for the capabilities, strengths, and weakness of both human and machine.

**Bravo 2015**; Bravo et al. 2016) DOI: 10.1109/SMC.2017.8122766 Conference: 2017 IEEE International Conference on Systems, Man and Cybernetics (SMC) IS automation theory identifies different levels of automation ranging from fully manual operations to computer use while preserving humans' full decision-making responsibility and up to full automation, whereby the computer acts autonomously.

**OBJECTIVES**

This study mainly focuses on the Customer satisfaction on using the smart devices – with reference to villages. And also this study focuses on the change of the behavior of the mankind after and before the introduction to the smart devices. The smart devices taken in the study basically concentrates on kitchen appliances, home appliances and smart phones usage in rural areas.

**METHODOLOGY**

The present study depends on both primary and secondary data. The primary data is gathered from the survey conducted through questionnaire. The total Sample size taken for the study was twenty and the sample space was totally Bangalore (rural) - Karnataka (India). The tool for the collection of information used was Questionnaire. The secondary data is used to collect the information on Smart devices.

### SMART DEVICES

There are so many smart devices in the market presently. The generation of smart devices started from 20<sup>th</sup> Century. The smart devices are helping the mankind in many ways since from the last century. Recently, there are so many developments in the field of smart devices. There are so many advantages as well as the disadvantages of the smart devices.

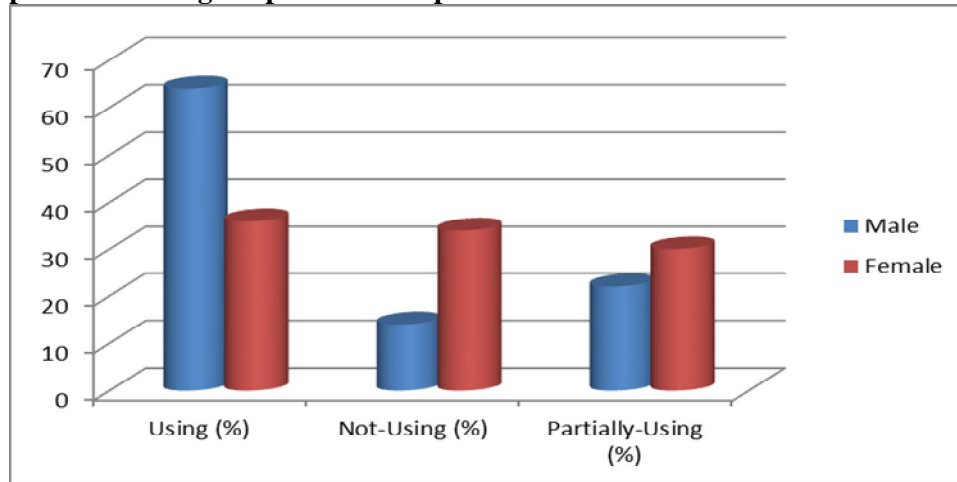
The advantageous side of the smart devices is helping the mankind in day to day activities in form of smart phones, smart kitchen appliances and home appliances. In large scale, if it is seen, then it is helping the defense in safeguarding the country in many ways. And also to the industry, the automation led to the increase in the productivity in the country as well as world. The smart devices have almost reached all the places in India. As of the study, it has even reached the village and town places too.

Even though, smart devices are difficult to understand, village people started using them in the form of smart phones, smart kitchen appliances and home appliances.

**Table-1.1: Showing Responses of Respondents towards Smart Devices in rural areas:**

Gender	Using (%)	Not-Using (%)	Partially-Using (%)
Male	64	14	22
Female	36	34	30

**Graph-1.1: Showing Responses of Respondents towards Smart Devices in rural areas**

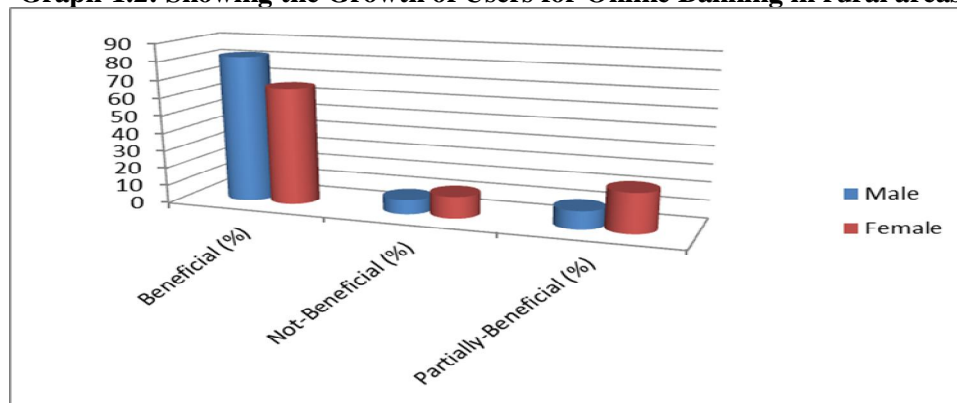


From the above table and graph, it can be understood that more number of users are male and very less number of people are female. Very less number of males are not using the smart devices and moderately males are using the devices partially. This shows that the males are opened up to the smart devices more than the female.

**Table-1.2: Showing how beneficial it has turned to the customers in rural areas:**

Gender	Beneficial (%)	Not-Beneficial (%)	Partially-Beneficial (%)
Male	82	08	10
Female	66	12	22

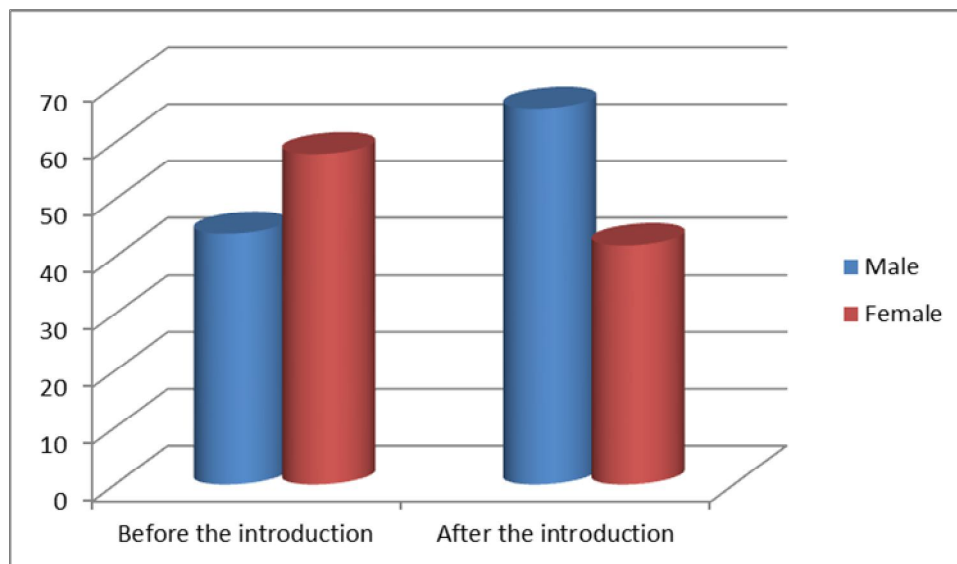
**Graph-1.2: Showing the Growth of Users for Online Banking in rural areas**



From the above table and graph, it can be depicted that the smart devices are helpful for both the male and female. There are very less people who say it is not beneficial or partially beneficial.

**Table-1.3: Showing responses of customers towards satisfaction before and after the introduction of Smart Devices in rural areas**

Gender	Before the introduction	After the introduction
Male	44	66
Female	58	42



From the above table and graph, it can be said that the satisfaction level is more for the male after the introduction of smart devices in comparison to the female. And it also shows that the female were more satisfied before the introduction of smart devices.

### FINDINGS

1. It is found that many of the people have turned into smart phones and smart devices.
2. It is also found that more number of people are depending mainly on smart phones and devices irrespective of their age, education and region they belong to.
3. It can be seen that the rural women are still not into the smart devices.
4. Rural men have started following the smart devices.
5. The education towards smart devices is not yet popularized in rural area.

### RECOMMENDATIONS

1. The support to the usage of smart devices need to given.
2. The awareness with regards to the usage of the smart phone and devices need to be updated over the rural areas.
3. The government can provide subsidies for the smart devices for bringing the awareness and updating the rural areas.
4. Rural women need to be supported and educated for the usage of smart devices.

### CONCLUSION

It can be concluded that the majority of the rural population have been transferred to usage of the smart devices and phones. They proved that their dependency is now more on smart devices and they use it for the sake of their conveyance in this fast moving life. Majority of female in rural areas are still away from the smart devices due to the cost of smart devices, literacy rate and the level of education and the freedom the rural women.

### REFERENCES

1. Helal A, Mann W, Elzabadani H, King J, Kaddoura Y, Jansen E. Gator tech smart house: a programmable pervasive space. IEEE Comput Mag. 2005; 38(3):50–60. doi: 10.1109/MC.2005.107.CrossRefGoogle Scholar
2. Adlama T, Gibbs C, Orpwood R. The gloucester smart house bath monitor for people with dementia. Phys Med. 2001;17(3):189.Google Scholar

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3. Thomson Reuters. ISI Web of Knowledge Web site. <http://www.isiwebofknowledge.com>. Accessed June 7, 2009
  4. <http://en.wikipedia.org>
  5. [https://en.wikipedia.org/wiki/Home\\_automation](https://en.wikipedia.org/wiki/Home_automation)
  6. <https://link.springer.com/article/10.1186/s40327-018-0063-8>
  7. Amazon reviews on smart devices
  8. Flipkart reviews on smart devices
  9. Understand smart sensors – Paul W Chapman
  10. Smart sensors for Industrial applications - Krzysztof Iniewski.



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**A STUDY ON THE IMPACT OF INDUSTRY 4.0 ON INTEGRATED MARKETING COMMUNICATIONS**

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**ABSTRACT**

*With the changing trend in technology "Industry 4.0", the communication channels are also changed, The revolution which changed the way the products are marketed. Industry 4.0 has given a new challenge for marketing participants to utilise technology in IMC. It is the technology basis for the transition to a new economic and corporate part of industrial internet in the most affected sectors such as industry, transport, agriculture, energy (smart grid), smart city etc. The fourth industrial revolution is characterised by merging technology and erasing boundaries between physical, digital and biological spheres.*

*This study is to explore on the development of marketing communications with the influence of industry 4.0. Here, particular attention is paid to the study of relationship of virtual (such as search engine optimization, social media marketing) and real economic space (sales promotion activities, personal selling) in which present firms are using the marketing activities. We know how digital technology is making its way through all levels of industrial production. The marketing communications focus on the target audience which requires the involvement of both consumer and producer. And why particular importance is given to the consumer behaviour in the fourth industrial revolution. Market indicates the increase in the business interest in the emergence of new business models based on the integrated marketing communications (IMC) and some form of consumer behaviour in the real virtual market. The potential interaction with the consumer, which gives these models are considered growth factors of competitiveness of firms in the market are identified.*

*Keywords: Industry 4.0, IMC, Marketing Activities, Virtual*

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**INTRODUCTION**

Today's economic world is influenced by the digitalisation progress and the development of high-tech innovative technologies. In the array of the technology and digitalisation business are forced to adapt their products and services due to the global trend of digitalisation and the immense pressure of competitive progress on high-tech, innovative strategies. The development of technologies in this fourth revolution are summarised as the upcoming utilisation of smart factories through the implementation of internet of things and internet of services. The achievement of optimum impact on the consumer is provided by an integrated marketing communications coverage of the target audience of the company, that is using the concept of integrated marketing communications (IMC) this concept has led to the revolution in the field of promotion. It was found that for the effective management of marketing activities necessary to combine different forms of promotion into a single program of integrated marketing communications. IMC is defined as a research based, audience focused, result driven, communication planning process that aims to execute a brand communication program over time so that there is clarity and consistency in the positioning of the brand. This is achieved by coordinating different communication disciplines and integrating the creative content across media. Along with the increasable explosion of technology during last two decades a host of new specialized media and fragmented of mass market. Suddenly needed to co-ordinate the multiplicity of companies and product messages being issued many of which lacked consistency. Companies initially took narrow, inside out view of integrated marketing communication (IMC). They saw it as a way to co-ordinate and manage their marketing communication (advertisement, publicity, public relation, personal selling, sales promotion and direct marketing) to give audience a consistent message about the company. Today, under industry 4.0 integrated marketing communications is viewed in a more sophisticated outside and inside perspective. It is a form of building and reinforcing mutually profitable relationships with employees, customers, other stake holders and the general public by developing and co-ordinating a strategic communication programme that enables them to make constructive contact with the brand with a variety media.

**LITERATURE REVIEW**

The true value of the IMC process is synergy, which happens at the customer level via media consumption rather than at the firm level through media distribution (Schultz, 2006). Duncan (2005, p. 5) describes IMC as "an ongoing, interactive process" and points out that "interactive, two-way communication is just as important as one-way mass media messages." From a professional's perspective, practitioners have generally embraced the concept of IMC, with advertising agencies in particular adopting the approach as "both sound practice and a source of added revenue" (Stammerjohan et al. 2005, p. 55).

Some researchers believe that the concept of IMC can be traced back to the 1970s (Cornelissen and Lock, 2000; van Riel, 1995). The first study on IMC was conducted by Caywood, Schultz, and Wang 1991b at the end of the 1980s, while the first “conceptual ideas” were published in the book “Integrated Marketing Communications” by Schultz, Tannenbaum, and Lauterborn 1993. IMC advocates believe that its emergence was down to the context of media upheaval of that time, for example, digital TV and mobile phones, market environments, that is, increasing global competition and rapid technological developments, such as the personal computer (Kliatchko, 2005; Reid, 2003; Eagle and Kitchen, 2000; Griffin and Pasadeos, 1998; Bruhn, 1997/1998; Hutton, 1996).

“IMC is a concept of marketing communications planning that recognizes the added value of a comprehensive plan that evaluates the strategic roles of a variety of communication disciplines – general advertising, direct response, sales promotion, and public relations – and combines these disciplines to provide clarity, consistency, and maximum communication impact” (Caywood, Schultz, and Wang, 2009)

The fourth industrial revolution is planning to get automated equipment to talk to each other without human intervention. In fact, it is about creating self –organ sing global production systems with highly flexible and realizing synergy potential of technological development production forces will become self organized, will receive feedback on the final product, assembly, machine, household appliance today some companies are already widely used technology and services in the internet of things, the percentage use of these technologies is limited. We are waiting for explosions which according to various estimates occur in the next 5-7 years.

### **NEED OF THE STUDY**

The need of this study is to get a better understanding about the integrated marketing communication under the influence of Industry 4.0 and how virtual communication (internet of things) helps in achievement of optimum impact on the consumer.

### **OBJECTIVES OF THE STUDY**

Research aim can be defined as a general statement which describes the reason for selecting a particular subject matter of the research. The following are the objectives of the study:

- To identify the reasons for transformation of marketing communication
- To know the differences between real & virtual economic space.
- To analyze the impact of Industry 4.0 in integrated marketing communication system.

### **RESEARCH METHODOLOGY**

The current study is based on the conceptual analysis of marketing communication in the era of Industry 4.0. The secondary data has been reviewed to meet out the objectives of the research.

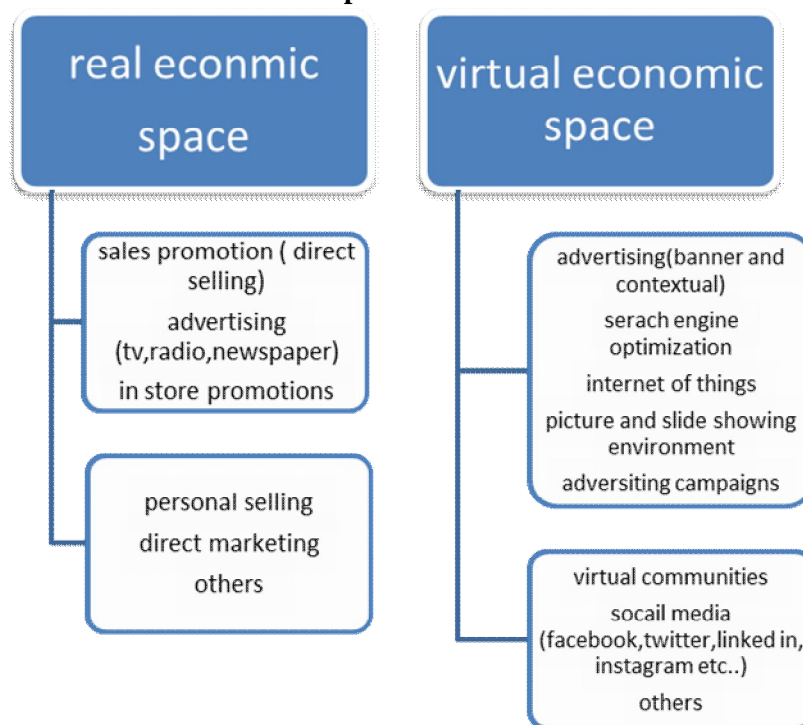
### **CONCEPTUAL ANALYSIS**

#### **Reasons for Transformation of Marketing Communication**

Relevance of the implementation of complex integrated marketing communications is due to several reasons:

- The effectiveness of the use of certain tools of the marketing policy of communications, including due to the high cost (for example, television advertising). Using complex IMC allows you to combine the budgets needed to move the same goods through various channels of communication, reducing the cost for each of them. So that the company has achieved its aim effectively, as well as dealing with fewer partners, shifting them complete solutions in a single block.
- The rapid growth of the flow of information and technology marketing communications under the influence of the Internet. The emergence of new distribution channels, interactive media, and the development of specialized media requires adjustment and placement of other accents in the strategy of marketing communications firm.
- Moving to the individualization of consumption and, consequently, to a two-way interactive marketing communications that require the involvement of both the consumer and the producer. In such circumstances, an increasingly important role to play become sources of influence and information dissemination: independent media, community social networks, business partners, family and friends, experts, state and public organizations, monitoring the quality of products.
- Glut in the market similar services and goods produced in a highly competitive environment for identical technologies. In such market situation marketers need to be creative in the using of new approaches and technologies promotion to position a particular product / service / brand in the minds of the target audience.

### Difference between Real & Virtual Economic Space



Source: Self made by the author

### CHANGING MOTIVES OF CONSUMER BEHAVIOR

Studying of consumer's behaviour(both physical and legal persons) - is a research of all economic, social and psychological influences, which influence the process of preparation and implementation of purchase, using the acquired production, including transfer of the got experience to other persons. In the conditions of the rigid competition in the modern globalized economy there is a problem of understanding of what occurs in consciousness of the consumer from the moment of receipt of external marketing incentives, completing acceptance of a final decision.

### IMPORTANCE OF MARKETING COMMUNICATION

- This study is to enhance the understanding of integrated marketing communication and how it influences brand orientation and market orientation.
- To influence or directly affect the behaviour of the selected communication audience through a strategic understanding of integrated marketing communication must be based on a rigorous planning process that will identify appropriate target audience, set specific communication objectives for target audience, and develop marketing communication that will accomplish those objectives in a consistent way, and find the best way of delivering the message.
- To encourage employees to work with a multiple targets and enable them to achieve integration of different brands, communication message, and functions with one company – that is IMC does not mean that an organisation should only work with one message or with single unifying brand rather through IMC approach it can have expanded notion of brand communication
- To communicate around customers and help them move through the various stages of the buying process. And it ensures that all forms of communications and messages are carefully linked together.

### CONCLUSION

Marketing communications play a significant role in marketing thorough minimising cost, increasing sales, creating brand awareness, and creating a positive brand image. Therefore, business would greatly benefit through IMC through advertising and direct marketing which will offer the business a competitive advantage against its competitors in the local market. The combination of these strategies would be instrumental in reaching a wider target market through industry 4.0, these tools will be evaluated through monitoring sales, conducting surveys and evaluating customer feedback. Reflects the current research and theories related to integrated marketing communications, digitalisation, and innovation or similar. This includes evaluating and critically assessing a substantial number of sources and outlining their relevance within the development of the

marketing communication and their contribution In order to explore the impact of the implementation of the industry 4.0 on marketing communications. the study will focus on how the development of marketing communication is done and how organisations use communication approaches and will explore the implementation of industry 4.0 , a concept of marketing communications planning that recognizes the added value for a comprehensive plan that evaluates the strategic roles of a variety communication disciplines (e.g. general advertising, direct response, sales promotion, impact and public relations) and combines these communications or disciplines to provide clarity, consistency and maximum communication.

**REFERENCES**

- J. Bernet Marketing communications: an integrated approach / J. Burnett, S. Moriarty,. Translated from English. ed. SG Bozhuk. - St. Petersburg: Peter, 2001. -864 p. - from. 110-113 6. J. Rossiter. R. Percy L. Advertising and product promotion. - SPb.: Peter, 2000.
- Larry P., Richard E. Development of an integrated marketing communications program (part 1) Larry P., Richard E. / Publishing house "Grebennikov". "Advertising Magazine. Theory and practice". - №4, 2007. - p. 75-77
- Litovchenko IL Marketing in a duality of the modern industrial market / IL Litovchenko Naukova // News of Kherson sovereign universitetu. Seriya: Ekonomichni science. - 2015. - №10. - Part 3 - P. 60-63
- Lucia porcu, assistant lecture of corporate communication vol:114 no 2 pp-33-348
- Research of E-Commerce worldwide [Electron resource] - Mode of access: <https://www.statista.com/outlook/243/100/ecommerce/worldwide#market-revenue>
- Schultz DE new marketing paradigm. Integrated marketing communications / DE Schulz, S. Tannenbaum, RF Lauterborn. - M .: INFRA-M, 2004 - 234 p. - s.19-21
- Shkurupskaya .i.o phd., prof.liovchecko i.l., dr. Faculty of international economy , marketing department Odessa national economy, Ukraine

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**INFORMATION SECURITY CHALLENGES AND YOUTH AWARENESS ON INFORMATION  
PRIVACY: A COMPREHENSIVE ANALYSIS**

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**ABSTRACT**

*In this era of digitalization, securing personal information is mounting up to be one of the biggest challenges. People are gradually becoming aware of the importance of maintaining the privacy of their personal information yet spreading knowledge and creating awareness is required to widespread population. The objective of the paper is to understand various threats to information privacy, measure awareness level amongst youth and provide suggestion to face the challenges.*

*The paper begins with a brief introduction to the Data Protection Laws in India. It says that in India although we have many strict laws for breach of information but still stringent laws are required for governing data protection or privacy. In order to collect information about awareness level of youth primary data was collected through survey where a questionnaire was made and was distributed to the youth in Bangalore. There are 100 respondents for the study and the questionnaire was equally distributed among 50 male and 50 female. The secondary data was collected through internet, articles, journals, magazines etc.*

*According to the study, it was found that the young generation isn't aware about how the information is stored by the sites and through which channel the hackers hack into the stored information and they aren't aware of the precaution methods for their device. There is a need to make the public aware about the medium through which threats occur and the precautions they can take to keep their information private.*

*Keywords: Digital age, Personal information, Data privacy, Awareness level, Young generation, Challenges.*

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**INTRODUCTION**

Personal information is claimed to be the new product in the digital age, with an increasing market demand and profitability for businesses. Simultaneously, people are becoming aware of the value of their personal information while being concerned about their privacy. At a population 1.34 Billion, India has the second highest number of internet users in the world after China but it lacks the legal framework to ensure data protection and privacy with current laws inadequate for the rapidly-evolving sector, say its cyber security experts. A right to protect one's data on online platforms constitutes data privacy. Such data could either be concerned with an individual, enterprise or even a government. India's first regulation for 'data privacy' came through the Information Technology Act of 2000. This law deals with compensation for negligence in implementing and maintaining reasonable security practices and procedures for sensitive personal data or information; and provides punishment for disclosure of information without the information provider's consent.

What are the data protection laws in India?

India presently does not have any express legislation governing data protection or privacy. However, the relevant laws in India dealing with data protection are the Information Technology Act, 2000 and the (Indian) Contract Act, 1872. A codified law on the subject of data protection is likely to be introduced in India in the near future. The (Indian) Information Technology Act, 2000 deals with the issues relating to payment of compensation (Civil) and punishment (Criminal) in case of wrongful disclosure and misuse of personal data and violation of contractual terms in respect of personal data. Data protection in India is governed by loosely constructed provisions of the Information Technology Amended Act, 2008 (ITAA) under Sections 43-A and 72A of the Act. Compensation for failure to protect data (Section 43-A) was introduced by way of an amendment in 2008, which states the liability of a body corporate to compensate in case of negligence in maintaining and securing the "sensitive data." However, the Act fails to define "sensitive data" and states the same as "personal information as may be prescribed by the Central government."

Section 43A (Penalty and compensation, for damage to computer, computer system, etc.) is an important provision in the act which is based out on negligence, implementing reasonable security practices and procedures, wrongful loss and wrongful gain and compensation. Sections 65 is the penal provision, as tampering with computer source documents, which establishes imprisonment up to three years, or with fine which may extend up to two lakh rupees, or with both, who knowingly or intentionally conceals, destroy, or alter any computer source code used for a computer, computer programme, computer system or computer network, when the computer source code is required to be kept or maintained by law for the time being in force.

Section 66 it deals with Computer related offences, Section 66 read with section 43 execute a criminal mandate as if any person, dishonestly or fraudulently, does any act referred to in section 43, he shall be punished with imprisonment for a term which may extend to three years or with fine which may extend to five lakh rupees or with both. The word used in the section dishonestly or fraudulently in relation to section 43 for curtaining hacking to computer or unauthorized use of protected information. Section 72, Penalty for breach of confidentiality and privacy, – Directly demonstrate privacy protection with a penal provision. Section says “Save as otherwise provided in this Act or any other law for the time being in force, if any person who, in pursuance of any of the powers conferred under this Act, rules or regulations made there under, has secured access to any electronic record, book, register, correspondence, information, document or other material without the consent of the person concerned discloses such electronic record, book, register, correspondence, information, document or other material to any other person shall be punished with imprisonment for a term which may extend to two years, or with fine which may extend to one lakh rupees, or with both.” Section 43A and Section 72A, protected the data even outside the India, but the expectation of corporate are too high, ‘The information technology amendment Act, 2008 was aimed to rectify such lacunas in our country, still much more is needed.

India presently does not have any express legislation governing data protection or privacy. However, the relevant laws in India dealing with data protection are the Information Technology Act, 2000 and the (Indian) Contract Act, 1872. A codified law on the subject of data protection is likely to be introduced in India in the near future. Protection of data privacy is important to strengthen the digital ecosystem and the mobile environment of India. It will form the foundation of realising the Digital India dream and protect users from any kind of cyber harm. It is crucial to have in place an effective regime for the protection of personal information only then can we win the trust of the users in our country and can witness more people becoming a part of the digital journey.

#### **LITERATURE REVIEW**

Amina Wagner, Nora Wessels, Peter Buxmann & Hanna Krasnova (2018) states in the paper, ‘Putting a Price Tag on Personal Information – A Literature Review’ that in the digital age, personal information is claimed to be the new commodity with a rising market demand and profitability for businesses. Simultaneously, people are becoming aware of the value of their personal information while being concerned about their privacy. This increases the demand of direct compensation or protection. This paper highlights multiple factors that drive the awareness and consciousness such as transparent secondary data use and identification to increase their valuation of privacy.

LemiBaruh, EkinSecinti & ZeynepCemalcilar (2017) states in the paper, ‘Online Privacy Concerns and Privacy Management: A Meta Analytical Review’ that the meta-analysis investigates privacy concerns and literacy as predictors of use of online services and social network sites (SNSs), sharing information, and adoption of privacy protective measures. A total of 166 studies from 34 countries ( $n = 75,269$ ) were included in the analysis. The paper says that the users concern about privacy were less likely to use online services and share information and were more likely to utilize privacy protective measures. Analyses also confirm the role that privacy literacy plays in enhancing use of privacy protective measures. The findings were generalized across gender, cultural orientation, and national legal systems.

Svensson, Mans; Rosengren, Calle; Astrom, Fredrik (2016) states in the paper, ‘Digitalization and Privacy: A systematic literature review’ that in this systematic literature review, two types of investigations have been conducted. First, a bibliometric analysis that aims to produce comprehensive overview of the current state of the research in the area at a statistically analytical level. Second, a systematic literature study that has identified relevant scientific articles, analysed their content and categorized them. This paper aimed to find out privacy and digitalisation more in a scientific manner.

Dimitris Potoglou; Neil Robinson; Tess Hellgren; SvitlanaKobzar and Patil Sunil (2014) states in the paper, ‘Literature Review of Approaches for Measuring Preferences with Respect to Privacy, Security and Surveillance’ that this paper aims to inform the identification and selection of relevant, robust and validated methods for measuring individuals’ preferences related to privacy and security. It reports on the results of a targeted search of peer reviewed and grey literature concerning measurement scales and valid attitudinal indicators relating to privacy, security and surveillance. This search was conducted in the context of Work Package 2 of the FP7 PACT project and was intended to inform the selection of appropriate methods in the subsequent fieldwork stage of Work Package 3 of PACT.

CY Messenger, BSNS7370 (2012) states in the paper, 'Literature Review Concerns of trust and privacy within the social networking sites' that this report is a literature review of ten published journals and articles related to the topic of trust and privacy within the social media space, taken from a user's perspective. It has begun by discussing the user's responsibilities concerning their own online content, and go on to talk about the inconsistency and confusion of SNS's privacy policies. This paper says that that Governments need to update privacy policies concerning the online space, that SNS users must be aware of SNS's privacy policies and take some responsibility for the information that they choose to post online, and finally that SNS's have to take a more ethical and socially responsible approach to their use of user information.

### **OBJECTIVES**

- To study the Right to privacy act & cyber laws relating to online privacy.
- To understand new challenges by big data and industry 4.0.
- To measure the awareness levels of youth towards online social networks & websites.
- Suggest possible solution towards new challenges.

### **NEED OF THE STUDY**

With the development of social networks sites, privacy of information online has been a serious and important research topic. Given the rising popularity of social networks, its a little surprise that there have been several high-profile breaches of security on sites as huge as MySpace, Face book and Cambridge Analytica. India is expected to have 500 million internet users by June 2018, all it takes is one single person to cause a major damage.

Privacy is about respecting individuals and their personal life. This paper aims to understand the new privacy risks posed by Big Data and the awareness level among the young generation to evade the risk.

### **RESEARCH METHODOLOGY**

The research type used is Descriptive type of research where survey method is used. The unit for the research selected is the youth in Bangalore. The target population selected is young men and women who are the users of the online networks in Bangalore. The sample size of the research is 100 respondents. The 100 respondents were selected from the population through Simple random sampling method and the questionnaire was equally distributed to 50 male respondents and 50 female respondents. The required data was collected through survey, where a set of open and closed ended questions were prepared and the questionnaire was circulated through Google forms to the respondents. This is how primary data was collected and secondary data was collected through articles from the internet, newspapers, magazines etc. The acquired data was analysed using Microsoft excel where the calculations are done using percentage and average method.

### **CONCEPTUAL ANALYSIS**

#### **Challenges Faced By Big Data**

The biggest challenge which is faced by big data considering the security point of view is safeguarding the user's privacy. Big Data mostly contains vast amounts of personal particular information and thus it is a huge concern to maintain the privacy of the user. Since, the data stored is in big amount, breaching it will affect big data a lot as there will be devastating consequences.

Increased connectivity and interactions of devices may create a number of security and privacy risks. Internet of Things devices may present a variety of potential security risks that could be exploited to harm consumers by: (1) enabling unauthorized access and misuse of personal information; (2) facilitating attacks on other systems; and (3) creating safety risks.

First, on Internet of Things devices, as with desktop or laptop computers, a lack of security could enable intruders to access and misuse personal information collected and transmitted to or from the device. Secondly, security vulnerabilities in a particular device may facilitate attacks on the consumer's network to which it is connected, or enable attacks on other systems.

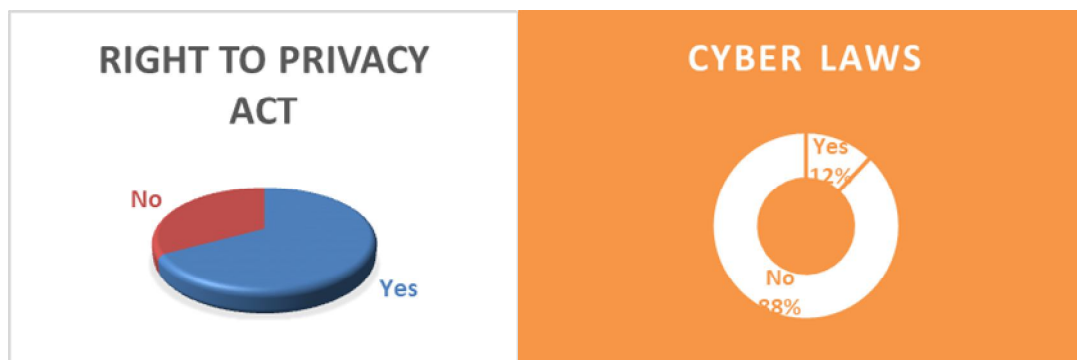
In addition to risks to security, privacy risks also arise from the Internet of Things. Some of these risks involve the direct collection of sensitive personal information, such as precise geo location, financial account numbers, or health information. Others arise from the collection of personal information, habits and physical conditions over time. This paper therefore studies the awareness of youth regarding such privacy issues and the simple measures which can be adopted to avoid such problems.

### DATA ANALYSIS AND INTERPRETATION

The data collected from questionnaire method survey is analysed and interpreted. The analysis of the data was done using the percentage method and average method using the Microsoft excel. This paper will discuss and analyse how one gets access to personal information and how privacy of information has become a concern and through percentage method we can find out the awareness level among the young generation. Using the percentages graphs are created and the interpretation was made.

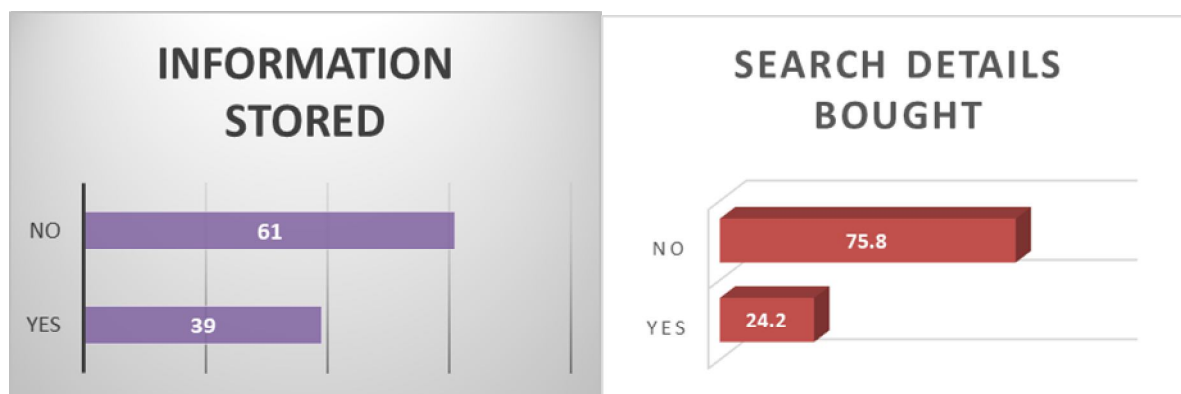
**Table-1: Awareness on Right to privacy act and cyber laws.**

Variables	Responses		Percentage	
Right to privacy act	Yes – 67	No - 33	Y – 67%	N – 33%
Cyber laws	Yes - 12	No - 88	Y – 12%	N – 88%



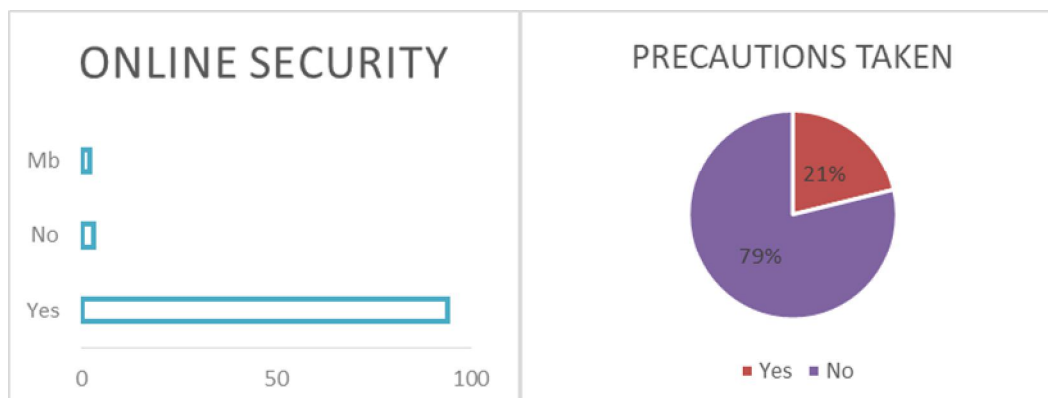
**Table-2: Awareness on information stored and search details bought by other websites.**

Variables	Responses		Percentage	
Informed stored	Yes – 39	No - 61	Y – 39%	N – 61%
Search details bought	Yes - 24	No - 75	Y – 24.2%	N – 75.8%



**Table-3: Do you feel online security is important and have you taken any precautions for your device?**

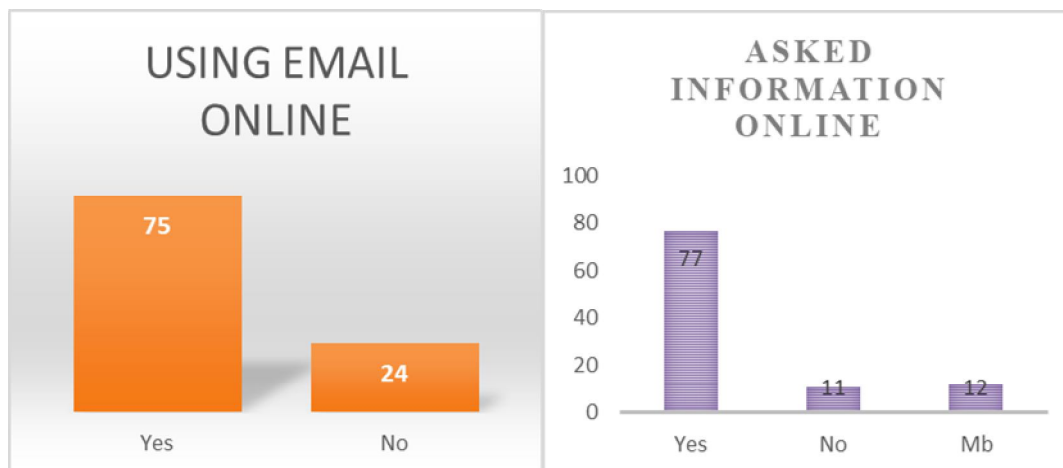
Variables	Responses		Percentage	
Online security is important	Yes – 94	No – 3 MB - 2	Y – 94.9%	N – 3% MB – 2%
Precautions taken	Yes - 21	No - 78	Y – 21.2%	N – 78.8%





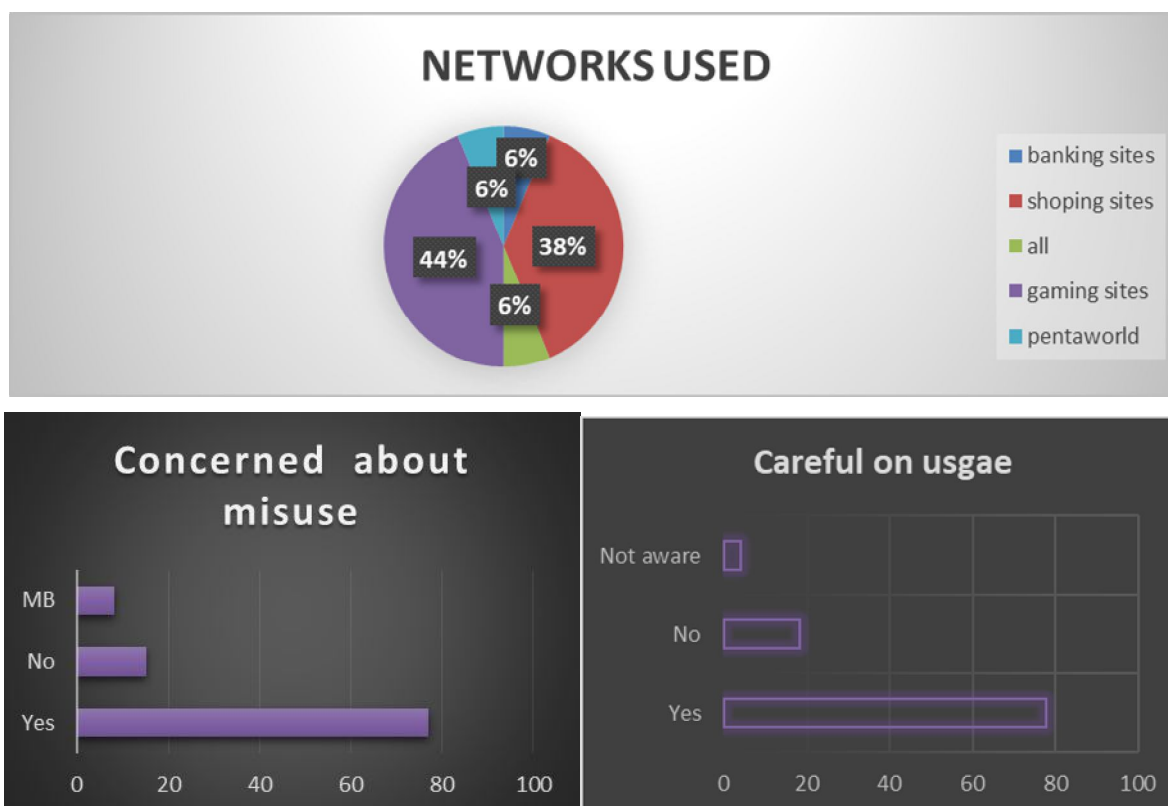
**Table-4: Are you aware that just by using your email, online information becomes accessible to others and have you been asked to provide information online?**

Variables	Responses	Percentage
Using email	Yes – 24 No – 75	Y – 24.2% N – 75.8%
Asked information online	Yes - 77 No – 11 MB - 12	Y – 77 N – 11 MB - 12



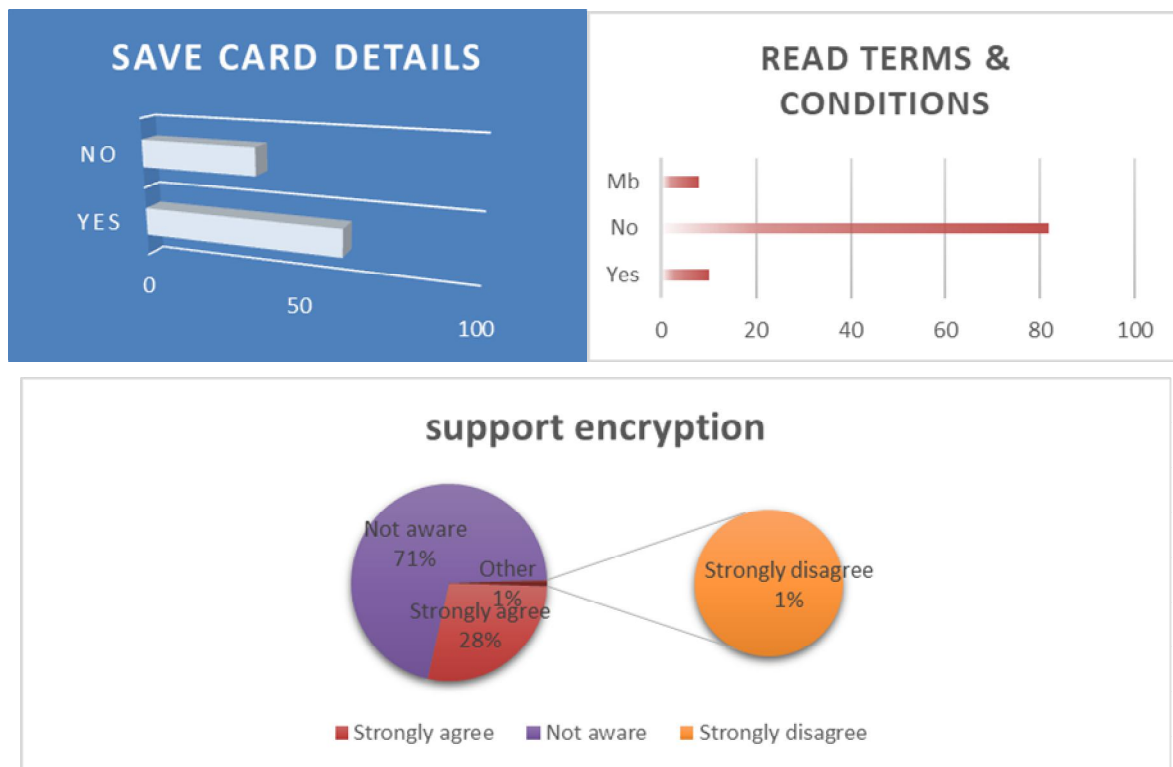
**Table -5: Types of networks used regularly, are you concerned about misuse of personal information and how careful will you use networks after the recent data threat?**

Variables	Responses	Percentage
Concerned about misuse	Yes – 77 No – 15 MB - 8	Y – 77% N – 15% MB – 8%
Careful on usage	Yes - 77 No – 18 NA - 4	Y- 77.8% N- 18.2% NA- 4%



**Table-6: Do you save card details on your device, read terms & conditions carefully and do you support the establishment of key escrow encryption?**

Variables	Responses	Percentage
Save card details	Yes – 63 No – 37	Y – 63% N – 37%
Read terms & conditions	Yes - 10 No – 82 MB - 8	Y- 10% N- 82% MB- 8%
Support encryption	SA- 28 NA – 71 SD - 1	SA-28% NA- 71% SD – 1%



**Table-7: Do you feel that there is a need to create awareness and educate public on this issue?**

Variable	Responses	Percentage
Need for awareness	Yes – 94 No – 3 MB - 3	Y -94% No – 3% MB – 3%



## FINDINGS

- Using the percentage method, it was found that the respondents are aware of Right to privacy act but not aware of the cyber laws.
- More than half of the respondents aren't aware that the information is stored by the websites once it's used and that this information stored is bought by other websites.
- The young generation agrees that online security is important but 78.8% is not using any precautions because they are not aware on how to secure the device.
- 77% respondents says that they are asked to provide personal information online while using the websites but not aware about the fact that just by accessing email all the stored information like pictures, personal documents, banking details etc. becomes accessible to hackers.

5. 84% respondents are users of social networking sites on a regular basis and are highly concerned about misuse of information by the site and it is found that after the data threat by Facebook the young generation is much careful about using this social network site.
6. There are users who save their card details on the device for easy payments but 82% do not read the terms and conditions carefully before using them. It is found that 71% respondents are not aware about the establishment of key escrow encryption for privacy purposes and 28% has strongly agreed.
7. All the respondents answered “No” to the question “Is your privacy really private?” which clearly indicated that there should be awareness about how the privacy breach and misuse of personal information can be minimised. If the public is aware about how the information is stored and used then individually one can take precautions to minimise the damage.
8. Government can create awareness programmes on the same as this is an on-going issue and let us together safe guard information in the digital era. About 94% of the respondents said there is a need to create awareness on the same.

### SUGGESTIONS AND POSSIBLE SOLUTION TOWARDS NEW CHALLENGES:

This paper studies not only on the awareness among youth and understanding of the possible security issues but also suggests the measures which they can adopt to face the security challenges. It is necessary to raise awareness of cyber issues and minimize its effect by ensuring that all young generation have a wide and current knowledge. It is then hoped that this will ensure that not only the students but also their friends, relatives and future employers would also gain from this knowledge.

First, companies should implement “security by design” by building security into their devices at the outset, rather than as an afterthought. All the employees should be taught in advance about the precautions and limitations.

In addition, every company should do a privacy or security risk assessment, consciously considering the risks presented by the collection and retention of consumer information. Companies should incorporate the use of smart defaults, such as requiring consumers to change default passwords – if they use default passwords at all – during the set-up process.

Third, companies must work to ensure that they retain service providers that are capable of maintaining reasonable security, and provide reasonable oversight to ensure that those service providers do so.

### CONCLUSION

Protection of data privacy is important to strengthen the digital ecosystem and the mobile environment of India. This study clearly indicated that there is a high need to educate people on how they can carefully use sites and prevent one from hacking into their data privacy. Personal information needs to be kept secured. The major problem in India is that people are not aware of the significance of keeping the information private and the repercussions of what can be done, if the information is shared. The recent data breach by the famous networks has created a concern in the minds of the public but the question which is to be answered is that what can an individual do to keep such information safe. It can be said that creating awareness in educational institutions, organisations (public & private) and religious communities etc. can reduce the risk of security to an extent. The only limitation of the study is that the respondents selected are the youth in Bangalore and the results of the same might be for this particular location. The same could be studied in different parts of India which would provide accurate results and this is the next research opportunity.

### REFERENCES

- Amina Wagner, Nora Wessels, Peter Buxmann & Hanna Krasnova (2018), ‘Putting a Price Tag on Personal Information – A Literature Review.’
- Aroral, Kim (2018), All you want to know about General Data Protection law.
- CY Messenger, BSNS7370 (2012), ‘Literature Review Concerns of trust and privacy within the social networking sites.’
- Dimitris Potoglou; Neil Robinson; Tess Hellgren; Svitlana Kobzar and Patil Sunil (2014), ‘Literature Review of Approaches for Measuring Preferences with Respect to Privacy, Security and Surveillance.’
- Lemi Baruh, Ekin Secinti & Zeynep Cemalcilar (2017), ‘Online Privacy Concerns and Privacy Management: A Meta-Analytical Review.’

- 
- Meredith, Sam (2018), YouTube should be fined billions for illegally collecting children's data, privacy groups claim.
  - Solove, Daniel J. (2008). Understanding Privacy, Cambridge <https://en.wikipedia.org/wiki/Privacy>
  - Svensson, Mans; Rosengren, Calle; Astrom, Fredrik (2016), 'Digitalization and Privacy: A systematic literature review.'
  - Thakur, Ajay (2017) All You Need To Know About Cyber Laws In India <https://blog.ipleaders.in/need-know-cyber-laws-india/>

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**A STUDY ON THE IMPACT OF E-TAILING: A PARADIGM SHIFT TO SUPPLY CHAIN MANAGEMENT TOWARDS CUSTOMER SATISFACTION**

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**ABSTRACT**

*E-tailing is a broader concept of Building Relationship through sales. It's a buzzword for business to consumer (B2C) transactions that takes place over the Internet.*

*We shall study on the impact how the E-tailing has helped in predictive analysis in demand planning, advanced analytics, underlying the machine learning techniques, Order management, bringing collaboration and managing the inventory.*

*It's the time to change the game from Business to consumer with the usage of Industry 4.0 with highly Integrated process optimisation.*

*We shall arrive at the understanding the balancing of the Business cost of production and consumer satisfaction.*

*A model of operational efficiency is our effort in this study.*

*Keywords: Cost of Production, Technology, Supply chain, consumer satisfaction*

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**INTRODUCTION**

In every Business the most effective department that should work in coordination to get the production cost reduced is the SCM (Supply Chain Management). In commerce, supply-chain management (SCM), is the flow of goods and services, involves the movement and storage of raw materials, of work-in-process inventory, and of finished goods from point of origin to point of consumption. Interconnected or interlinked networks, channels and node businesses combine in the provision of products and services required by end customers in a chain. Supply-chain management has been defined as the "design, planning, execution, control, and monitoring of supply-chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand and measuring performance globally.

**RESEARCH OBJECTIVE**

- To understand on how the Cost of Production can be reduced
- To study on the Consumer Satisfaction.
- To make sure Consumer products are available at a reasonable pricing.

**RESEARCH DESIGN**

The Research Paper is an Empirical Study through Questionnaire and Interview.

**SOURCES OF DATA**

Both Primary as well as Secondary data will be used. Primary data will be conducted from Questionnaire and Case Study, Secondary data will be conducted from books, journals, e-journals, e-libraries, newspapers and magazines.

**PROCESS OF SUPPLY CHAIN MANAGEMENT**

The Supply chain process has brought an impact on the Customer Satisfaction. This has led to the reduction in the Cost of Production to the manufacturers and helps in reduction in Selling price of the product.

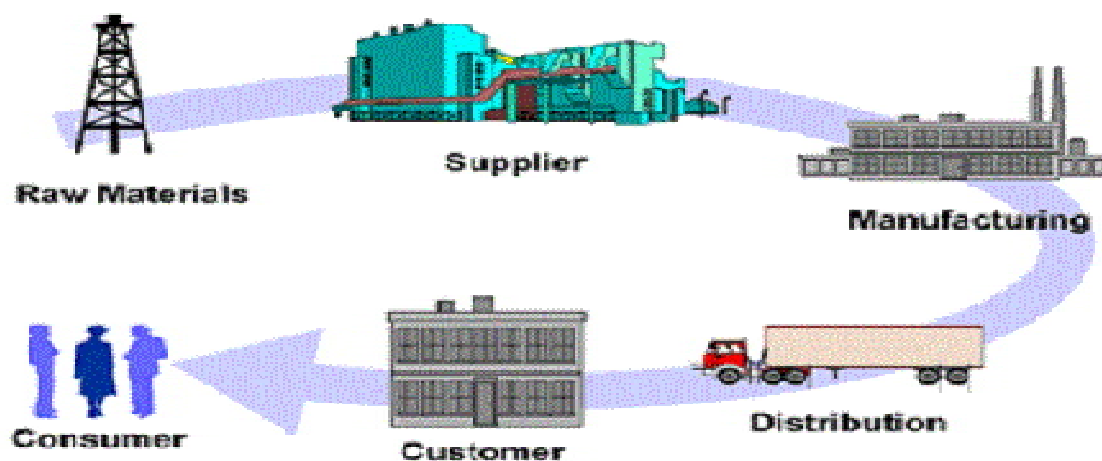
**DIFFERENCE BETWEEN LOGISTICS AND SUPPLY CHAIN MANAGEMENT**

There has been a difference between the Logistics and Supply Chain Management.

Logistics is defined as the process of planning, execution, and control of the movement of goods and other related activities.



But Supply Chain Management is a terminology used to describe all the activities, which include the purchase of raw materials, receiving of raw materials, manufacturing, and production of goods, and delivery of the desired goods to their respective customers or destinations.



### ADVANTAGES OF SCM

#### Higher Efficiency Rate

The Business gets an opportunity to manage their funds and can dynamically adjust to the fluctuating economies, emergency markets, and shorter product life-cycles.

#### Decrease Cost Effects

It helps in Inventory Management and reduction in Production cost. Distributors price will be reduced or can be eliminated.

#### Increases Output

This adds up to the coordination and collaboration with shipping and transport companies, vendors, and suppliers.

#### Increases Your Business Profit Level

When you place your business open to the new technologies and an improved collaboration within the different areas, you can be sure that this will ultimately increase your business profit level.

#### Boost Cooperation Level

The communication among the different areas of your business will allow you to have faster access to forecasts, reporting, quotation, statuses, among many other plans in real time.

#### No More Delays in Processes

Everyone is aware of what they're doing as well as what others are doing, this will mitigate any late shipments from vendors, logistical errors in distribution channels, and hold-ups on production lines.

#### Enhanced Supply Chain Network

By combining all the information gathered on the different sectors of your business will allow you to have an enhanced supply chain network.

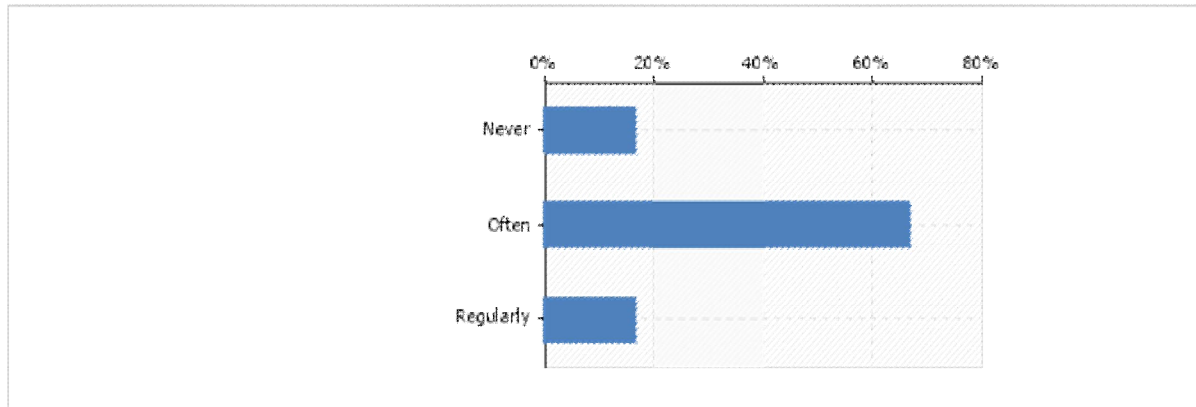
## EMPIRICAL STUDY

The following is the Respondent feedback on the “Impact of E-tailing on SCM that leads to Customer Satisfaction”

The Majority of the age group prefer to do the online shopping and also prefer visiting stores.

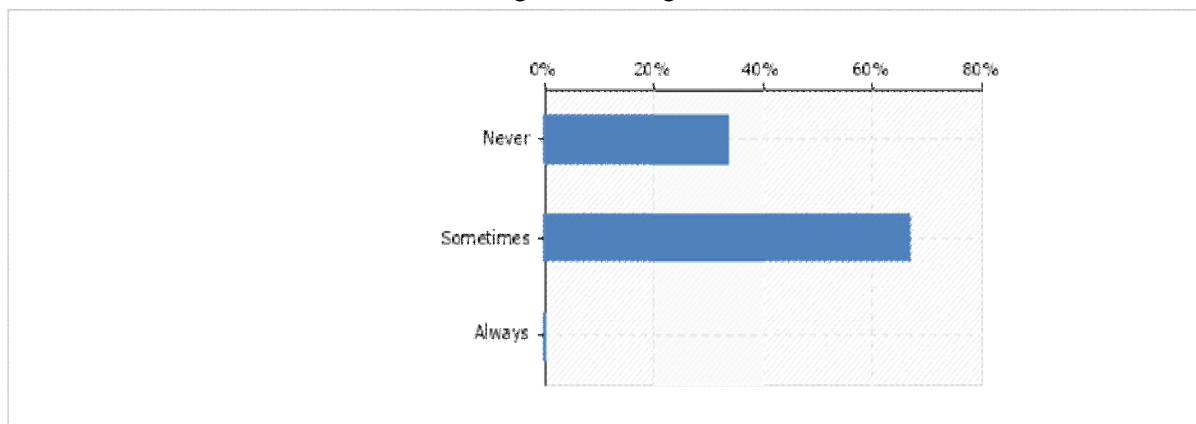
The Products and price always create an greater impact to the consumers to enhance Satisfaction.

1. The Majority of respondents prefer to buy products during the period of offers



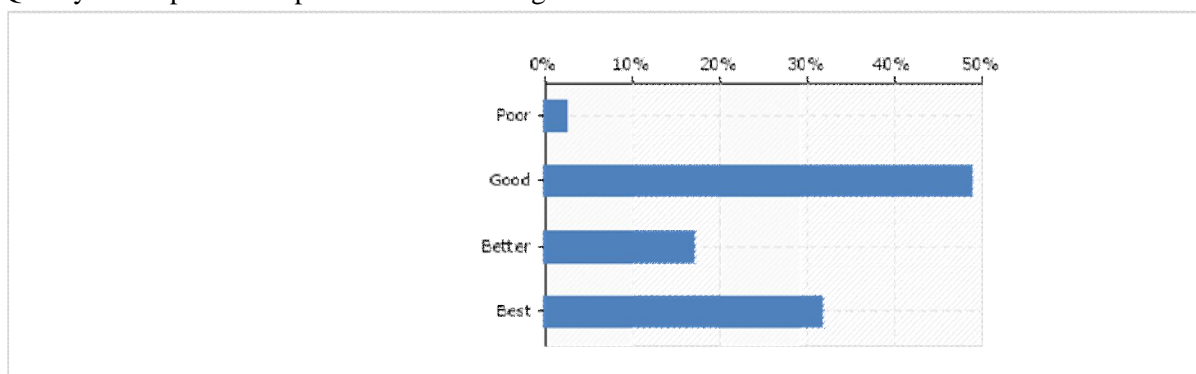
From the graph we clearly understand that the consumers prefer to buy products during the period of offers or at the reduced pricing. The E-tailing has made it very easy to access the discounted products rather to visit the stores regularly to check the offers.

2. Sometimes difficulties are faced in accessing the e-tailing sites



The respondents feel that due to the entrants of many e-tailing sites and the competition among them has led to the difficulty in accessibility of sites as each site quotes different products and pricing every time and calls for different early bird offers that has made the consumers to access multiple sites and confused to buy from the right site.

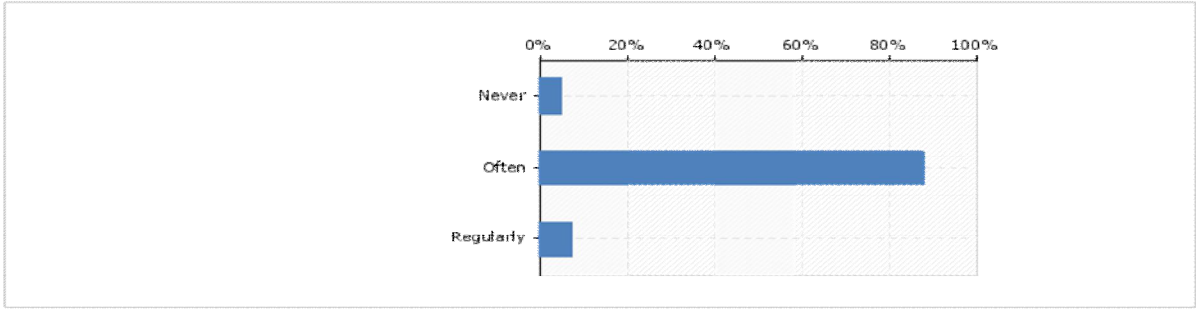
3. Quality of the product expected from E-tailing



These online shopping websites has lot of competition in terms of Quality and variety of products to be made available onsite. Though the consumer knows that they cannot touch or feel the product they are confidently buying the products online and are confident in the Quality of the product rendered.

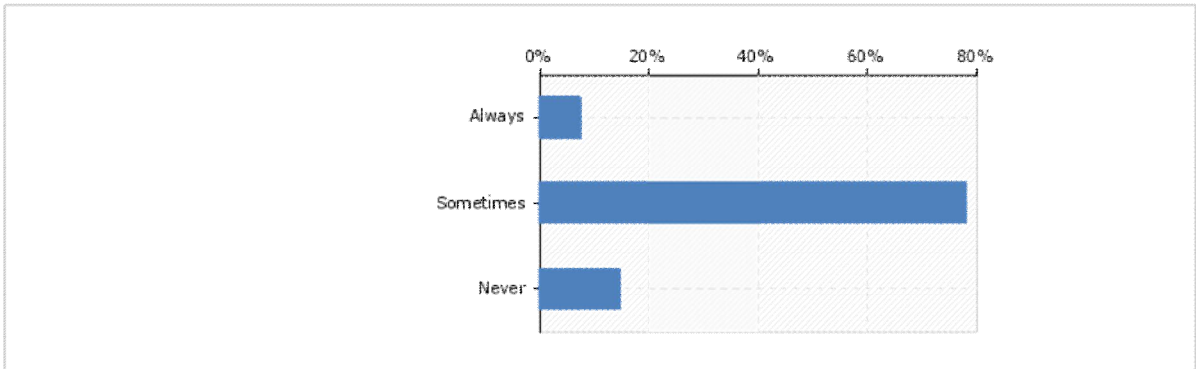


4. Appropriate pricing is accepted through online shopping



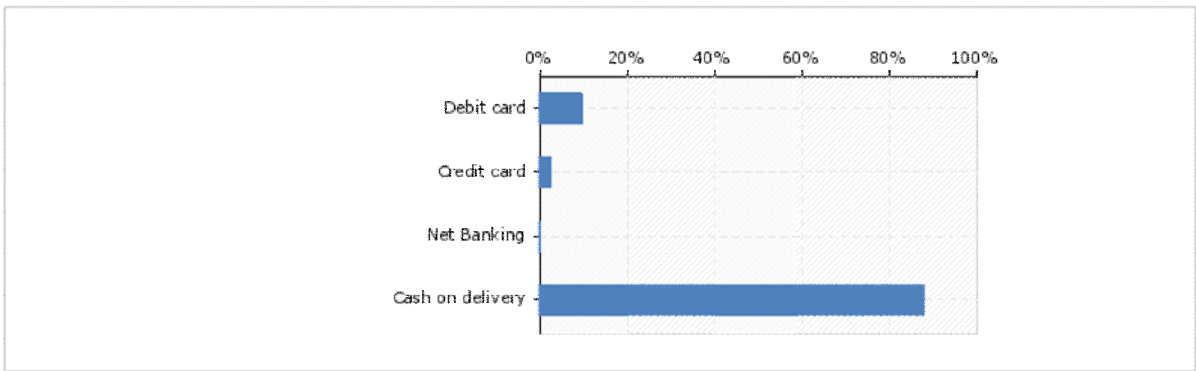
The respondents are very clear about the pricing of the product that is worth of the kind of quality of product they buy through E-tailing.

5. Sometimes there is a delay in the delivery of the product



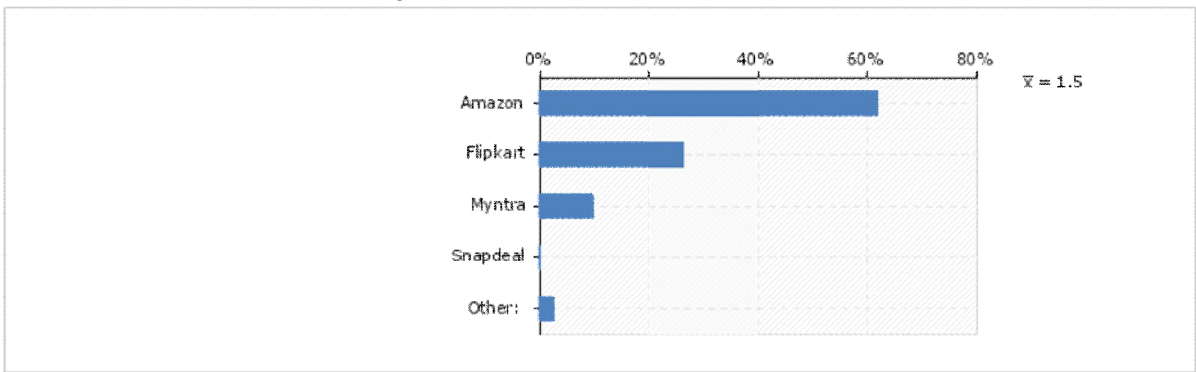
This is one of the challenges to the Logistics since the products are delivered from different location of warehousing to the place of customer location. This has brought an extra shipping charges to be bared by the customer in comparison to the product cost.

6. Majority prefer COD



Cash on Delivery is one of the safest modes of payment since there is a huge competition among the retailers in the market. So the authentication of the website is judged. Due to this the consumers feel to pay for the product only after the delivery.

7. Amazon is the most used E-tailing site





The Amazon has earned the brand value in the market due to which the respondents feel that it is one of the best E-tailing sites. This site also gives a lot of discount and quality of product. They also treat every consumer as the prime consumer on the basis of the Purchasing patterns.

### **FINDINGS**

- As per the respondent analysis few of the finding state
- The respondents prefer to buy the products by visiting stores and buy online
- The consumers prefer to buy products during Discounts and offers.
- Accessing these sites are at times difficult due to the Navigation issues or the server problems
- Through the mode of E-tailing the consumers expect a good quality of products.
- The pricing quoted online are appropriate for the consumer buying
- There never has been any issue in the product ordered and delivered
- Majority of the consumers prefer to pay cash on delivery
- The quality of the product is appropriate to the price paid online
- There is also a delay at times in delivery time of the product that is shipped.
- More often the customers feel there has been a mismatch of the product ordered and the product received due to the colour, size of the product as it's a image that reflects the product.
- The refunding process of the E-tailing sites is dependable as there is a promissory commitment on the refund as per the damaged product or any such reason.

### **CONCLUSION**

The Supply chain management has helped the E-tailing sites to operate in an easier way that has reduced in the control of Inventory cost, Production cost and logistics cost.

This System of SCM has helped the consumers in buying the products at the reasonable price and saving time. This has brought a great satisfaction to the consumers in terms of effective usage of pricing of the product.

Overall the SCM has brought Customer satisfaction by means of pricing, Quality and delivery of the product to the consumers on time.

### **REFERENCES**

- Article , (October 2016),Supply chain Management. Retrieved from <https://www.mckinsey.com>
- Flash global blog (January 7,2019) Web log post . Retrieved from <https://flashglobal.com/blog/supply-chain-management>
- Alexander Ellinger, Hyunju Shin, William Magnus Northington, Frank G. Adams, Debra Hofman, Kevin O'Marah, (2012) "The influence of supply chain management competency on customer satisfaction and shareholder value", Supply Chain Management: An International Journal, Vol. 17 Issue: 3, pp.249-262, <https://doi.org/10.1108/13598541211227090>
- David Swanson, Lakshmi Goel, Kristoffer Francisco, James Stock, (2018) "An analysis of supply chain management research by topic", Supply Chain Management: An International Journal, Vol. 12 Issue: 3, pp.100-116, <https://doi.org/10.1108/SCM-05-2017-0166>
- Xin Tan, David C. Yen & Xiang Fang (2002) Internet Integrated Customer Relationship Management a Key Success Factor for Companies in the E-Commerce Arena, Journal of Computer Information Systems, 42:3, 77-86, DOI: 10.1080/08874417.2002.11647506

### **Books**

- F Robert Jacobs (McGraw-Hill Education; 15 edition February 9, 2017), Supply Chain Management
- Thomas E Vollman Irwin Professional Publishing; 4th Revised edition edition (1 March 1997) , Manufacturing Planning and Control Systems for SCM

## A REVIEW OF LITERATURE ON HUMAN RESOURCE 4.0 (SMART HR-4.0)

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**ABSTRACT**

*There is undoubtedly various changes that science and technology face in terms of innovation and creativity every day it is basically altering with the materialization of new technologies associated with **industry 4.0** or one can say '**Fourth Industrial Revolutions**'. The main Purpose of this paper is to review the most recent works on Human Resource 4.0 (Smart HR-4.0) to find out the current status of research on the same through the research articles published. Human resources are used in business environment, industry and in reference to people working in various other fields and organizations. Human resources (employees /workforce) are the vital assets and valuable resources for every company's performance, growth and development. Human resource or manpower plays one of the most important roles in any form, organization, only because of their knowledge, experience and skills which gives creative and rational ideas for a better management and functioning of an organization. Gone are the days where we blindly stick to the old ways of working because many of these ways and patterns of working might no longer be relevant. The research is based on analyses to the past research papers which are related to the Human Resource -4.0 for which the review work has been based only on secondary data. A narrative review methodology in the selection of research articles has been used. Future research recommendations and directions can be provided in this paper which can be of a great help to researchers who are willing to do research in Human Resource-4.0 domain. A lot of interest and good work has been already shown on Industry 4.0 which has developed a quest among researchers to explore more about it in various other fields. This paper will surely help the future research on Human Resource-4.0*

*Keywords- Human Resource, Human Resource4.0, Industry 4.0, 4.0, Smart Human Resource*

**INTRODUCTION**

Humanity is all about embracing all new lifestyle and culture that will be followed by the A.I driven (artificial intelligence) technologies, and algorithms. There are various discussions going on all around the globe about man vs. machine, this new global topic must be prioritized for the well being of global environment in which human race will have to adjust and adapt to live a quality of life happily. "Change is the only constant" is a well-accepted adage, but the truth is that the 'rate of change' has been more exponentially. The futurist "Ray Kurzweil" make it very clear in his 2005 book 'The Singularity is near' that across industries, technology has advanced at a high rate. This clearly means that successive waves of technology obsolescence will be hitting us faster and faster in coming years. This will not only change what we do and how we do but also how we work at our workplace. The only way to deal with the coming onslaught of change is to be adaptable to it, adaptation in all the three components of our lives- behavioral, emotional, and cognitive.

Gerd Leonhard, in his book 'Technology vs. Humanity' talks about the key issues and challenges of the clash between man and machine. The Futurists say the humanity will change more in the next 20 years than the previous 300 years. In future, humanity will be on the top of technology. Challenges of humanity will be taken care -off by the technology and will allow humans to spend more time on the top layers of the Maslow needs pyramid which is social and cultural need, self realization /actualization etc. It is believed by many thinkers that humanity with technology should be an overall positive outcome.

The very recent development in Information and Communication Technology (ICT) has introduced the development of **Industry 4.0**. Technological advancement in Industry 4.0 will offer a workable array of solutions to the increasing requirements of many organizations. The idea of industry 4.0 is essential to remark that there is a multitude of challenges a paradigm shift, which has a lot of challenges, risks and barriers associated with.

Looking at the above status, it becomes essential to know and understand the current status of the research as well the forthcoming opportunities in future research on Industry 4.0 and HR 4.0. This work tries to focus on the most recent work published during 2017 till 2018. Few articles published in different journals are reviewed in this paper. Further the paper is organized as follows. A detailed review is provided. The next section gives the methodology for selection of the articles. The Discussion on the literature is given in next section. The concluding remark is provided in the last section 4, of this paper.

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**METHODOLOGY**

Literature review is one of the most important parts of a investigative/research work. Through this the relevant literature in that field is made understood, is also assessed and analyzed, for finding the possible research gaps which aid in strengthening the field of study in future. The extensive literature reviews were carried out from various available databases related to human resource 4.0. The researcher has referred different papers from the significant number of renowned publications, like Research Gate and HRMR. This structured review methodology had a five-step process-

1. DATA - BASE SELECTION
2. KEYWORDS SELECTION
3. SELECTION OF RESEARCH ARTICLES
4. INCLUSION/EXCLUSION CRITERIA FOR ARTICLES
5. REVIEWING THE SELECTED ARTICLES

**1. DATABASE SELECTION**

The search strategy for this review paper was introduced by firstly understanding the data sources i.e. Database. The most extensive abstracts from various research articles and citation databases which include thousands of peer-reviewed journals from various authors were taken and studied.

**2. KEYWORD SELECTION**

The most relevant and appropriate articles are cited in this paper. So, the keywords used for the search process are very specific viz. Industry 4.0, Smart HR 4.0 etc.

**3. COLLECTION OF ARTICLES**

The initial search results by reading various articles published from 2012 onwards. The articles published in different conference proceedings, book chapters, news articles, blogs, etc. Doctoral thesis and editorial notes were excluded.

**4. INCLUSION/EXCLUSION CRITERIA**

As the focus of the paper is review the most recent (latest) articles are only selected. The articles from journals like- (HRMR) Human Resource Management Review, Research Gate, Journal of Business Management & Social Sciences Research (JBM&SSR), The International Journal Of Human Resource Management, Sustainability, Journal of Intelligent Manufacturing, Journal of Manufacturing Technology Management, Human Resource Management International Digest, are selected to have high reliability on the articles.

**5. REVIEWING THE SELECTED ARTICLES:**

The brief review of the research articles from various sources as mentioned above will be future seen in this review paper in the last section.

**DISCUSSION ON LITERATURE REVIEW**

The development in the field of Industry 4.0 is not new it has been growing very rapidly this will follow an incremental approach in growing technologies (NSF, 2017). The growth in researches and publications shows that there is rapid progress in the field of Industry 4.0, its now not only in Information and Communication Technology (ICT) but also in academics, and other Industrial fields including Human Resource Management.

**THE PAPER BY MICHELA PICCAROZZI, BARBARA AQUILANI AND CORRADO GATTI**

highlighted that Industry 4.0 is an in progress journey which is even now one of the new topic in the field of management and even in or fields. The core of this paper was a systematic literature review method. The paper is one of the original papers in this field. It also gives recommendations for future research in Industry 4.0 domains, new aspects like open innovation and value co-creating is something to be research more on. The paper provide knowledge regarding the particular roles in an organisation like managers role and there implications also about some professional implications which will be a help for many firms and to get this done one must practice, things like focus on managerial functioning in the context of Industry 4.0 etc.

The paper is also a help in a way that the managers get ideas for various innovations in their firm. It can help them to understand the challenges which is worthy of consideration and the cautious execution of a strategy which is carefully thought-out. Basically, this paper gives some suggestions regarding the sustainability issues, as these should be considered most important in any organisation and it must also be the core of the Industry 4.0. With a sociological perspective the acceptance of Industry 4.0 by organisations, and going by accurate approach as the result of a deliberately formulated strategy will be a boost in the organisation in particular and

including the well-being and development of the whole society in general which will silently chip in to boost sustainability aspect as well..

**In the paper titled- ‘ A Review of Literature on Industry4.0’ by author Vishwas Dohale, Shashank Kumar, Research Scholar, from National Institute of Industrial Engineering (NITIE), Mumbai –** has conducted an extensive review of the most recent 24 articles published during January 2017 to June 2018 on Industry 4.0 phenomenon and highlighted the type of research, focus of study and the contribution of the various studies. The papers provided the opportunities for future research and studies. This study helps to accelerate the momentum in the Industry 4.0 researches.

**Fabian hecklaue, mila galetzkea, sebastian flachsa, holger kohlb in there paper titled as ‘holistic approach for human resource management in industry 4.0’**

This paper tries to study the suitable ways to deal with the challenges that emerge out of new technologies like coming out from Industry 4.0 and realize that for the benefit of overall human resource management one must need to look at manufacturing organizations and other firms. The main task is to make employees shift their potential to work in a space which has a multifaceted processes and this ensures the job retention in an organization along with the good working- environment which is in a constant flux. All jobs these days has unusual needs and wants, the acknowledged capabilities are developing more and more important aspects in the field of management and is also now becoming one of the most vital feature that needs to be addressed by HRM and HRD. The next section part of the paper in a few words discussed about the common relevance tactic for the competency model. It was seen how the model can be used to assess and develop an employee’s professional skills so that he/she can very easily overcome future challenges in the field of management. Up-coming study must be concentrate on the developmental aspect of particular job profiles, as well as on the incorporation of individual skills and qualification.

**Shohreh Parham, Harm-Jan Tamminga, Amsterdam, Netherlands in there paper ‘The Adaptation of the Logistic Industry to the Fourth Industrial Revolution: The Role of Human Resource Management’-** this paper talks about the fact that the fourth industrial revolution is changing the whole business world rapidly and all sectors including logistics are being affected by it along with other sectors and fields. Although the upcoming changes bring some benefits to organizations such as efficiency, lower operational costs and higher profitability but there are also challenges that companies will face in the new era which must be taken care off today itself. Therefore, it is of crucial importance for the companies to be prepared for Industry 4.0 and its after effects also to come up with concrete plans to ensure a successful transformation in the new context. This study particularly focused on the adaptation of logistics industry into the fourth industrial revolution and explained the key role of human resource management in this process. Findings of the study showed that there are many challenges that industry players will face in coming years and it is essential to prepare the current and future workforce ready to overcome these challenges. Human resource management plays a crucial role in workforce preparation and transformation. It should also be noted that the current study focuses only on the logistics sector and clearly different sectors will experience the fourth industrial revolution in different degrees. Although the role of HRM as the agent of change is obvious across all sectors but some human resource policies in the new era may be more context-specific.

**Stefan Strohmeier In His Paper Titled ‘Smart Hrm – A Delphi Study On The Application And Consequences Of The Internet Of Things In Human Resource Management’-**This paper shed light on another major topic in revolution4.0 which is ‘Internet of Things (‘IoT’)’ which refers to the ability to connect physical objects (‘things’) to the Internet, and this connection enables things to behave autonomously in a context-adequate manner and thus to become ‘smart’. Based on the broad range of application possibilities, the current paper aims to explore the possible future application and consequences of the IoT in HRM by conducting an explorative Delphi-study with 4.0 IoT-experts. The results of the study reveal that the application of the IoT in HRM is to be perceived as future of smart HR. The results also uncover various hidden aspects of the Internet of Things in HRM. This adoption of Internet of Things in HRM will defiantly change Human Resource functioning’s and technologies, i.e. the hardware, software and data of HRM. Secondly, it will bring changes that will involve large modifications of HR activities and functioning. Thirdly, the application of the IoT is also expected to noticeably change tasks and qualifications of HR actors. To summaries, this paper indicates that smart HRM will constitute both a likely and relevant future development that needs deeper consideration for a holistic advancement in the field on management.

**Md Mehedi Hassan Onik Dr Mahdi H. Miraz in there paper ‘A Recruitment and Human Resource Management Technique Using Blockchain Technology for Industry 4.0-**This paper tries to study the appliance of Technology and Information in the area of HRM in any organization for a successful adaptation

and implementation of the Industry 4.0 practices. Strategies are compulsory to certify efficiency, trustworthiness in working environment. This literature review showed the modern significance of practicing IT in the field of HR Management and understanding why Block chain as a new concept may assist in achieving a cost-effective, efficient, transparent and secure structure and functioning of management. A new algorithm has been proposed through this paper- that in the process of recruitment in an organisation which is also known as a Recruitment Management System Block chain is important (BcRMS). And from the results and analysis obtained through the discussion and conclusion of the case studies, it was observed very evidently that the anticipated system holds many merits in comparison to the existing recruitment systems and functioning.

**In the paper ‘ Smart industry and the pathways to HRM 4.0: implication of SCM by the authotrs Lara Bartocci Liboni, Charbel Jose Chiappetta Jabbour, Luciana Oranges Cezarino, Nelson Oliveira Stefanelli-** talks about the main aim of this paper which is to deal with the possible effects and impact of Industry 4.0 on HRM. This also focuses on the aspects like job profile, recruitment process, qualification; skill etc of the employees and also has certain changes for SCM which is supply chain management of any organisation. The paper elucidates about certain significant studies which deals with the effect of Industry 4.0 on individual-allied topics, such as the workforce, human resource, labour market etc; this constructs a new research skeleton using the main contributions which were highlighted in the literature. The results of the paper expose that till date most of the research articles are theoretical and abstract in this quantitative analysis is missing. In this work four leading aspects are talked about –Education, Employment, Work infrastructure etc. This system cover the implications in three different dimensions of HRM for SCM that is professional skills and Qualification and Education which comes under individual competences, partnership and amalgamation of SCM organizational competences and data and information management which is the technical competences.

**Brijesh Sivathanu, Rajasshrie Pillai in there papr ‘Smart HR 4.0 – how industry 4.0 is disrupting HR’ –** The paper discusses about the value of Smart HR 4.0 its role as a method by which the entire HR field is disturbed in certain way. The research paper shows the merits of Smart Human Resource 4.0 in the Human Resource management field by *Credit Suisse*; this has comprehensively used the individual’s analytics to lessen employee attrition. This paper is a theoretical work which makes an addition to the existing work and literature in this field of human resource. This paper discuss factors like –‘how HR 4.0 can create disruption in HR and in the creativity and talent of HR, and the talent off-boarding and in boarding process of emerging technologies that changes the employee performance. Any organization would need a flourishing Smart New Human Resource strategy to grow up with the change and challenge of Industry 4.0 revolution. New budding expertise like (IOT) and (A.I) will mechanize the Human Resource functioning and process, resulting in efficient workforce and Human Resource team. Any organization will need organizational and leadership changes in order to create an efficient and smart human resource 4.0 and this will have many implementations that would permit department of Human Resource Management and development plays a intended role for organizational growth.

## CONCLUSION

On the basis of reviews of previous researches over the years, most of the researchers concluded on the basis of their empirical study that industry 4.0 has had a lot of influence on all the fields including human resource 4.0. In the HR 4.0 scenario, most HR solutions are highly automated and employers are investing in recruiting and retaining the best way to maintain relationship between employers and employees and to work together for the overall development of the organization. There are many companies till date who do not wish to invest in a technological revolution in the HR department. Such organizations on the other hand rely on a large Human Resource workforce that understands the needs of their workforce. Doing this enables employers to build a close relationship with their workforce and to promote the personal development of each employee. Having said that the future of Human Resources will have incredible impact not only on the workforce, but also on the societal and business sphere some believe that industry 4.0 has harmful effects on human workers whereas some believe that this revolution will bring about a positive change in the industry. This paper has come up with a lot of future recommendations for future studies.

## RECOMMENDATION

There are certain topics related to industry 4.0 and smart HR 4.0 which are still unrevealed and can surely be the opportunities for further research.

1. There are many definitions for industry4.0 but till date there is no commonly accepted definition of Smart HR 4.0 or for Human Resource4.0. Therefore, the future research and publication can target to develop a concept which can be well accepted by all or most of the academicians and industrial experts for the same.

2. Majority of Research are focusing on managing the technology and gives the general discussion on Industry 4.0 concepts and theories. However, there is a strong need of some empirical study on Human Resource 4.0 so that things are clear for future topics like, work life balance in the coming times and working environment to validate the theories and concepts of smart HR 4.0 must be carried out in the form of a future research study.

3. There is lack of research on Human resource management in Industry 4.0, Revolution 4.0 is it an evil or bliss for humanity!

## REFERENCES

- Smart HRM – a Delphi study on the application and consequences of the Internet of Things in Human Resource Management
- The International Journal of Human Resource Management
- Smart industry and the pathways to HRM 4.0: implications for SCM-Emerald Publishing Limited 2019
- Smart HR 4.0 – how industry 4.0 is disrupting HR-Emerald Publishing Limited 2018
- A Recruitment and Human Resource Management Technique Using Blockchain Technology for Industry 4.0
- <https://insights.bridgr.co/future-human-beings-new-industrial-revolution/>
- Smart Industry Research in the Field of HRM: Resetting Job Design as an Example of Upcoming Challenges
- *Sustainability* — Open Access Journal *Sustainability* (ISSN 2071-1050; CODEN: SUSTDE) is an international, cross-disciplinary, scholarly, peer-reviewed
- A Review of Literature on Industry 4.0
- [https://www.researchgate.net/publication/328345685\\_A\\_Review\\_of\\_Literature\\_on\\_Industry\\_40](https://www.researchgate.net/publication/328345685_A_Review_of_Literature_on_Industry_40)
- Smart HR 4.0 – how industry 4.0 is disrupting HR-Emerald Publishing Limited 2018
- Holistic approach for human resource management in Industry 4.0- 2016 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license
- SSADM (Structured Systems Analysis & Design Method)
- MANAGEMENT APPROACHES FOR INDUSTRY 4.0 –THE ORGANIZATIONAL CULTURE PERSPECTIVE
- Industry 4.0 and Human Resources Development: A View from Japan
- <https://ijird.com/>
- A structured methodology for the design and implementation of control and supervision systems for robotic applications
- Management approaches for Industry 4.0: A human resource management perspective-Conference: 2016 IEEE Congress on Evolutionary Computation
- THE FUTURE OF EMPLOYMENT - CHALLENGES IN HUMAN RESOURCES THROUGH DIGITALIZATION
- Special issue of the *International Journal of Human Resource Management*: Digitization and the transformation of human resource management

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**MAKE SMART, MAKE LIVING SMART**

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**Ashok P<sup>1</sup> and Vichitra Somashekar<sup>2</sup>**Student<sup>1</sup> and Assistant Professor<sup>2</sup>, Department of Management Studies, Garden City University

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**ABSTRACT**

*We are in the 21st century and the technology in the world is growing rapidly. The first world Nations or the developed countries are using the advanced technology for their growth of their economy, not only for the growth but also to make the people's work easier and less time consuming. Intelligent home also known as smart home or smart house which is a emerging technology in the construction field. Here in this the software engineers play an important in accomplishing this. This study discuss on the basic things that a smart home should have, which can be adopted by common people. This paper also include how a smart home or intelligent home reduces the man force or physical work. This paper also contain a few materials or objects that is essential for construction of a smart home. And also this study will include how a normal home can be changed into smart home by including few technology.*

*Keywords: Construction field, smart home, intelligent home, technology.*

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**INTRODUCTION**

Smart homes enhance traditional security and safety mechanisms by using intelligent monitoring and access control. Remote monitoring systems are common components of smart homes, which use telecommunication and web technologies to provide remote home control and support patients remotely from specialized assistance centres. Smart homes offer a better quality of life by introducing automated appliance control and assistive services. A user can control home appliances and devices remotely, which enables him or her to execute tasks before arriving home. A home, which is smart, is the technology used to make all electronic equipment around the home act "smart" or "intelligent" or more automated that is to say smart home has highly advanced automatic systems for lighting, temperature control, security and many other functions. Smart Homes using Internet Things (IT) provide the user varied features to operate home devices from any place where the user being and at any time whenever needed.

**NEED OF SMART HOMES:**

- Smart homes are unprotected to security threats. Most security problems are related to weak user- and device-authentication schemes.
- Security attacks may be generated locally or remotely. The projects that deal with security issues in smart homes are discussed next.
- From this review, it is obvious that most security mechanisms are adopted from existing techniques of computer security.
- One of the main objectives of smart home research is to ease daily life by increasing user comfort.
- This is achieved in two ways. One is related human activity identification and event 3 automation in local environments.
- The other is remote home management from distant locations. The following smart home projects aim to automate home appliances using knowledge of human activity and behaviour.
- These assistive services sometimes optimize energy usage because the house is intelligent enough to reduce energy use by controlling unattended home appliances.

**REVIEW OF LITERATURE****By: John J. Greichen [August 2015]**

The work of John J. Greichen discussed some of the early challenges faced by home automation systems. These include high manufacturing costs, high development costs, high installation costs, additional service and support costs, lack of home automation standards, consumer unawareness about technology and complex user interfaces. With the advancement of time, we saw a rapid development in technology and processing power which leads to a considerable reduction in device cost and size. All of these factors have contributed to the popularity of electronic devices today, so people are no longer confused or unsure about the use of computer, mobiles, or tablets. Moreover, a lot of home automation protocols, communication and interface standards. These factors contributed to addressing the challenges and concerns of early home automation systems, which lead to the popularity and wide acceptance of automated homes.

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**By: Vaishnavi S Gunge and Pratibha S Yalagi [May 2016]**

Home automation is gaining popularity due to its various benefits. Home automation refers to the control of home appliances and domestic features by local networking or by remote control. Artificial Intelligence provides us the platform to go real-time decision and automation for Internet of Things (IoT). The work deals with discussion about various intelligent home automation systems and technologies from different features standpoint. The work focuses on concept of home automation where the monitoring and control operations are facilitated through smart devices installed in residential buildings. Heterogeneous home-automation systems and technologies considered in review with central controller based (Arduino or Raspberry pi), web based, email based, Bluetooth-based, mobile-based, SMS based, and the Internet with performance.

**By: Shashikant M. Saryam [January 2017]**

An effective and flexible home control and monitoring system with the aid of an integrated micro web server with IP connectivity for access to and control of equipment and devices remotely app. The proposed system does not require a dedicated server PC with respect to similar systems and offers a new communication protocol for monitoring and controlling the home environment with more than just switching functionality. Smart home interfaces and device definitions to ensure interoperability between ZigBee devices from various manufacturers of electrical equipment, meters and Smart Energy enables products to allow manufactured. We introduced the proposed home energy control systems design intelligent services for users.

**By: Neha Malik [March 2017]**

One of the topics which is gaining popularity is Home Automation System because of its in numerous advantages. Home automation refers to the monitoring and controlling of home appliances remotely. with the never ending growth of the Internet and its applications, there is much potential and scope for remote access and control and monitoring of such network enabled appliances. This deals with discussion of different intelligent home automation systems and technologies from a various features standpoint. The effort targeted on the home automation concept of where the controlling and monitoring operations are expediting through smart devices. Wide-ranging home automation systems and technologies considered in review with central controller based (Arduino or Raspberry pi), cloud-based, Bluetooth-based, SMS based, ZigBee based, mobile-based, RF Module based, web based and the Internet with performance.

**By: Muhamad Raisul Alam [June 2015]**

Smart home projects have been conducted over the last several decades; they convey different ideas, functions, and utilities. Smart homes are extending into different branches of specialization focusing on the interests of researchers and user requirements and expectations. Smart homes provide comfort, healthcare, and security services to their inhabitants. Comfort and healthcare services can be provided locally as well as remotely. Security measures not only provide authentication services to the user but also restrict unauthorized access to the household devices presents the categorization of smart home projects according to the intended services.

## **OBJECTIVES**

**To Study the Comfort in a Smart Home****To Study the Security Measures in a Smart Home**

## **METHODOLOGY**

This research is conducted based on review of literature on similar topics and also on observation techniques. The proposed methodology is based on a 24-hour circadian cycle, which is subdivided hourly for activity monitoring. Statistical mean and deviation measurement methods are applied to this hourly information to alert in an abnormal situation. This research is limited to single-inhabitant monitoring. However, the hourly summarization method is not efficient with respect to the detection of long term deviations such as weight changes or sleeping disorders. The design of a smart home depends on user requirements and user living styles. Generally, smart homes offer comfort, safety, security, remote control, and energy conservation. Smart homes provide healthcare support to the elderly and projects discussed here present the methodologies used to implement healthcare support in the home environment. A Health Integrated Smart Home Information System is an experimental platform for home-based monitoring. Infrared Radiation sensors and contact switches are used to track inhabitant activities, and information is transmitted via a Controller Area Network to a local computer.

## **SUGGESTIONS**

Future homes will be able to provide almost all required and expected services, e.g., communication, medical, energy, utility, entertainment, and security. People spend a significant amount of time in their houses, which attracts potential investors to promote the integration of all possible services into traditional homes.



Current trends in smart home research signifies that healthcare services will receive more scope in the future. One of the main objectives will be to provide assistance for the elderly and disabled. Remote patient monitoring will become more popular because providing healthcare services to certain groups of patients requires less manpower. Other services related to comfort and security will be improved gradually with the improvement of associated components.

### **CONCLUSION**

This paper based on the meaning of smart home and the details of smart home elements. And the main objective of this paper is to give a survey for these smart home researches and summarily describe the details about smart home. As the development of technologies grows, many research projects have also been developed. Now smart home is more than just a home controlled by the central evaluation unit like computer. With smart homes, the way people live will obviously become more efficient and comfortable. All the time, our home can be saved from home automation, so we will have much time to work on other pursuits. However, smart home technology is a good choice for people who care about security and comfort but energy saving as well. Smart homes will become more ubiquitous because new technologies will be explored more and more. In future work, we plan to build an application on tablet or smart phone using Android operating system for controlling the smart devices for easier and more convenient living.

### **REFERENCES**

- [https://www.researchgate.net/publication/262687986\\_A\\_Review\\_of\\_Smart\\_Homes\\_Past\\_Present\\_and\\_Future](https://www.researchgate.net/publication/262687986_A_Review_of_Smart_Homes_Past_Present_and_Future)
- [https://www.researchgate.net/publication/224696459\\_The\\_Smart\\_Home\\_Concept\\_our\\_immediate\\_future](https://www.researchgate.net/publication/224696459_The_Smart_Home_Concept_our_immediate_future)
- [https://www.researchgate.net/publication/262687986\\_A\\_Review\\_of\\_Smart\\_Homes\\_-\\_Past\\_Present\\_and\\_Future](https://www.researchgate.net/publication/262687986_A_Review_of_Smart_Homes_-_Past_Present_and_Future)
- [https://www.springer.com/cda/content/document/cda\\_downloaddocument/9783319680170-c2.pdf?SGWID=0-0-45-1620097-p181147106](https://www.springer.com/cda/content/document/cda_downloaddocument/9783319680170-c2.pdf?SGWID=0-0-45-1620097-p181147106)
- <https://pdfs.semanticscholar.org/e9ff/fb16cb33198b207305e562135f4b0866b5fc.pdf>
- <https://www.engpaper.com/home-automation-2015.htm>
- <https://www.irjet.net/archives/V4/i5/IRJET-V4I5531.pdf>

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**HRM IN HOSPITALITY INDUSTRY: AN OVERVIEW**

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**Nithin Kumar K Naik<sup>1</sup> and Sneha Ravindra Kanade<sup>2</sup>**Student<sup>1</sup> and Assistant Professor<sup>2</sup> Garden City University Bangalore

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**ABSTRACT**

*Human resource management could be an important operate of a company. With the specialization of tasks, it becomes very imperative to induce the correct human resource for the specialized tasks. hospitality business all thrives on the standard of service providing human resource that makes category apart expertise for the shoppers. it's the human resource of the hospitality enterprise that lays a property foundation for the long run. The analysis paper explores numerous dimensions of human resource management in hospitality management.*

*Keywords: Hospitality Business, Human Resource, employee Lifecycle, accomplishment, retention.*

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**INTRODUCTION**

Human resource Management has gained a great deal of momentum because it the human capital of the corporate World Health Organization decide the long run and course of action. the long run of any organization depends upon the correct candidates selected for the correct job at the correct time. Therefore, importance of accomplishment and choice method cannot go unheeded. It assumes the place of predominate importance within the employee lifecycle because it is that the initial purpose of contact with the potential leader.

Once such business wherever folks square measure the foremost vital resource is that the hospitality business. This business all thrives on the expertise that they produce for his or her customers. Behind each WOW! expertise of the client there's human effort at work. hospitality business could be an industry that has bars, restaurants which has from lodging to the event about to the traveling that provides quality service for the shoppers once returning to the accomplishment and choice method in hospitality business it differs from alternative business ,because it's a client service job were the employee should have nice soft skills however just in case of alternative business the leader appearance for excellent laborious skills ,but once returning to the hospitality sector it fully depends upon however sensible one is at soft skills and the way well one greets and treats the shoppers with right feeling and supply them a top quality service and conjointly the employee should acumen to sense the shoppers with their would like and wish and meet the shoppers expectation .

**REVIEW OF LITERATURE**

Satyam (2017) has brought out Associate in Nursing importance on the 60 minutes ways for accomplishment of employees and its impact on employee- retention in hospitality business of Garhwal and Kumaon region of Uttarakhand. It helped to scale back skill-drains from the state, because it is standard that the state has best level of hospitality skills. The existing hotels of Uttarakhand have completely different practices concerning accomplishment of employees. several of the hotels throughout country have the employees or hands from Garhwal and Kumaun region virtually all told departments at completely different level. The folks from Uttarakhand even don't wish to flee from their home state. The analysis paper has self-addressed the problems concerning employee retention within the hospitality business.<sup>7</sup>

Nivethitha, Dyaram, & Kamalanabhan (2014) aforementioned that ratio is Associate in Nursing prevailing issue in hospitality business, globally. ratio intention acts as a proxy for actual ratio. one in every of the difficult problems Janus-faced by the hospitality organizations nowadays is to manage the dynamical employment relationship. Being in client service business, hospitality business capitalizes heavily on its human resources so as to realize its competitive advantage.<sup>6</sup>

Bhaskar & Reddy (2018) known that hospitality business support from HRD is proscribed thanks to improper implementation of HRD mechanism. thanks to international competition, shoppers expect best hospitality from this business. The business recruits a lot of personnel during this era and providing nominal HRD mechanism. personnel demand for hotels is on the increase. Star hotels need specialized trained employees for his or her numerous departments: food and drink, work, accounting, marketing, recreation and alternative services, pc applications, money management, engineering, maintenance, security fireplace fighting and promotional material. These jobs became progressively difficult and in recent times.<sup>3</sup>

Gowrishankar V (2017) aforementioned that within the five-star building and five-star deluxe building their square measure around a lot of employee square measure concerned in numerous jobs in numerous fields there's dire ought to look and management on them. little question completely different department heads square measure gift to appear their department employee, however HRD could be a place, that supervise and

effectively communicate with these departments head and communicate with the highest management. therefore, there operate is incredibly giant and numerous as compared with relevance completely different department heads.<sup>5</sup>

Chauhan & Patel (2014) has explored the impact of human Resource Management (HRM) practices on job satisfaction (JS) within the context of building business. JS means that sense of inner fulfillment and pride achieved once playing a specific job. The population of study cowl {the selected |the chosen} employees of hotels and also the sample size of eighty-eight employees were selected, victimization the easy random sample techniques. The survey instrument utilized in the gathering of information was the form. This study is proscribed to solely 5 hotels of Udaipur division. it absolutely was found that HRM practices have important association with JS. additionally, accomplishment and choice, operating condition and carrier growth were found to possess positive impact on JS.

A & Subramaniam (2017) aforementioned that Human resources square measure currently thought-about as Associate in Nursing quality rather than LIABILITY. Department of HUMAN RESOURCE all told the businesses is currently in lime lightweight rather than back seat and it's learnt that "HR cannot operate in cabins". sensible human resource ways and practices square measure the backbone of all corporations {the businesses} could also be in operation across the nation or multi-nationally and sensible human resource management is that the life blood of these companies.<sup>4</sup>

Agarwal & Kumar (2018) aforementioned that accomplishment and choice play role and have significant for Star class building. accomplishment and choice help in reducing value, helps in most utilization of the offered resources and gain economical employees out of the accomplishment method that ever is followed by the building. during this paper we tend to square measure attending to discuss regarding {the assorted} strategies of accomplishment and choice method that is being adopted by various star hotels chains in Udaipur. The principle behind analysis was to match choice strategies utilised by completely different building rating classes and investigate their effectiveness in terms of employee placement, concerning each social control and non-managerial positions.<sup>2</sup>

Sherkar (2015) aforementioned that E- accomplishment conjointly called on-line accomplishment is wide employed by the 60 minutes within the building business. the most purpose is to scale back value, maximize utilization of human capital and ease in accomplishment method. there's numerous e- accomplishment techniques adopted by numerous Human Resource managers for e.g. Naukri. com, monster.com and numerous interviewing technique like Skype, video career square measure simply many within the list.<sup>8</sup>

Nadda, Rafiq, & Tyagi (2017) aforementioned that the culture was positive influence on the usage of RPO within the organizations, in terms of adopting RPO throughout enlargement of geographies and globalization. the requirement for RPO has gained significance with the impact of structure, tight project deadlines, light time for internal 60 minutes department for recruiting personnel, inefficiencies in desegregation all stages of accomplishment and enlargement of geographies.<sup>5</sup>

## **RESEARCH METHODOLOGY**

The analysis is explorative in nature that makes an attempt to grasp the human resource management in hospitality business. Secondary information was collected through various sources like journal, newspaper etc.

### **OBJECTIVES:**

- To study human resource management in hospitality industry.
- To recommend measures to boost human resource management in hospitality industry.

### **STATEMENT OF PROBLEM**

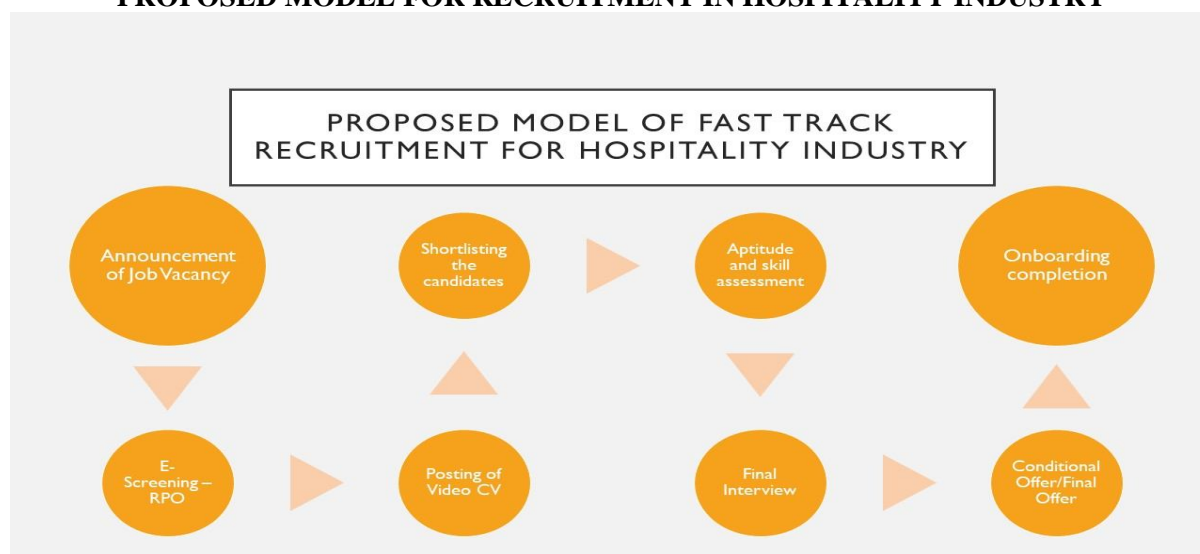
Human Resource Management stands as a very important operate of all the industries since its the those who decide the fate of the organization. choosing and retentive right folks could be a terribly vital side since industry sustains thanks to the expertise created by the employees. hospitality is Associate in Nursing business that demands to make and deliver client expertise that retains the client and adds on potential client. So, it becomes imperative to review the human resource side of hospitality business.

### **ANALYSIS AND DISCUSSIONS**

- In certain regions of India like Garhwal, Kumoan etc. there is considerable demand for skilled hospitality workforce. The Hospitality Industry of such regions feel the crunch for human resource. The employee retention has emerged as a workable strategy. Promotion as a way of appointment serves the purpose of employee retention.<sup>7</sup>

- The recruitment and selection process in hospitality industry is well organized with due attention to the qualification and skills.<sup>7</sup>
- Most of the employees are satisfied with the human resource development initiative however lacks in apt manpower planning. The employees are of the opinion recruitments need to be more scientific in nature.<sup>4</sup>
- Most of the employees feel that the wage structure fails to be satisfactory and they are underpaid.<sup>4</sup>
- Though there is a process to identify the vacancies followed by recruitment is documented in HR Manual/Service Rule, the recruitment process initiation is not usually done immediately. The work is assigned additionally to the existing employees resulting in low morale.<sup>5</sup>
- When a vacancy arises, considerations to internal candidates to be given first and if in case there is no match identifiable for the open position, external candidate recruitment can be done. But in most of the cases, the internal candidates are not considered even if they are eligible.<sup>5</sup>
- Regional behaviour and language influence is higher during training and even after delivering their language; the desired effects are not seen.<sup>3</sup>
- Since rules and regulations are very dynamic, so most of the employees face difficulty to adjust with them.<sup>1</sup>
- Recruitment and selection procedure always remain same in every hotel.<sup>8</sup>
- Psychometric test must be conducted for each and every employee applying for the job for having healthy time in the job. <sup>8</sup>
- The utilization of e resources in recruitment and selection can be increased to achieve desired results. <sup>2</sup>
- The HR should identify suitable e resources for recruitment in top management cadre.<sup>2</sup>
- E resources should be used predominantly for attracting talent and for simplifying the recruitment process.<sup>3</sup>
- The core and non-core functions in the stages of recruitment can be distinguished to perform better outsourcing processes. There are various stages of recruitment, where certain stages are crucial to recruit to any candidate which needs to be handled by internal HR functions. Such functions need to analysed and measures should be suggested for effective performance of those functions in outsourcing conditions. <sup>5</sup>
- Though the study has mentioned the benefits of recruitment process outsourcing in the luxury segment, the economic benefits are not monetized. Hence, further studies can measure monetary benefits achieved by the organization. The financial implications and advantages of using it financially can be dealt in depth to identify economic benefits. Thereby, future studies can be conducted to analyse the economic stance of utilizing RPO in any hotel. <sup>9</sup>

#### PROPOSED MODEL FOR RECRUITMENT IN HOSPITALITY INDUSTRY



Based on the review of literature, the need was felt for fast track recruitment was felt due to the employee crunch in the industry. The requirement is immediate in nature and has to be met diligently to keep the business

going. Therefore, the above model if proposed on the same lines in order to fasten the recruitment process. The use of technology is quite evident in order to fasten the process.

### **CONCLUSION**

Human resource management is indeed most important function of service industry especially hospitality industry. Well trained human resource would be appreciated in the industry for quality services. The hospitality industry has a scientific way of recruitment. Usage of technology has brought many changes in the operations of the hospitality. However the challenge lies in the retaining the best talent in the industry.

### **BIBLIOGRAPHY**

- A, S., & Subramaniam, G. (2017). A comparative study of Manpower Planning, Recruitment & Selection Processes in Public Sector Undertaking Companies in India . International Journal of Scientific & Engineering Research, 1340-1346.
- AGARWAL, S., & KUMAR, S. (2018). CHALLENGES FACED BY AN ENTREPRENEUR IN RECRUITMENT AND SELECTION PROCESS IN HOSPITALITY INDUSTRY OF RAJASTHAN: A STUDY OF 3 STAR CATEGORY AND RESIDENCIES HOTELS, UDAIPUR. KAAV INTERNATIONAL JOURNAL OF ECONOMICS COMMERCE & BUSINESS MANAGEMENT, 63-71.
- Bhaskar, M., & Reddy, P. (2018). Effectiveness of HRD in Hospitality Industry A Study of Selected Hotels in Andhra Pradesh, India. International Journal of Pure and Applied Mathematics, 2 - 12.
- Chauhan, Y. S., & Patel, N. K. (2014). HUMAN RESOURCES MANAGEMENT PRACTICES AND JOB SATISFACTION: A STUDY OF HOTEL INDUSTRY. Abhinav National Monthly Refereed Journal of Research in Commerce & Management, 1-6.
- Nadda, V., Rafiq, Z., & Tyagi, P. (2017). Effectiveness and Challenges of Recruitment process outsourcing (RPO) in the Indian Hotel Sector. Munich Personal RePEc Archive.
- Nivethitha, S., Dyaram, L., & Kamalanabhan, T. (2014). Human Resource Practices and Employee Turnover Intentions in Hospitality Industry. Global Journal of Management and Business Research, 35-41.
- Satyam, D. N. (2017). A CRITICAL STUDY OF RECRUITMENT PROCESS AND ITS IMPACT ON HR STRATEGIES OF EMPLOYEE- RETENTION IN HOSPITALITY INDUSTRY OF GARHWAL AND KUMAUN REGION OF UTTARAKHAND. SRJIS, 6843-6859.
- Sherkar, A. (2015). A Study on Use of E- Resources in Recruitment and Selection Process in 5 Star Hotels. Atithya: A Journal of Hospitality, 1-6. Retrieved from Publishingindia.com.
- V, G. (2017). A study on human resource management practices in five star hotels in Coimbatore. International Journal of Commerce and Management Research, 78-82.

## DIGITAL MARKETING – A REALITY CHECK

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## ABSTRACT

Nowadays, customers have access to information anytime and anywhere they require or need it. Due to the net and economic process, the general public on the world area unit able to access the data via computers, tablets or mobiles. What business owners ought to bear in mind is that everybody will influence the image of their firms via social Media and will be able to make certain that your client feedback are a lot of trustworthy for others to browse than your own one. whereas older generations can little question lament the end of paper-based newspapers, books, communication ways and ancient TV and radio broadcasts, people who have adult up with the net and mobile phones as a God-given right area unit already grip the brave new world of digital consumption.

The facts area unit that digital ways of communication and selling area unit quicker, a lot of versatile, sensible and efficient, therefore it's maybe unstartling that when the technology became accessible, we have a tendency to begin quickly going in the digital age. the great news is that digital offers even as a lot of potential to marketers because it will to shoppers.

**Keywords:** Digital Marketing, E-Marketing, ROI (return on investment), SEO

## INTRODUCTION

Today's time of web has opened the gate approach of tremendous digital promoting opportunities for business. By utilizing totally different channel of digital promoting, business cannot simply share their product and services online; to boot they'll gain shoppers for his or her business lure them then convert them to spice up their ROI.

The speed and straight assertiveness with that the digital media transmits information and support a business is astonishing. during this introduction to digital promoting E-Guide, each signal facet of Digital promoting is going to be mentioned to assist marketers perceive what digital promoting islets first of all throw some light-weight on the fundamentals of digital promoting via the definition given below this can be the primary step after we point out the introduction to digital promoting.

The world is super connected today and every one thing thought of promoting and advertising are not any additional a similar as they once were. this can be significantly valid attributable to the ascent of on-line networking. that has modified however organization speaks with doubtless and existing customers.

**Market:** - an everyday gathering of individuals for the acquisition and sale of provisions, placental and alternative commodities.

**Marketing:** - The action or business of promoting and mercantilism merchandise or services, as well as marketing research and advertising.

Digital promoting: - it's marketing of merchandise or services mistreatment digital technologies, in the main on the web, however additionally as well as mobile phones, show advertising, and the other digital medium.

## REVIEW OF LITERATURE

Afrina Yasmin (2015) suggests that importance of digital promoting for each marketers and customers. we tend to examine the impact of digital promoting on the firms' sales. to boot the variations between ancient promoting and digital promoting during this paper are conferred. This study has delineated varied varieties of digital promoting, effectiveness of it and also the impact it's on firm's sales.<sup>1</sup>

Zack Jourdan (2013) has tried to review the literature to analyses the content on the digital promoting arena. The prediction of AN explosion of on-line searching became a wedding between data technology consultants and promoting professionals. Most would believe the knowledge technology researchers were finding out the web technology and its blessings, whereas the marketers were centered on the consumer's use of the technology.<sup>6</sup>

K.Sangeetha (2016) instructed that {an on-line a web|an internet} seller currently has to realize wherever folks are assemblage online and wishes to interact them in an exceedingly meaty approach. Be it in matching with what they're searching for, looking at however they move and perceive what they like or paying attention to their natural opinions on company or market and reacting thereto.<sup>4</sup>

Chourasiya (2017) opined that on-line promoting is leverage the distinctive capabilities of latest interactive media to form new style of interactions and dealing between customers and marketers. additionally, it is thought of as innovative approach of selling in digital marketplace which incorporates on-line advertising, online marketing research, online promotions and on-line rating models. to create it productive there are totally different strategy like Targeting, Product Strategy, rating strategy, Distribution strategy and promotional strategy.<sup>2</sup>

El-Gohary (2010) aforementioned tiny|that tiny|that little} businesses play a serious role and implementing E-Marketing by small commerce will modification each the form and nature of its business everywhere the globe. as a result of the rise usage of the web and alternative Electronic promoting tools (i.e.: E-mail, Intranets, Extranets and Mobile phones) in electronic transactions may produce not solely a great deal of opportunists for little business enterprises however can also eliminate a great deal of its threats. From this prospective, it's detected that the web, alternative electronic media tools and Electronic promoting tools are taking part in a significant and essential role in conducting promoting activities at intervals business enterprises notwithstanding its sort or size.<sup>3</sup>

Paulus H. A. Andreki (2014) aforementioned that economic process and technological enhancements are close at hand and people that embrace it nowadays are going to be higher ready for tomorrow. E-marketing is growing at a dramatic pace and is impacting client and market behaviors. This has forced companies to start out incorporating e-marketing because the main style of promoting and take a look at to satisfy their targeted customers has to the satisfaction. This paper investigates and states what's e-marketing, what this trend of the promoting field is and what the longer term of the promoting field is. The paper has found and over that e-marketing is that the future because it has been completely laid low with this technological modification that has created the utilization of good phones and gadgets a necessity.<sup>5</sup>

## **RESEARCH METHODOLOGY**

Statement of Problem: Digital Marketing has become all pervasive in the marketing domain. The companies are adopting new ways of multiplying the advertising effect through digital ways. The expenses are drastically reduced as compared to the traditional ways of marketing. Based on the review of literature, need was felt to understand and analyze the role of digital marketing in today's scenario.

## **OBJECTIVES**

- To understand the current scenario pertaining to digital marketing.
- To analyze the existing digital marketing literature.

Data was collected through secondary sources like journals, newspapers, website etc.

Type of research is descriptive in nature as it elaborates various facets of Digital Marketing.

## **ANALYSES AND DISCUSSIONS**

New varieties of promoting will then be incorporated within the style of new social media, medium and be connected to potential customers and shoppers via their good phones. Recent reports have shown that there are over one billion good phones within the world. The folks of nowadays became additional hooked up to their gadgets over something during this world, they watch their favorite movies there, browse their mails, news, play music and everything (even their daily dairy/daily planner has been incorporated to their gadgets). thus, seller ought to place this in context and realize that the sole thanks to get the customers attention is thru e-marketing. The paper has additionally got wind that e-marketing has some challenges however the foremost necessary facet is modification is important and people that don't settle for it'll be left behind.<sup>3</sup>

By taking into thought Hanson web promoting framework and supported the actual fact that web promoting isn't just one of the most component of E-Marketing however even has a similar characteristic. The model has incorporated varied aspects of E- promoting like data Technology, data systems, economics, business, management, promoting etc.<sup>2</sup>

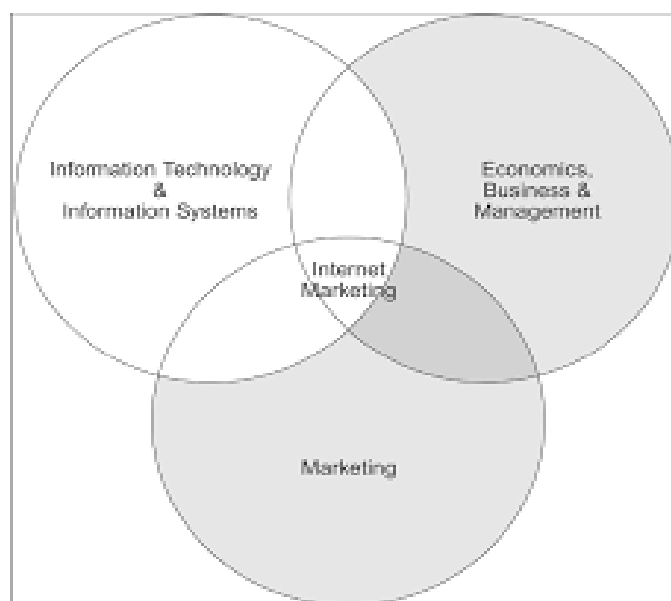


Figure-2: Hanson web promoting (IM) framework

Source: Ngai (2003)

Day by day, technology is obtaining refined and prices are crumbling, creating the web simple and low-cost to access. Eventually, even for getting a product from a store settled almost about home, the client could use the web to position order, and should get the merchandise delivered like a shot. the mixing of electronic commerce and promoting can bring a renaissance in promoting operate. mistreatment the benefits of each web promoting and ancient promoting per the goals of the corporate, is taken into account to be the foremost effective approach of selling. scrutiny the 2 approaches, web appears to be a complementary tool to ancient promoting. There are varied promoting strategy problems, which require to be answered before stepping into on-line promoting for productive helpful promoting.

E-Marketing has emerged united of most likely the foremost innovative mediums for organizations to plug several and services. it's going to be the art of distinctive and understanding client desires and making solutions that delivers satisfaction for the shoppers, profits towards the producers and edges for the stakeholders'-promoting nowadays encompasses product definition, product packaging, advertising, sales, too as, distribution. Increasing best tiny business advertising concepts would like for web site promoting offers rise to a large range of on-line promoting professionals all told of the businesses. Best Street Festivals on Earth. In e-Marketing the buyer can purchase the products with in an exceedingly place. Thus, the buyer and also the trafficker will get additional profit in e-Marketing.<sup>5</sup>

However, the nice news is that a lot of of the analysis ways and topics during this analysis are offered for future analysis efforts. Of explicit interest to researchers and practitioners would be studies perceptive client behavior in real time mistreatment science lab and field experiments or measure buying behavior from mistreatment keep click stream information in an exceedingly secondary field study. We encourage researchers in fields of Marketing to continue developing the body of research on this necessary topic mistreatment cross-disciplinary groups composed of researchers from business and also the activity sciences. additionally, future studies may take into account the six web promoting classes with relevance the analysis ways. additionally specifically, with this in mind, we hope this research analysis lays a foundation for developing an additional complete body of information relative to web research at intervals the fields of data Systems and promoting.

## CONCLUSION

Digital channel in promoting has become essential a part of strategy of the many corporations. Nowadays, even for little business owner there's a really low-cost and economical thanks to market his/her merchandise or services. Digital promoting has no boundaries. Company will use any devices like smartphones, tablets, laptops, televisions, game consoles, digital billboards, and media like social media, SEO (search engine optimization), videos, content, e-mail and heap additional to push company itself and its merchandise and services. Digital promoting could succeed additional if it considers user desires as a prime priority. a bit like "Rome wasn't inbuilt daily," so, digital promoting results won't additionally return while not try, while not trial (and error). The watchwords "test, learn and evolve" ought to be at the guts of all digital promoting initiatives. corporations ought to produce innovative client experiences and specific ways for media to spot the simplest path for driving up digital promoting performance.



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**REFERENCES**

- Afrina Yasmin, S. T. (2015). Effectiveness of Digital promoting within the difficult Age: AN Empirical Study. International Journal of Management Science and Business Administration, 69-80.
- Chourasiya, M. A. (2017). on-line Marketing: Impact on society. IJEDR.
- El-Gohary, D. H. (2010). E-Marketing - A literature Review from a tiny low Businesses perspective. ijbsnet.
- K.Sangeetha. (2016). E-Marketing. Indian Journal of analysis.
- Paulus H. A. Andreki, R. Y. (2014). Is E-Marketing the longer term of selling Field. yank Journal of business and Business Management.
- Zack Jourdan, R. I. (2013). web promoting: A content Analysis of the analysis. Electronic Markets.

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**IMPLEMENTATION OF ONLINE WITH OFFLINE EDUCATION FOR SKILL DEVELOPMENT COURSES**

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**ABSTRACT**

*There are currently more than 1.5 million schools educating around 260 million students. 39,000 colleges are catering more than 27 million under graduate students and 4 million post graduate students.*

*While most of the higher education is still primarily driven through offline channels in India, online channels have started marking their presence in both formal and informal sector. Online channels are dominant in informal education where reskilling, test preparation and tutoring are majorly used by consumers. With India's population booming and according to Census, India will be the only country with youth surplus in 2022, there seems to be a large potential market for online learning/education systems.*

*It creates an ocean of opportunities for everyone to learn something new. Online education in India is expected to grow rapidly by the end of year 2021 and with a healthy rise in number of paid subscribers the market is expected to grow with a compound annual growth rate at 34% CAGR during the forecast period, 2017-2023. Online certification courses have gained immense popularity with growing number of courses from various universities across the globe. The growth of online education market is majorly being driven by the convenience provided to the users and also lower cost of education. However, will online education alone be able to provide the relevant education to today's generation?*

*Skill Development eco-system in India, although started a decade ago, is still in its formative years. It is yet to show the benefits, results and paradigm -shift needed to face the acute shortage of skilled manpower resources in the new economy. On the other hand, appropriate technological interventions can impact the Skill Development training & education especially if it can be delivered to the masses.*

*This study is to explore the feasibility of integrating online education modes under Skill Development to effectively enhance the impact of skill development courses.*

*Keywords: Skill Development, Online education*

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**INTRODUCTION****Online education in India**

There are two streams in education system of India viz. Formal and Informal.

Formal education is given through schools. Under graduate and post graduate colleges. While Informal stream is basically supplement to informal education in form of pre-primary, Private tuitions, vocational education.

While Formal education is still primarily driven through offline channels in India, Online channels have started marking their presence in both formal and informal sector. Online channels are dominant in informal education where reskilling, test preparation and tutoring are majorly used by consumers. Considering huge potential consumer base, many online players have started E-learning portals with B2B, B2C, C2C models. With India's population booming and according to Census, India will be the only country with youth surplus in 2022, we have large potential market for online learning/education systems.

Online education is a digital platform that offers regular courses, certifications for professional courses and various other courses. In India, online education is expected to grow rapidly by 2021. The market is expected to grow with a compound annual growth rate of 34%. Online certification courses have gained immense popularity with growing number of courses from various universities across the globe. Also, online test preparation market segment is expected to grow at a significant rate owing to the rise in number of competitive exam applicants. The growth of online education market is majorly being driven by the convenience provided to the users and also lower cost of education. Online portals provide education and relevant content to the consumers/learners at one place.

**OBJECTIVE**

- To study the Online Education Market in India
- To understand the needs of online education for skill development

- To develop a viable model to address the skill training requirements
- This paper explores benefits using the Hybrid/ Blended model of and in-training & online education that can lead to effective models for Skill Training.

### **ADVANTAGES OF ONLINE OR COMPUTER-BASED LEARNING**

#### **Extendibility, Accessibility, and Suitability**

Reduces travel time and travel costs for off-campus students reduces travel time leading to cost savings on travel time. On-line courses will be cheaper than on campus training. For example, Britain's Open University's study found that producing and providing distance learning courses consumes an average of 87% less energy and produces 85% lower CO2 emissions per student than full time conventional face-to-face courses. Such reduction in energy and CO2 emissions appears to be related to a reduction in student travel and elimination of much energy consumption of students' housing (built infrastructure required for campus-based systems). Therefore, online learning may be an opportunity for sustainable development in higher education since there is a very significant environmental benefits of distance learning or e-learning. In other words, "just in time and just enough."

e- learning allows you to choose from a wide variety of schools to complete your education. You may find online schools that specialize in your particular field or one that can provide a great general education. Students may have the option to select learning materials that meets their level of knowledge and interest.

#### **Collaborative and exploratory learning environments.**

Instructors and students both report eLearning fosters more interaction among students and instructors than in large lecture courses. e-learning can accommodate different learning styles and facilitate learning through a variety of activities. Develops knowledge of the Internet and computers skills that will help learners throughout their lives and careers. Successfully completing online or computer-based courses builds self-knowledge and self-confidence and encourages students to take responsibility for their learning. Learners can test out of or skim over materials already mastered and concentrate efforts in mastering areas containing new information and/or skills

#### **Easy and affordable training deliver**

Students can study anywhere they have access to a computer and Internet connection

Lots of flexibility available for students for self-paced learning modules allow students to work at their own pace

### **DISADVANTAGES OF ONLINE OR COMPUTER-BASED LEARNING**

Not everyone is an ideal candidate for online learning. If you know you have problems with motivation, procrastination and needs lots of individual attention from an instructor you may want to think long and hard before enrolling in an online learning programs. Learners with low motivation or bad study habits may fall behind. Without the routine structures of a traditional class, students may get lost or confused about course activities and deadlines.

Students may feel isolated from the instructor and classmates. Instructor may not always be available when students need help. Slow Internet connections or older computers may make accessing course materials frustrating.

While a majority of employers will accept your degree there are some who still see a stigma attached to distance learning. Realize that your online course may not be the ideal tool for some job fields or for future learning

Managing computer files and online learning software can sometimes seem complex for students with beginner-level computer skills. Especially in India with digital literacy in a nascent stage. Thus it requires adaptability to new technologies.

Hands-on or lab work is difficult to simulate in a virtual classroom esp. when skill based programs are actual hands-on practice. Infact this is one of the main reasons "only" online skill education may not work.

Not all skill courses are offered online and the LMS will need to be changed regularly to accommodate the latest courses required. It makes sense that more practical skill based courses like nursing aren't offered entirely online, after all, part of the degree is learning to work directly with patients. Find out all the requirements of your degree to see what may need to be completed offline.

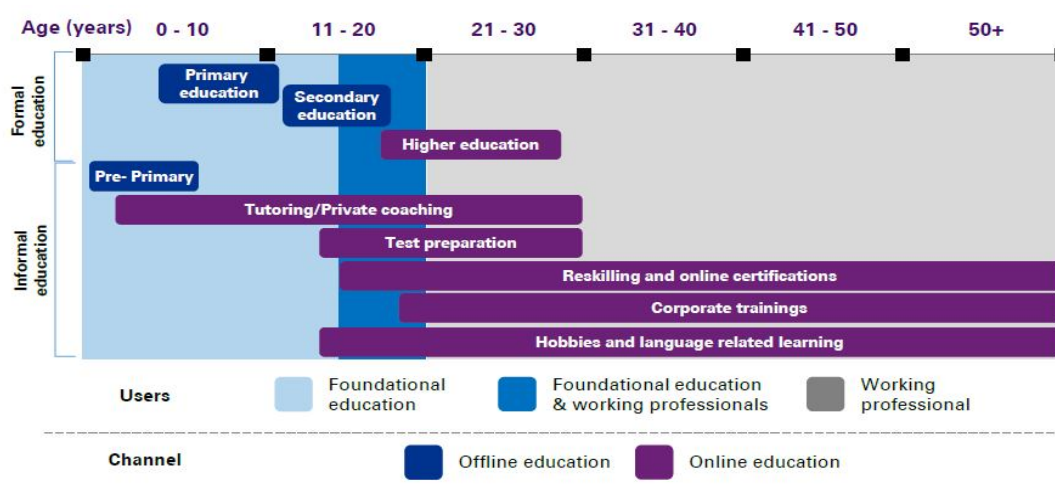
Many hands-on exercises [e.g. welding, CMC lathe operator, medical interactions] don't work for distant learning. All though National Skill Development Corporation (NSDC) under the Ministry of Skill Development and Entrepreneurship has launched

### RESEARCH METHODOLOGY

The survey study was to explore the role of online education leading to a better impact on Education and thereby skill development. The research study includes Secondary data and review of literature to understand the online education and its impact in India and world.

Primary data was collected through Market survey which was conducted to gauge perception of potential and current consumer base regarding online courses. Analysis of customer perceptions, cost implication and technological requirements. The paper also covers the advantages and disadvantages of Online education.

### Interpretation and Analysis



### Macroeconomic factors affecting Online education industry in India

Online education market is driven by many macro economic factors of the country. Cost of offline education is too much which drives people for distance education or online courses. Increasing smartphone adoption as well as expanding internet network helping raise awareness about online education.

India will be the only country with youth surplus in 2022 and online education adoption is more in young people, which will be helpful in the future.

Employability of current working population and need of reskilling due to exponential development of technology will drive online education in coming years.

There are primarily five categories of online education –

#### 1) Reskilling and Upskilling

- Technical certifications are most popular kind of courses
- This category will be driven by increasing need of working population of India.

#### 2) Primary and Secondary supplementary education

- Current demand driven by perception about thorough understanding of content in spite of only acing exams.
- Large offline student base and internet penetration in non-metro cities will be primary growth factor.

#### 3) Test Preparation

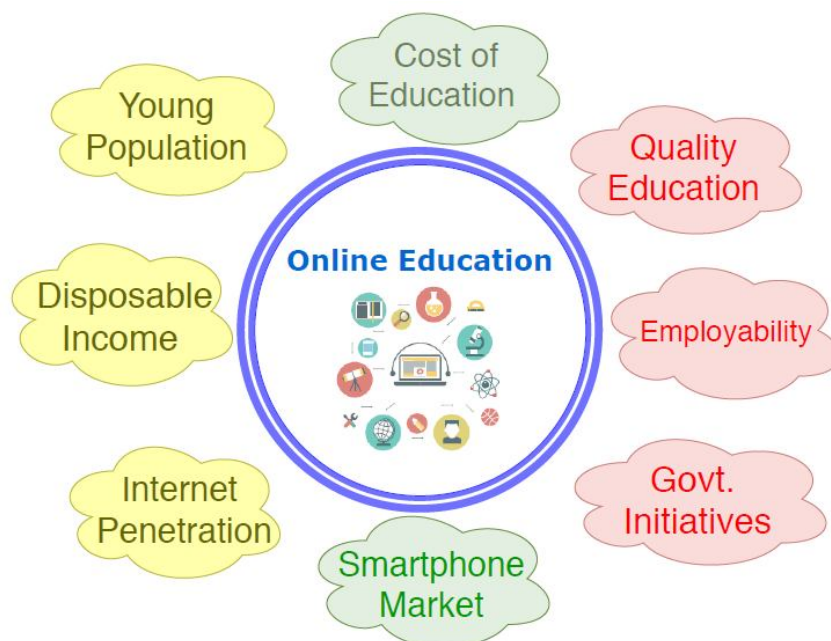
- High demand for engineering and Govt. exams
- Increase in number of competitive exam aspirants will increase demand in future.

#### 4) Higher Education

- Online MBA and distance education is taking grip in India

#### 5) Language and casual courses

- English language user base is more in country
- Casual courses are taken in large base but mostly preferred as free course.



Reskilling and Upskilling currently comprise most of the online education market. According to surveys made over last couple of years, Test preparation and Secondary Supplementary Education are expected to be dominant in next 5-8 years.

#### MARKET DYNAMICS OF ONLINE EDUCATION

The online education market is broadly segmented into component, product, learning type and end users. Online education have a significant impact in developing the education industry overall in terms of money as well as innovation. With exponential growth of internet users, online education market is expected to witness high growth rate. With the increase in purchasing power of an individual and growing digitalization, the smart devices such as laptops, smartphones have created a tremendous impact on online learning platform. The surging internet connection has changed the structure of the learning aspects. The internet enabled smart devices help in accessing the learning applications at any time and from anywhere. The growth in internet base is exponential in developing countries like India and China. Smartphone ownership and internet usage continue to climb in the emerging economies.

#### DRIVERS, RESTRAINTS, OPPORTUNITIES, CHALLENGES ANALYSIS –

##### ❖ Drivers

- **Cost of Education** – Online education is a low-cost alternative
- **Quality Education** – Provides world class courses to potential students
- **Employable skills** – Provides industry relevant trainings at convenience
- **Govt. Initiatives** -- Skill India, Digital India encouraging adoption
- **Internet Penetration** – Exponential in Semi urban and rural areas as well
- **Disposable Income** – Increasing and is forecasted to increase till 2030.
- **Youth Surplus** – Acceptability of online channel is higher in youths.

##### ❖ Restraints

- **Abundance of Free Content** – Availability of free content, diminishes value of paid content
- **Lack of Awareness** – Benefits of online education are still not realized
- **Comparison with offline teaching methods** – Indian users are still not accustomed to learning without instructor

##### ❖ Opportunities

- Demand for Adaptive Learning
- Virtual Learning and Distance learning initiatives
- Need for reskilling and upskilling in modern era

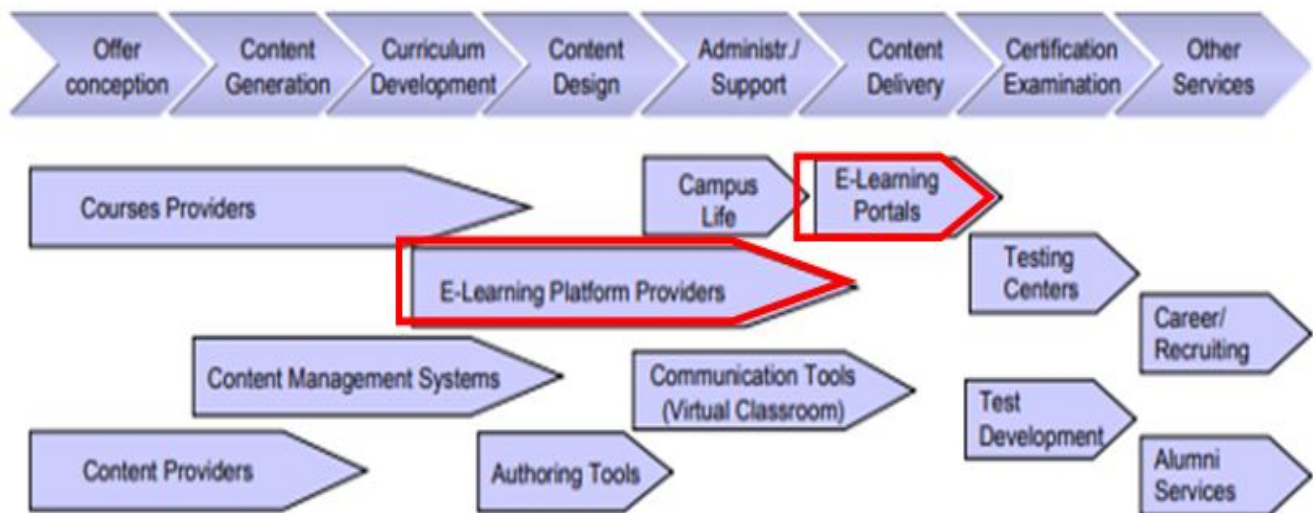
### ❖ Challenges

- Widespread presence of offline players
- Multiple influencers in decision making

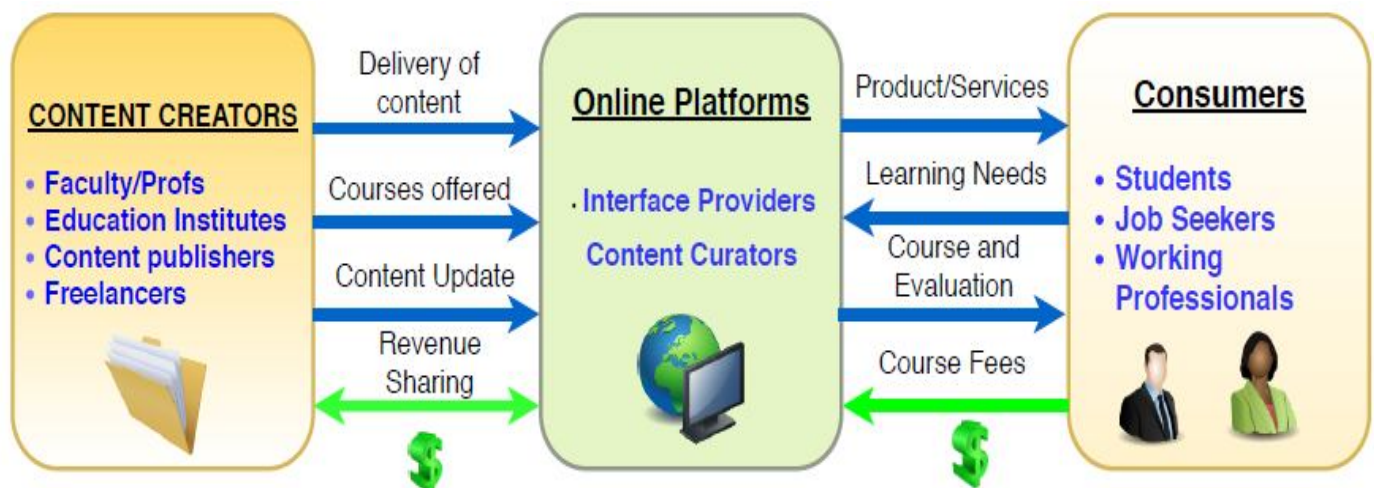
### EDUCATION VALUE CHAIN

Education value chain for offline and online channels is as below. Different players try to emphasize on different values to build their business models.

Here we can provide e learning platform and a portal while getting relevant content from content creators and providing it to customers as a service and monetizing it, sharing revenue with content creators.



Online platforms play pivotal role in the whole education eco system. We can connect potential students with content creators. There are B2B, B2C, C2C models. B2B is prevalent in higher education institutes which offer courses to their own students. C2C is like where we connect potential teachers with potential students.



Basic model of any e-learning provider is as above. Content creators deliver quality content to service providers and then service providers make it available to large consumer base.

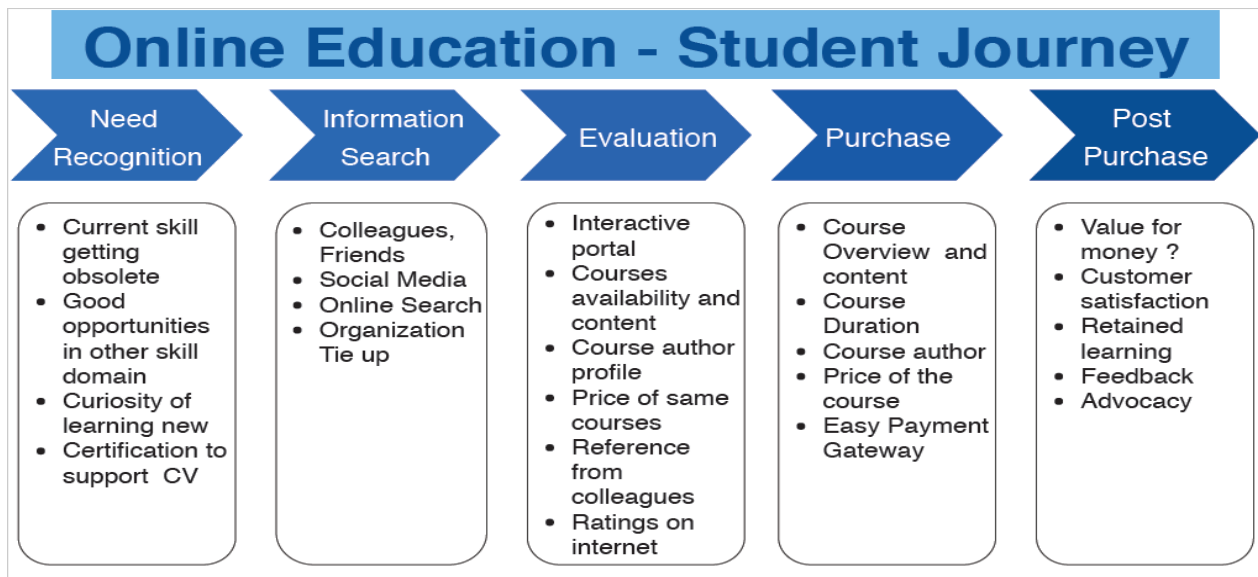
Consumers come to service providers to fulfil their learning needs and pay for their valuable service. Online platforms then share the revenue with content creators. Online platforms also provide certification which sometimes help build customers their CV.

Course providers also provide course updates, which are necessary over the period.

### STUDENT DECISION PROCESS WHILE SELECTING ONLINE COURSES

Why one student applies for course and how he takes a decision is all mapped in above diagram. These are all major factors influencing student's decision to whether opt for a online course or not. We can work on these factors while starting our own e learning platform. These helps map out the journey and also build some distinguishing factor which can be useful in long run.





### NEED RECOGNITION

This shows reskilling and upskilling are need of potential consumers.

#### Information Search

Word of mouth is dominant factor in information search. More than 50% of students first ask reference from colleagues or friends,

### Evaluation of alternatives

While evaluating alternatives, interactive e learning portal and variability of available courses are the main differentiating factors. Course content and delivery models also drive decision making.

### Purchase

Course sample and duration of whole course primarily drive the purchase decision. Valid certificates at the end of the paid courses and easy formalities also help driving the decision.

### Post Purchase

Post completion, customer satisfaction is of utmost importance and a key towards customer retention. If customer find course is value for money then only he/she will advocate for our courses.

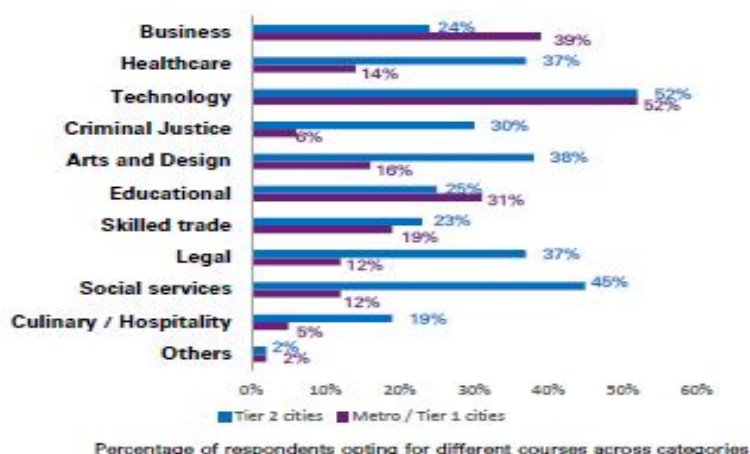
Retained learning i.e. assessment should be there to find the effectiveness of course delivery.

### Current Market characteristics

Online adoption is currently high in working professionals. Online channel is preferred by them due to convenience and shorter duration of courses. This industry is forecasted to grow at 38% CAGR driven by the needs of reskilling in evolving technologies. 23% of the tier 2 cities use online methods compared to only 19% in tier 1 city or metros.

### Current potential user base

- High adoption in IT and IT related courses – working professionals



### Device Preference

- Laptop is preferred over mobile for consuming knowledge online

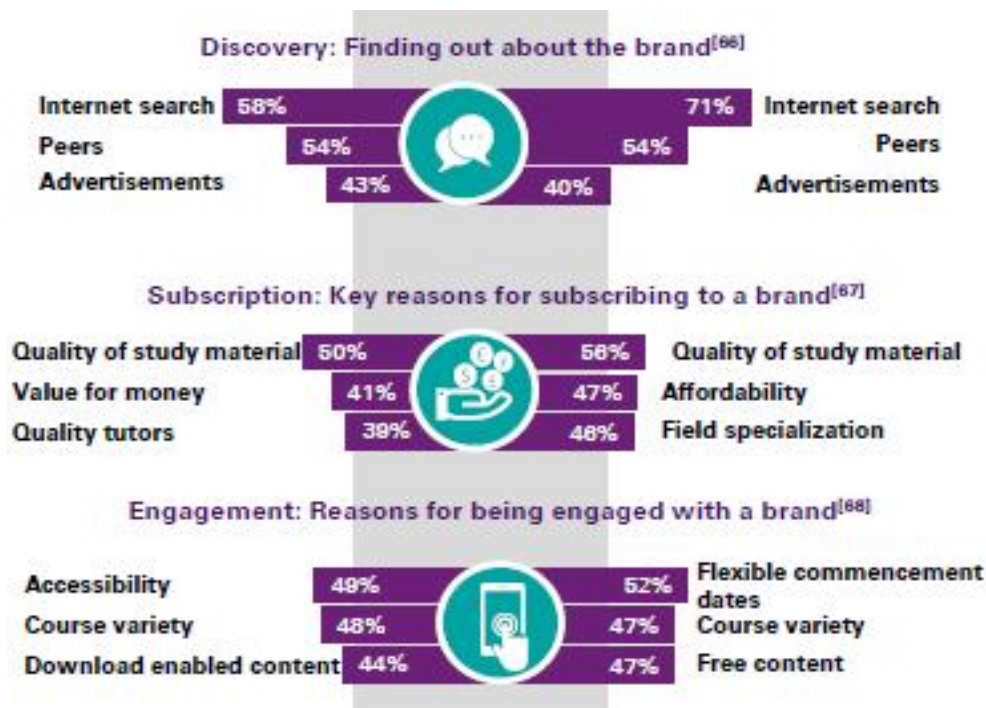


Though mobiles are user friendly, Laptops are preferred by online learners as it gives better learning experience.

Reason for selecting a specific brand (Tier wise)

### METRO CITIES

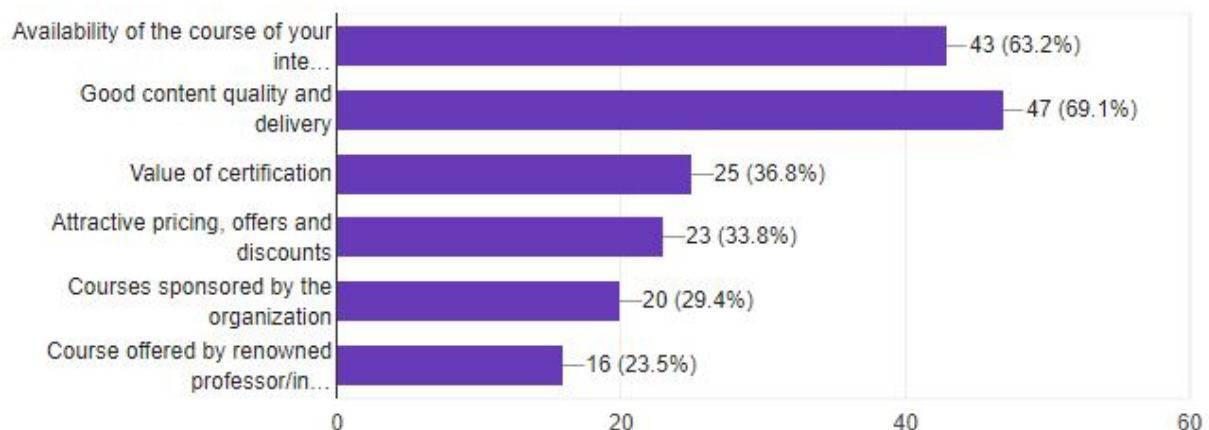
### TIER 2 / TIER 3



According to survey conducted by us, following is result for selecting any online course provider

### Reason behind choosing specific service provider ?

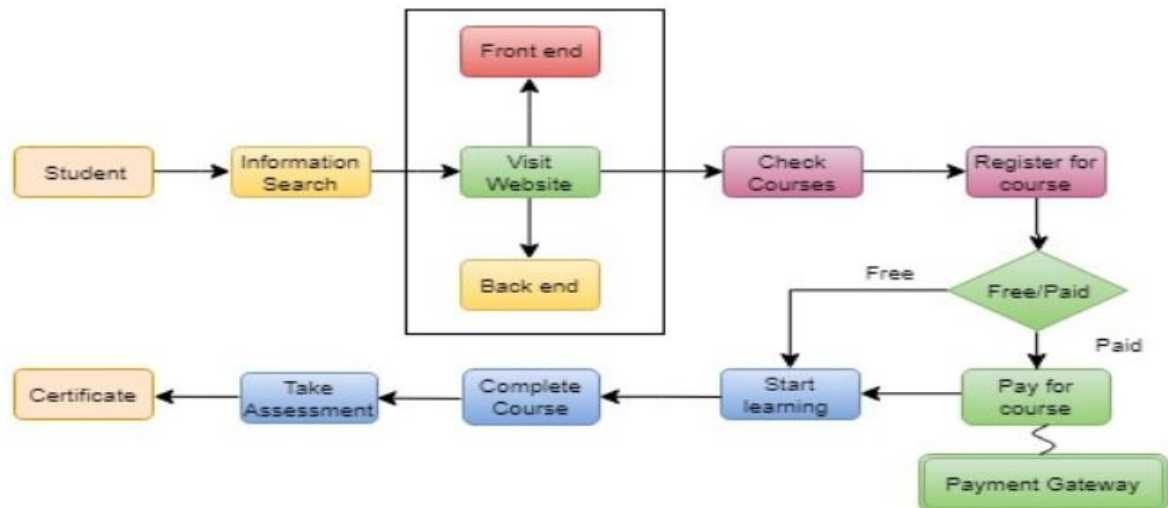
68 responses



Technical Implementation of Online Learning Portal for Skill Development courses

Macro Process Flow of Student Journey in Online Course





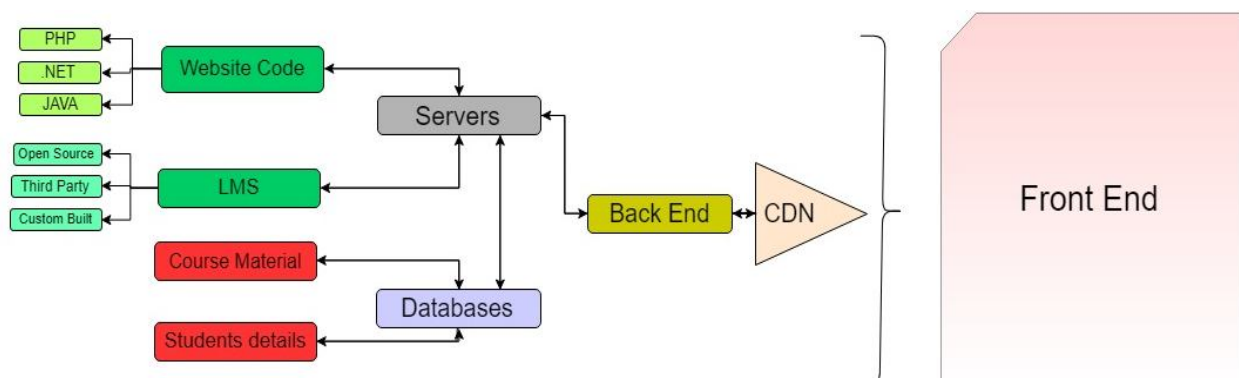
Setting up an e learning portal is an important step and it needs study of various technologies considering cost factor of implementation.

Macro process flow of student journey shows, various steps that are followed while taking any online course. If we go deep and draw one micro process flow, we will get factors which are important at each macro stage.

1. Information Search – Reference from peers, internet search
2. Visiting E learning portal – Interactive portal, Response time
3. Check Courses – Availability of courses, Different domain courses, Course samples
4. Register for courses – Course overview, Course author, Duration of course
5. Payment – Ease of payment, Price of the course
6. Course learning – Quality of content, effective delivery, convenience
7. Assessment – Relevance of course content, Complexity

These are few of the factors which are affecting each step at macro level of the journey. We must make sure student journey is facilitated at each of the steps and student experience is enhanced.

Technical Model - (shown in box above)



Learning Management system is the heart and soul of e-learning. It helps to manage content, student activities, discussions, supports forums and makes whole learning process easier.

First, we need a website to host the LMS. It can be designed in PHP, .NET, Java as per our requirements. We need Databases to store the various course content as well as student data like personal details, payment details, history etc. Course material can be stored in large volume cloud databases and be fed to LMS via Content Delivery Network (CDN). CDN is necessary for e learning as it helps deliver content in faster speeds and enhances customer experience.

Learning Management System can be hosted on our own server or we can also opt for third party LMS solutions which are available at affordable prices.

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To go ahead with our LMS solution, there are 3 possibilities -

1. Third Party LMS solution
2. Open Source like EdX, Moodle
3. Custom Built (from the scratch)

### **1. Third Party LMS solution**

In this solution, we buy complete LMS package as a service from third party like Teachable, Thinkific etc. Such platforms give us hassle free solution for e-learning.

Teachable is a hosted online course platform that will allow us to build course website, host online courses, sell & market courses, deliver content and also engage with audience.

If we go for Open source LMS hosting or custom built LMSs, we might end up spending more money and time on tech rather than on our core competency which is skill development.

We can integrate all the core features into one platform i.e. teachable. Even without any technical skills we can sell end to end online courses with integrated solutions.

#### **What Teachable provides**

- Build your course website and sales pages even if you have no coding skills
- Create engaging online courses - you can add video, audio, images, quizzes and other multimedia content
- In-built marketing tools like coupons, 1-click upsells and ability to create your own affiliate program
- Accept payments through either Stripe or PayPal
- Deliver your course content professionally and further engage your students
- Dedicated 24x7 customer support

Along with these teachable provides unlimited scalability for unlimited students, so that we don't have to take care of back end at all. As all the technical requirements will be taken care by them at a fixed yearly cost.

### **2. Open Source Platforms (EdX,Moodle)**

We can either opt to third party or Open source platforms as both of them have low setup cost involved. But if we deploy these open source LMSs, we need to have our own cloud servers and storages, which is very time consuming and ultimately costing lots of money.

It also needs continuous support from front end as well as back end. We might have to shed more cash if we scale up eventually, which is not the case when it comes to third party platform like teachable. We will have to pay more for more server usage and databases.

We can have greater flexibility as we can design as per our requirement and as per student feedback. OpenEdX also provides dashboard for student's data analysis.

This also requires hiring technical expertise to deploy and support whole system which again ultimately is not so cost effective as compared to Third party solutions. Due to economies of scale, third party solutions can achieve low prices but if we deploy it our own, it costs a lot more.

Along with Setup, Deploy, Operationalize, Support, we need content development which is independent of which platform we use and has its own cost implications.

### **3. Custom Built**

This is the most complex solution. It requires to work from scratch and lots of man power.

We need lots of technical experts who can code from scratch as per requirement.

We also need cloud to host all the code and also the databases to host all the content. It all adds up to cost in the end but giving flexibility.

It also might need more than 10 months to complete end to end solution according to requirement and also there is a possibility of it not being efficient.

It's very long shot and unless, we have enough revenue to break it even, we shouldn't take this approach.

Comparison of all 3 solutions is given below :

PARAMETER	SaaS (Teachable)	Open EdX/Moodle	Custom Built
Ease of implementation	High	Medium	Medium
Setup cost involved	Negligible	Fairly high	Highest
Back end Support	Not Required	Required	Required
Scalability	Possible	Possible	Possible
Scalability cost	Low	High	High
Payment Gateway	In Built/Custom	Need to design	Need to design
Flexibility	Low	Medium	High
Security	High	Moderate	Moderate
Analytics/Dashboard	In Built	In Built	Need to design
In built studio	✓	✓	✓
In Built Marketing tools	✓	✗	✗
Transaction Fees	Fixed / Per subscription/No Fees	No	No
Payouts	End of the month/instant	Instant	Instant
HR requirement	Low	Medium	High
Exit Cost	Low	Medium	High

Considering above all factors, Third party LMS solutions are very good to start with. In the future if number of courses and number of users increase significantly. Then we can use open source solutions which might give us flexibility in student interaction modules as well as in setting up different assessment techniques which are little constrained in such platforms as a service.

#### Front end and U.I.

A website needs to not only look good and provide the basic information – it should also become an interactive hub for the learner community. Having a well-organized and intuitive website can mean the difference between effective e-learning and a disappointing online learning experience for students. Creating a high impact website that is easy to navigate and aesthetically appealing can help us to promote our product.

#### Platform should easy to navigate and fully functional :

When designing the site and e-learning platform, ease of navigation and functionality should be top priority. A well organized and intuitive web-based learning platform enables students to focus on the coursework rather than having to sort out technical issues that may arise from poorly designed sites and systems

#### Enhance the customer learning experience

An interactive website can also improve the learning experience. Students can get access to all the materials and they can check notes and resources from anywhere.

Resource sections can also be added to the website, including

- Documents;
- Videos;
- Images;
- Presentations.

#### Improve communication

Instructors and students need to communicate. And a more interactive website allows them to do this with greater ease.

If we incorporate social media accounts into our website, like Twitter and Facebook, we can also make use of these to broadcast information. Many people are familiar with social media sites, and they may check their Twitter feeds more than their emails, so this can be an excellent way to improve communication.

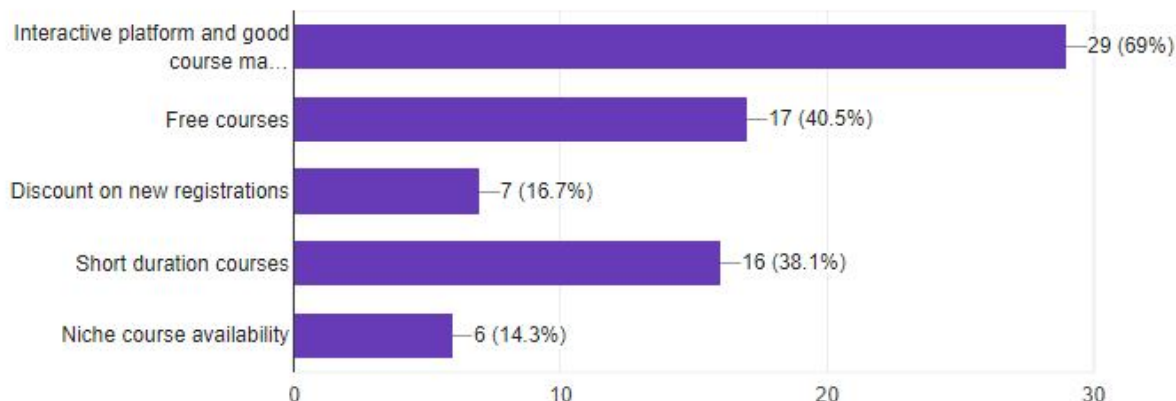
#### Improves the brand image

We also want our brand image to be positive, and we can achieve this through taking the time and care to update a website and provide information to the community. We may be marketing our website online, and an interactive site can ensure that when people arrive at our website, they see our portal in the best light and up to the level with big players.

Interactive platform is one of the top factors which people expect to start adopting online education.

### What services should the service providers provide to attract you?

42 responses



Possible revenue models in this approach:

- 1. Course Subscription :** Based on one time transaction where students pay per course subscribed.
- 2. Pay per session/module :** Students are charged as per the number of modules or sessions they accessed.
- 3. Freemium/Upgrades :** Students can be provided with free sample courses and we can charge for the full course or assessment of that course.
- 4. Content Sharing :** Students can be encouraged to create courses and we can share revenue on the basis of content shared on platform.
- 5. Advertisements –** If consumer base is large enough on our website then we can earn revenue from advertisements as well.

We can follow the traditional revenue model to monetize our courses. Once we are done with technical platform, most important part of any e-learning portal is CONTENT.

As per the survey, Course content is the primary driver or influencing factor of customer purchase decision. We need to have course designed from industry experts and designed in a very interactive way so that student find it interesting.

Thus all Content Creation and development is a tedious work and out of our core competency.

We can create content from Subject Matter Experts (SMEs) and Instructors and develop digital content from third party vendors who have expertise e learning area.

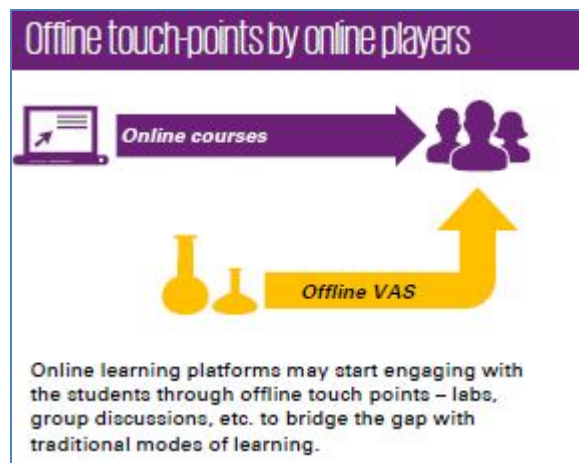
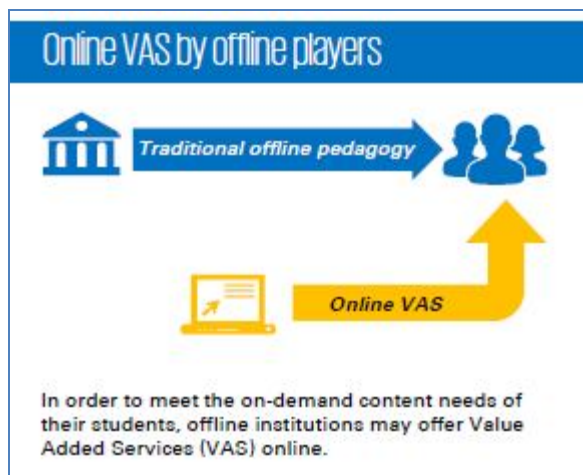
As Content and its delivery is the most important for us , it needs to be of the highest quality and it must be interactive as well to keep learning engaging.

### Future of Online Education Industry

Expected Market Characteristics in Future

- Attractive platforms and good product can attract customers to online portals
- Competition will be intense , so users will vast choice to select course provider
- Differentiation will be technology enable solutions and interactive content
- Value added services such as industry visits, career counselling and soft skills will be of immense importance as there will be cut throat competition in service providers.
- Online portals should also start with blended learning as it will be key to areas where offline learning is prominent e.g. Tier 2/Tier 3 cities.

- Customer satisfaction will also be the key factor, as customer retention is necessary for continuous revenue flow.
- Government initiatives will fuel growth as they will be providing support for these enterprises.
- Rise in disposable income will bypass the barrier of adoption of paid online courses.



Offline teaching institutes will move online with some of their services, here we can capitalize on changing trends of learning and can provide online solutions to such institutions.

Online courses will also have to interact with offline touch points and provide value added services which can be differentiation factor.

A new portal called [www.indiaskillonline.com](http://www.indiaskillonline.com).

## SUGGESTIONS & CONCLUSIONS

### Market

Current 247 million dollar industry is forecasted to grow at 38% CAGR to become 1.96 billion dollar industry by 2021. Reskilling and certification is currently dominant category and projected 5 fold growth in next 6 years.

### Consumer Behavior shift

Evolving technologies forcing adoption of reskilling and upskilling convenience, Ease of learning are primary drivers in today's fast paced world. Availability and quality of content major factors of brand selection. Word of mouth followed by internet search and advertisement influence evaluation.

### Technical platform

- Third party LMS solution gives ease of implementation
- Low entry and exit cost
- Low resources required for solution implementation
- Custom branding and payment gateways available
- In built analytics and marketing tools help in strategy building
- In future, after enough revenue generation, we can go for open source or custom built LMS as break even and cost implications can be taken care with healthy cash flows.

### Content Development

- Quality and delivery of content is primary decision factor for consumers
- Industry experts with significant experience should be taken as SMEs
- After thorough research and considering target audience, course curriculum should be designed
- Course development is important and should be aligned with technical platform
- It can be outsourced to third party vendors who have expertise and resources in e learning.
- Quality of course content is key factor in customer retention.

**Future plans**

- Customized content delivery and assessment can be applied once brand is set
- Value added services such as live projects and internships can be offered along with relevant courses.
- Gamified courses can be implemented once market starts adopting to online channels.
- Blended learning modules can be started in future.

**Hybrid or Blended models for Skill Development:**

The hybrid model allows faculty to develop solutions to course problems and to incorporate new types of interactive and independent learning activities that were not possible in traditional courses. The Faculty can teach using a variety of online and in-class teaching strategies, which make it possible to achieve course goals and objectives more effectively.

Hybrid practioners reports that they feel more connected with their students and are able to get to know them better since they communicate both online and face-to-face.

Hybrid environments have the potential to increase and extend instructor-student and student-student connectivity and to build relationships even more so than in traditional or only online courses. Discussions started in class are continued online and online interaction often carries over into the traditional face-to-face classes. Integration of out-of-class activities with in-class activities allows more effective use of traditional class time. Students who rarely take part in class discussions are more likely to participate online.

Number of studies in other countries show students are better able to master concepts and apply what they have learned compared to students in sections of their traditionally taught courses. Students may develop higher-order skills of critical thinking, problem-solving, and the ability to apply theoretical models to real-world data.

A new pedagogical approaches can lead to hybrid learning more effective. Successful hybrid course leads to using more participatory and student-centered learning activities.

Documenting the process as well as the product of learning: Many instructors report that their course management system has increased their pedagogic efficiency because of its ability to organize the course and automate some basic activities such as quizzes, grading, and surveys. Skill Development courses a mass training with same standardised modules can make a better impact through hybrid models. Infact with this hybrid models can make it cheaper to execute because of the ability to impart a larger mass with a standardised content.

**Challenges & what is needed for Hybrid models**

Teaching a hybrid course can be challenging, since it requires acquiring different teaching skills, redesigning a course to take into account new teaching and learning opportunities, managing the course content both online and in-class, and preparing students to work in a hybrid format.

**Rethinking Course Design:** To teach a successful hybrid course instructors must re-examine their course goals and objectives, design online learning activities to meet these goals and objectives, and effectively integrate the online activities with the face-to face meetings. Instructors must make the transition from lectures and presentation to a more student-centered active learning.

**Adopting a New Approach to Teaching:** Instructors need to learn how to facilitate online discussions and small group activities, and re-examine traditional methods of assessment of student work to take into account the new learning environment.

**Managing the Dual Learning Environment:** The hybrid environment also adds additional scheduling and communication challenges as courses meet both online and face-to-face. Instructors must also take care not to overload themselves and their students.

**Preparing Students:** Instructors must be prepared to help students understand their active role in the hybrid, assist students in keeping their work on time and on track, and be prepared to offer strategies for troubleshooting new course technologies.

Digital divide will lead to reach out to students. Digital literacy and good network accessibility in rural parts is very difficult to access.

Thus the advantages of hybrid education make a significant impact in higher education today and, as technology evolves, promises to deliver even greater benefits in the future. Hence we can conclude that at this point of time skill development courses are more effective when conducted under hybrid mode.

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**BIBLIOGRAPHY**

- <https://www.talentlms.com/elearning>
- <https://www.pixelmattic.com/blog/e-learning-website-features/>
- <https://www.onlinecoursereport.com/the-10-best-features-of-next-gen-learning-platforms/>
- <https://elearningindustry.com/5-common-problems-faced-by-students-in-elearning-overcome>
- <https://www.game-learn.com/8-problems-of-online-training-and-how-to-solve-them/>
- <https://home.kpmg.com/in/en/home/insights/2017/05/internet-online-education-india.html>
- <http://digitallearning.eletsonline.com/2017/05/indian-online-education-industry-to-be-1-96-bn-by-2021/>
- <https://www.elucidat.com/blog/marketing-strategies-online-training-providers/>
- <https://www.efrontlearning.com/blog/2015/11/how-to-create-an-elearning-organization-business-model.html>
- [http://www4.uwm.edu/lrc/hybrid/faculty\\_resources/advantages.cfm](http://www4.uwm.edu/lrc/hybrid/faculty_resources/advantages.cfm)
- Gary. W. James, Allen Communications
- [http://blackboardsupport.calpoly.edu/content/faculty/handouts/Ben\\_Online.pdf](http://blackboardsupport.calpoly.edu/content/faculty/handouts/Ben_Online.pdf)
- Top 5 emerging markets with the best middle class potential , Euromonitor international, sept 2015
- All India Survey on Higher Education [2015-16], MHRD 2016
- E-Learning Business Models Strategies, Success Factors and Best Practice Examples, Dr. Sabine Seufert

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**ROLE OF SOCIAL ENTREPRENEURSHIP FOR SUSTAINABLE DEVELOPMENT**

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**ABSTRACT**

*The research focuses on understanding the significance of Social Entrepreneurship on the local environment, community, society, and economy. Entrepreneurs recognize the benefit of sustainability linked with the economy, environment, and society, applying during the policy making along with execution of the business. The papers aim is to identify how the social entrepreneurship is associated with the sustainable development to encounter the needs of the society at a larger scale. Their business processes, structures and result of their initiatives are different compared to the traditional way of businesses. It's been notified that social entrepreneurs accommodating the different needs associated with the sustainable development such as the elementary need of individuals, needs of communities and the need of future prospects. The needs of the society at large, the inclusion of the masses into main stream area of business and services were an untapped large market. As the opportunity pie increases the product, solution and services get tested in much wider way leading to sustainability test.*

*The execution of a social entrepreneurship is considerably more complex than it is for a business, which can just gauge financial achievement. Measuring and adapting lives saved, personal satisfaction expanded, and natural damage mitigated is conceivable, are exceedingly hard to do. In this way, social entrepreneurship is absolutely mission-driven for the sustainable development. This paper starts with an overview of sustainable development and the significance of social entrepreneurship and its contributions to the society, economy, social wellbeing & ecosystem. The paper will summarize the major issues & conclude with suggestions for future researchers.*

*Keywords: Social Entrepreneur, Entrepreneurship, Sustainable Development, CSR, Sustainability*

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**INTRODUCTION**

Social entrepreneurship consists of activities which are attached to social objective, is about using entrepreneurial skills to bring innovative solution to solve the social issues. It not only focuses on social problems, yet does not avoiding the economic creation to the society. In this manner, it isn't constrained to the non-benefit or social areas but to achieve the interests & expectations of all the concern stake holders in the social, public and private segments by making nonprofit motivating forces for aggregate activity. Expecting the positive social effect of the entrepreneur and taking into account fundamental needs. This paper perceives the essential segments contributing to the advancement of sustainable development. Another, possible objective of why entrepreneurs should be engaged in sustainability to the motivations for sustainable development and unrevealed dimensions in decision making will be showcased. There are several studies available that entrepreneur's activities with sustainability, creativity has significance role to preserve the eco system. Social entrepreneurs are taking the ownership to create a sustainable society. Social entrepreneur engaged in innovative business practices especially in the development advancement though enhancing education, productivity, health care, waste management, energy retention and self-reliance of individuals and societies.

Social enterprise has different objective in comparison to business as social business person has the responsibility of the bigger scale for the advancement. It is not necessarily the case that business visionaries are not responsible; they are – to their clients and investors. Be that as it may, social business visionaries are responsible to a substantially larger group. This larger group incorporates investors, representatives (counting volunteers) in coordinate recipients, and the group or society. There are no such things as a firmly held, private social undertaking. Social business visionaries work in a fishbowl and are in charge of exhibiting their social effect for the accomplishment of the responsibility. It's been observed that social entrepreneurship has significance as it has given the contribution in triple-bottom-line components of sustainable & community development.

To leave the benchmark, social entrepreneurs need to have an ecosystem consist of policy makers, markets, accelerators, incubators, mentors, Government, venture capitalist and other stakeholders engaged. Simultaneously social entrepreneurs create their visibility in the market to showcase their achievement & experiences that how creativity and innovation subside the complex social problem in the society. In this way, social enterprise can be thought of as a remarkable, absolutely mission-driven type of practical business



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**OBJECTIVE**

- To understand the role of social entrepreneur in sustainable development
- To identify the benefit of sustainability during the policy making & execution of the business
- To demonstrate the social entrepreneurs who brought innovation in business and service oriented models are contributing to sustainable development.
- To Identify the role of social entrepreneur on the society at larger scale

**THE PHENOMENON OF SOCIAL ENTREPRENEURSHIP**

Social entrepreneur was coined in the 1970s to encounter the social issues. The term "social entrepreneurs" was first specified in 1972 by Joseph Banks in his original work named *The Sociology of Social Movements*, where he emphasized importance of managerial skills to address the social issues. The Maiden use of social entrepreneur in the 1980s with the foundation of Ashoka, which is the main association to support the social business visionaries. Simultaneously, the term "social innovation" was depicted in the work of Drucker (1990), who emphasized on the requirement of managerial skills in non-profit associations to build the proficiency and adequacy of delivering social products & services.

**A social entrepreneur**

- Brings the positive change on society
- The main objective is to deliver the service or product as an independent association
- Is financially sustainable and not completely dependent on any kind of gifts
- Run the venture in a sustainable manner
- Profit is not primary objective, and its aligned with the company's societal mission
- Scalability of the business model enhance the level of effect
- Governance and policies are based on equal voting rights for all parties involved
- Transparent to everyone

**Social Entrepreneurs and Sustainable Development**

The Bangladesh Rural Advancement Committee (BRAC), a likeness National Poverty Eradication Program (NAPEP) was build up to concentrate on softening the cycle of poverty in Bangladesh through social entrepreneurship. Likewise, they sort out the poor for self-improvement and assemble neighborhood capacities with respect to economic advancement, education and woman entrepreneur. This has changed the nearby dispositions and culture that make unreasonable impediment for woman interest. Crafted by Yunus (1997) additionally clarified the relationship of social business and innovation, seeing raising of economic wellbeing, less reliance of woman on their spouses, better nourishment for youth, enhanced life style, extension of poor ladies' parts in income generation as essential part of development. The emphasis is on enhancing the role of poor and minimized individuals particularly women in the rural regions to take an interest and ownership in independent ventures. Along these lines the highlights are grassroots for village improvement arrangement of help benefit and smaller scale credit for business. These activities have affected majorly on the social economic and political condition. In the midst of this presentation which is possible in developed countries and the Asian nations that are fast growing economies this gap must be filled if sustainable development is to be attained achieved through entrepreneurial activities. On a social level, collectivity innovativeness gives the chance to enhance the life of each individual. Rather they see challenges as opportunities to identify the new methods of doing things. Thus, social entrepreneurs focusses on creative thinking to achieve the new perspective on the world

**RESEARCH METHODOLOGY**

This research paper data sources are secondary data which includes academic sources, and included both qualitative and quantitative data. Journal articles, published books, industry related websites.

**DISCUSSION OF FINDINGS**

This research paper has identified that there is a relationship between social entrepreneurship and sustainable development. Simultaneously, it also observed that creativity and innovation has also affecting the sustainable development. This promotes the research of the researchers those who emphasized that creativity brings the opportunity to create and enhance the quality of life through regular innovation in process and

services . According to Drucker (1954) systematic innovation includes purposeful and organized search for changes and in the systematic analysis of the opportunities such changes might offer scope for economic and social innovation. Thus, innovation is a major key of social entrepreneurs and the source by which entrepreneur control the changes and bring new values that support the sustainable development.

Regularly, expansive scale social issues, for example, neediness, vitality, squander, water, instruction, wellbeing and employments are the duty of the State. In any case, these issues are perplexing in nature and need the ingenuity and spryness that an undertaking can convey to the table for it to be understood. State Institutions need run of the mill attributes that undertakings have – more noteworthy spotlight on results and capacity to investigate different models to take care of complex issues. That is the place social business visionaries come in. A social endeavor is a business first however has an equivalent enthusiasm for the social effect of their organizations instead of just producing incomes and benefits or to just taking care of a social issue. Nonetheless, this does not imply that a social venture is a not-for-benefit. The social business person's plan of action is supported through benefit age, similar to some other business. The thing that matters is that benefit age isn't the sole goal of these organizations, it's the general social effect made by the items and administrations of the organization

Business people are basic drivers of advancement and advancement. In the business world, they go about as motors of development, tackling opportunity and advancement to fuel financial headway. Then again, social business visionaries are people who perceive a social issue and utilize pioneering standards to arrange, make, and deal with a dare to roll out social improvement.

Social business entrepreneur are people with inventive answers for society's most squeezing and overwhelming social issues. They are eager and constant, handling real social issues and offering new thoughts for wide scale change.

There is no uncertainty that there is nobody all-inclusive model of sustainable strategy usage that can be connected effectively to various kinds of associations, as this is firmly related not exclusively to the particulars of the organization, yet in addition the sorts or nature of the techniques being executed. This implies it is conceivable to recognize different dimensions of progression of exercises guaranteeing an economical sustainable strategy execution procedure of a fluctuated dimension of viability .However, as demonstrated by a large number consequences of studies, some of which were referenced in this paper, it is conceivable to distinguish the positive impact of the incorporation of the possibility of supportability with system usage, which is reflected in the adequacy of exercises embraced. Based on the exploration, useful ramifications for officials may likewise be demonstrated. The system execution process is a mind boggling question which comprises of related components. Tolerating a feasible strategy takes into consideration the reception of an all encompassing point of view and appreciation of the corresponding impact of specific viewpoints and empowers a fair execution technique. This paper enables us to see better what variables ought to be considered while dissecting the procedure of system execution so as to guarantee complex advancement coordinated with authoritative objectives. Additionally, the discoveries of the investigation give intriguing experiences to executing the manageable strategy which may improve authoritative choice emotionally supportive networks. Those are the reasons distinguished in this paper could be referenced as useful ramifications associated with the idea of a feasible procedure execution process. The fundamental restriction of this examination is associated with the subjectivity of the appropriate responses gave. Despite the fact that the gathering of respondents was picked among the supervisors and administrators, there is a hazard Sustainability that the appropriate responses could have been deficient or did not completely speak to the procedures and inspected issues in a specific association. The picked points of view of supportability could likewise be additionally analyzed and their number or depiction could be researched. In addition, it is important to check with further investigation the degree to which the possibility of supportable system usage varies relying upon the measure of the association and the branch in which it works.

## **CONCLUSION**

This study has demonstrated that Social entrepreneurship is the key for the sustainable development in many developing countries .Based on the above findings, the researchers recommended the need of social entrepreneurship in education, innovation, creativity and government initiative should be designed to bring motivated entrepreneurs who can contribute with their innovation & creative process in finding solutions to socio-economic issues.

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**REFERENCE**

**References and Bibliography**

- Dan Senor and Saul Singer; 2009. Study of Startup Nation The Story of Israel Miracle. Twelve Hachette Book Groups, New York
- Eric Ries; 2008. *Lean startup Business Theory*. Crown Publishing Group, New York.
- Edward Lorenz; 1972. *The Essence of Chaos*. University of Washington Press, Washington

**Academic journals/Thesis**

- Amit.R. and Zott. C. (2001), Value creation in e-business, Strategic Management Journal
- Izdihar Baharin, 2012, Sustainable Development and Multinational Business Quest International University Perak, Malaysia
- Jeremy Hall, 2010, Sustainable development and entrepreneurship: Past contributions and future directions, University of Nottingham
- Peter Bradley, 2016, A framework for understanding and designing business models for sustainable development, Bristol, UK
- Ronald Muyingo, 2014, Sustainable Business Practices, university of Swedish

## ELEMENTS AFFECTING USAGE OF MOBILE BANKING APP AMONG STUDENTS USING UTAUT MODEL

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### ABSTRACT

*In the era of 4.0 almost everyone in the India are using smart phone in the country. Consumers are using mobile app for the banking at any place and at anywhere in the India. This research paper analyzed the elements affects the usage of mobile among the students using UTAUT model. Using UTAUT model four independent factors Performance expectancy, Effort expectancy, Social influence, Facilitating conditions, and dependent factor Behavioral intention are used to analyze the data. The study investigates out of four variables which variable has the significant impact on the behaviour intention. Statistical tool correlation and regression are used to analyse the data.*

*Keywords: Mobile banking, UTAUT model, Behaviour intention, Technology*

### INTRODUCTION

In the era of digitalization almost everyone are using mobile app in their day to day life. Mobile apps are becoming important part of the humans. Almost everyone are using smart phone as they are making their life very easy. 3G and 4G and in future 5G technology are encouraging consumers to use internet and mobile apps in their life. These app are very useful to work and can be used at any time and at any place. These mobile apps are making consumers to do the transaction as per their ease at any time. Everyone are buying online or doing transaction, paying utility bill through the mobile app. Consumers need not to go the bank each and every time to do the transaction or purchase. Mobile app is software which runs in the smart phones. This paper investigates the use of mobile banking app among the students in the Bangalore city. This paper analyse the UTAUT model to investigate the usage of mobile banking app among the students.

### UTAUT Model

The UTAUT model aimed to explain technology acceptance, is based on technology acceptance theories or models. UTAUT model was developed by the Viswanath Venkatesh in the year 2003. Four independent factors Performance expectancy, Effort expectancy, Social influence, Facilitating conditions, and dependent factor Behavioral intention. Researcher in the researcher paper analysed the impact of the four factors Performance expectancy, Effort expectancy, Social influence, Facilitating conditions, and dependent factor behavioural intention. The model used for the research paper as follows:

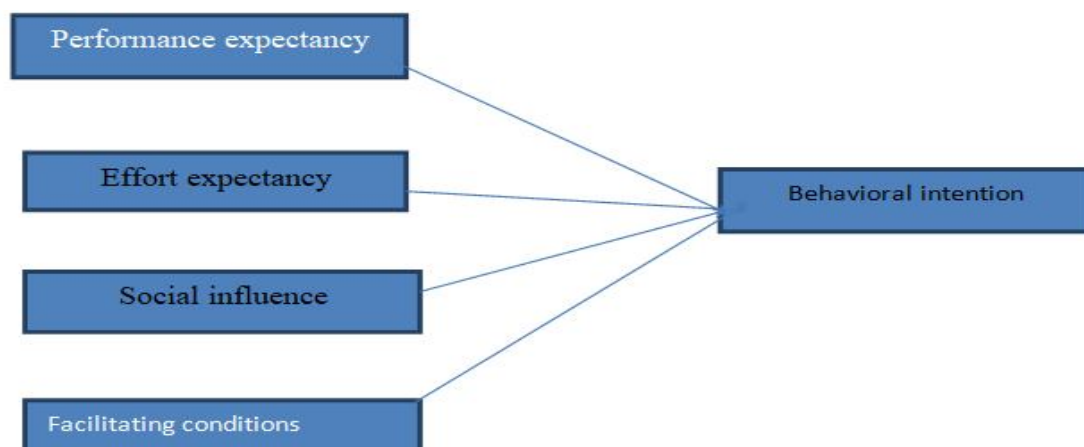


Figure-1: UTAUT model for usage of mobile banking app among students

### REVIEW OF LITERATURE

**Yogesh K. Dwivedi(2017)** researcher in the paper formed the new theory based on the original UTAUT model theory. New theory is developed using meta analysis and the structural equation model by the researcher. The result of the analysis showed that attitude: is the central to behavioural intentions and usage behaviours, moderately refereed the effects of exogenous constructs on behavioural intentions, and has a direct impact on the usage behaviours. **Troy Devon Thomas (2013) research paper** investigates the usage of mobile learning app for the higher education using UTAUT theory model. The study conducted in the developing countries and result shows that the different country and the culture have the differences which moderate the UTAUT effects.

**Paul Juinn Bing Tanh(2013)** research paper analyzed the need of English learning app for the Taiwan students. The research paper used UTAUT theory to study the acceptance of the English learning apps among the college students in the Taiwan city. The findings suggest that three factors performance expectations, effort expectancy, and social influence have positive effects on behavior intentions and facilitating conditions; behavioral intentions also have positive effects on use behavior. The result shows that the usage of English learning app will help the students to be more productive. **Shu-Lu Hsu, Jeffrey C. F. Tai, and Yi-Han Wang(2013)** in the research paper investigates the behaviour of consumer for promotional activities of mobile app. The research paper analyzed the impact of five factors of mobile app the cost (free/discounted) for earning APP, the relationship between APP and the promoted product, the perceived usefulness, the perceived ease of use, and the perceived playfulness of APP in the context of light foods purchase. The cost for earning APP has the significant effect on the adopting intention of mobile APP. The study also found a positive influence of adopting intention of APP on the consumer's purchase intention of the promoted product.

### OBJECTIVE OF THE STUDY

- To understand the impact of performance expectancy on behaviour intention
- To analyse the effect of Effort expectancy on behaviour intention
- To explore the impact of Social influence on behaviour intention
- To analyse the significant effect on facilitating conditions on behaviour intention

### HYPOTHESIS

- Hypothesis 1: Performance expectancy has significant effect on behaviour intention
- Hypothesis 2: Effort expectancy has significant effect on behaviour intention
- Hypothesis 3: Social influence has significant effect on behaviour intention
- Hypothesis 4: Facilitating conditions has significant effect on behaviour intention

### RESEARCH METHODOLOGY

The present study is conducted to find out the element affecting the usage of mobile app using UTAUT among college going students in the Bangalore city. The primary data was collected through the questionnaire from both UG and PG students from three colleges in the Bangalore city. The samples of 100 were considered for the study. The questionnaire is divided into two parts and first part consists of demographic profile of students such as age, gender, qualification. The second part of the questionnaire consists of factors Performance expectancy, Effort expectancy, Social influence, Facilitating conditions, Behavioral intention. To measure the impact of mobile banking app among students using 20 questions were asked with 5-point Likert scale, ranging from strongly disagree=1 to strongly agree=5, is used to measure each variable.

**Demographic profile:** From the demographic profiles of the respondents, majority of the respondents are male i.e., 60%. Most of the respondents i.e., 75% of the respondents are in the age group of 18 to 21 years, 48% of the respondents are UG students.

The reliability of the scale is assessed using Cronbach's Alpha. The overall Cronbach's alpha is .752 which is more than the standard value 0.7.

### FINDING AND ANALYSIS

Correlations						
		PE	EE	SI	FC	BI
PE	Pearson Correlation	1	.389**	.314**	.441**	.351**
	Sig. (2-tailed)		.000	.001	.000	.000
	N	105	105	105	105	105
EE	Pearson Correlation	.389**	1	.415**	.650**	.688**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	105	105	105	105	105
SI	Pearson Correlation	.314**	.415**	1	.425**	.392**
	Sig. (2-tailed)	.001	.000		.000	.000
	N	105	105	105	105	105

FC	Pearson Correlation	.441**	.650**	.425**	1	.498**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	105	105	105	105	105
BI	Pearson Correlation	.351**	.688**	.392**	.498**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	105	105	105	105	105

\*\* . Correlation is significant at the 0.01 level (2-tailed). N

From the above table we can conclude that the Performance Expectancy, Effort Expectancy, Social Influences and Facilitating Conditions is positively correlated with the Behavioral Intention. Among those there is strong positive correlation between Effort Expectancy and Behavioral Intention as;  
 $r(104) = .688, p < 0.01$

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.688 <sup>a</sup>	.474	.469	.26712
a. Predictors: (Constant), EE				

ANOVA <sup>a</sup>						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1 Regression	6.619	1	6.619	92.760	.000 <sup>b</sup>	
Residual	7.349	103	.071			
Total	13.968	104				
a. Dependent Variable: BI						
b. Predictors: (Constant), EE						

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.890	.304		2.927	.004
EE	.764	.079	.688	9.631	.000
a. Dependent Variable: BI					

#### Excluded Variables<sup>a</sup>

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
					Tolerance
1 PE	.098 <sup>b</sup>	1.268	.208	.125	.848
SI	.128 <sup>b</sup>	1.642	.104	.160	.828
FC	.088 <sup>b</sup>	.932	.354	.092	.578

a. Dependent Variable: BI

b. Predictors in the Model: (Constant), EE

From the Model Summary, we can see that  $R^2 = .47$ . It means that the independent variables like Effort Expectancy of UTAUT model will results in the 47% of the change in the Behavioral Intention.

The overall regression model was significant,

$F(3, 246) = 92.760, p < .001, R^2 = .47$ , Finally, we can conclude that the Effort Expectancy has more impact on the Behavioral Intention.

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**CONCLUSION**

The study investigates the element affecting the usage of mobile app among the students using UTAUT model. Four independent factors Performance expectancy, Effort expectancy, Social influence, Facilitating conditions, and dependent factor Behavioral intention are used to find out the impact on the usage of mobile banking app among students. The result shows that all the four factors Performance Expectancy, Effort Expectancy, Social Influences and Facilitating Conditions is positively correlated with the Behavioral Intention. The result further indicates that Effort Expectancy has more impact on the Behavioral Intention.

**REFERENCE**

- **Yogesh K. Dwivedi(2017)** Re-examining the Unified Theory of Acceptance and Use of Technology (UTAUT): Towards a Revised Theoretical Model, Inf Syst Front, Springer
- **Troy Devon Thomas(2013)** The utility of the UTAUT model in explaining mobile learning adoption in higher education in Guyana, (*IJEDICT*), 2013, Vol. 9, Issue 3, pp. 71-85
- **Paul Juinn Bing Tan(2013)** Applying the UTAUT to Understand Factors Affecting the Use of English E-Learning Websites in Taiwan, SAGE Open October-December 2013: 1– 12.
- **Shu-Lu Hsu, Jeffrey C. F. Tai, and Yi-Han Wang(2013)**, An Experimental Investigation of Factors Affecting Consumers' Reactions to Mobile APP-Based Promotions, International Journal of Economics and Management Engineering Vol:7, No:7, 2013

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**IMPACT OF INTRODUCTION OF GST ON THE BUSINESS OF DEALERS: WITH SPECIAL REFERENCE TO THE DEALERS OF CHINTAMNAI, CHIKKABALLAPUR DIST**

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**ABSTRACT**

*Goods and Service tax is reformation under Indirect tax regime in India and it was long awaited reformation in change which began in 2004 and since then there were many discussions among parliament members and officials about its implementation and owing to lack of uniformity in opinion, lack of propensity of introducing change among members of houses of parliament and also lack of majority among political parties, the introduction got delayed and the proposals were seriously considered in the year 2016. After getting the amendment bill approved, it was finally introduced in July 2017. This study is intended to record the impact of GST on the business of dealers, particularly the increase or decrease in quantum of business and the satisfaction of dealers with the provisions of Composition scheme. The study is based on primary data collected through questionnaire.*

*Keywords: CGST, SGST, UTGST, Composition Scheme under GST and GSTIN*

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**INTRODUCTION**

India as a Country of diversified culture, experienced diversification in rates of taxes on different goods and services that are being bought and sold. There were different rates of taxes on different commodities and each state had different rates of taxes being levied which in turn affected the price of commodities to vary from one state to another. To overcome the problems being faced by sellers and buyers in respect more number of taxes, The Govt. of India thought of introducing a system wherein one rate of tax on each commodity is levied by subsuming different types of taxes like purchase tax, entry tax, turnover tax, entertainment tax, octroi duty etc., In this connection, the constitutional amendment bill was prepared and was moved in the parliament for approval. On the consent being given by both houses of the parliament, the amendment bill was signed by President of India and thereby Government of India succeeded in introducing Goods and Service tax India, with the concept of “**One Nation, One Market and One rate of tax**”

The Goods and Service Tax was brought into force on the first day of July.2017 and it applies to entire nation with the dual model of taxation wherein Central level and State level goods and service tax, have been introduced.

India has adopted Canadian system of GST which speaks of two tier model- Central Goods and Service Tax and State Goods and Service Tax. Besides, the concept of UTGST (Union Territory Goods and Service Tax) has also been introduced in the interest of union territories of the nation.

The IGST (Integrated Goods and Service Tax) is a tax on interstate supply of goods and services and this is a combination of CGST and SGST

**STATEMENT OF PROBLEM:**

The dealers who were under VAT in pre GST period, had similar provisions which are now there in GST regime, but with different rates of taxes. This is an attempt to study as to how the business of dealers is affected with introduction of GST, where in tax compliance formalities are online which include giving benefit and getting benefit from the Government in the form of input tax credit and this is possible for only those dealers who have not opted composition scheme of paying taxes.

**LITERATURE REVIEW:**

- Prof. Rajat Deb, Tripura University- A Systematic literature review on Tax reform and Goods and Service Tax- wherein the different types of taxes which were subsumed have been given.
- Knowledge Consortium of Gujarat- Department of Higher education, Govt. of Gujarat- a journal of Commerce and Management- ISSN:2279.025x- “ An overview of Goods and Service Tax(GST) inIndia by Manoj Kumar Rathod, Asst. Professor, Dr. APJ Abdul Kalam Govt. College, Silvassa.
- GST in India- An introductory study- By Mrs. Poonam, P.G. Department of Commerce and Management, Sri Guru Teg BahadurKhalsa College, Sri Anandapur Sahib, Punjab (India)- ISBN-978-93-86171.21-4- at 6<sup>th</sup> International Conference on Recent trends in Engineering, Science and Management.



- A Research paper on an Impact of Goods and Service tax(GST)on Indian Economy-by Shefali Dani, Director, GLS( J.P.Shaw) Institute of Business Administration, GLS University, India. Business and Economics Journal- ISSN:2151-6219
- Goods and Service Tax(GST): India's New Journey towards Indirect Taxation (2015)- authored by Kumar A.N Shah Deo, Senior Lecturer and Perna Kittu Singh, Research Scholar, Department of Commerce, Marwari College, Ranchi- International Journal of Science and Research- ISSN(Online):2319-7064-Volume six, Issue 7
- Perspective of GST (Goods and Service Tax) in India- by B.M Munde, Assistnat Professor and Anil chavan, U.G. Student, Dept of Economics, Karmaveer Bhaurao Patil College, Vashi, Navi Mumbai, Maharastra, Inida. Published in International Journal of Innovative Research in Science, Engineering and Techonology- (Nov,11, 2016) ISSN(On line): 2319-8753. ISSN(print): 2347-6710- Statistics from 1991 to till date regarding tax collections have been mentioned and suggested the Government to be very cautious in implementing GST so that tax revenue would not be affected.
- A Study on Impact of GST after its Implementation-authored by Milan deep Kaur, Kajal Chaudhary, Sujan Singh and Balinder Kaur- published in International Journal Innovative Studies in Sociology and Humanities (Nov.2016) pages from 17 to 24- Post GST implementation effects on certain products and comparative study of pre and post-tax liability is done.
- GST: An economic overview: Challenges and Impact ahead- authored by Prof. Pooja. S. Kawle and Prof. Yogesh .L.Aher, Department of MBA, SRES College of Engineerng, Kopargon, Maharastra, India- published in International Research Journal of Engineering and Techonology- vide e-ISSN:2395-0056, p-ISSN:2395-0072-( April 2017) wherein challenges of its implementation in various sectors of economy and its impact was studied with respect to various goods and services.
- Issues Arise After Implementation of GST in India-authored by Dr. Sandeep Verma and Mr. Sudip Banerjee-published in Global Journal of Human-Social Science: E. Economics (2018) online-ISSN:2249-460X and print ISSN:0975-587X-Issues relating to costs of implementation and tax holidays to industries and the type of techonology have discussed.
- Challenges and Implementation of GST(Goods and Service Tax) in India- a original research paper published in Indian Journal of Research-Paripex- (July 2016)-ISSN-2250-1991-IF:5215/IC value 77.65- challenges relating to threshold limit for registration of dealers, turnover limits fixed for composition taxable persons have been discussed and also implementation of IGST on stock transfer is also discussed because GSt is consumption based tax.

### **OBJECTIVES OF THE STUDY**

- To study how the business of dealers is affected
- To Study whether dealers are satisfied with GST or not.
- To know how the dealers under composition tax are satisfied

### **RESEARCH METHODOLOGY**

Since this is a study based on research, survey was conducted in the market area of Chintamani.

**Primary Data:** Primary data which is also called as first-hand information was collected through questionnaire designed for such purpose, from dealers under GST. Besides, the questionnaire, personal interview was also done with these merchants selected for the study.

Secondary source is utilized for certain terms and concepts which are necessary for the study.

### **SAMPLING**

Population of the study is the dealers located at Chintamani carrying on different types of businesses but for the convenience of the study

**Sample size:** - Out of total dealers, 20 dealers have been selected being respondents for the study.

**Tools for analysis:** The following tools have been used for the analysis and interpretation:

- Table of data
- Charts/diagrams

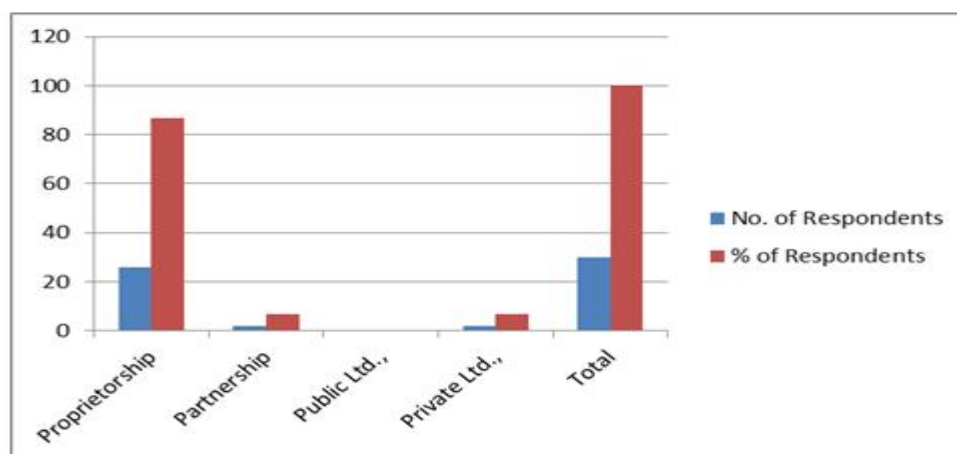
**Limitations**

- The study is limited to the geographical area selected.
- Due to paucity of time only 20 dealers have been selected for study
- Analysis is limited to the opinion expressed by respondents.

**Body of the Paper****Analysis of Data****1. Table Showing the type of organisation:**

Type of Organisation	No. of Respondents	% of Respondents
Proprietorship	26	86.86
Partnership	2	6.67
Public Ltd.,	0	0
Private Ltd.,	2	6.67
Total	30	100.00

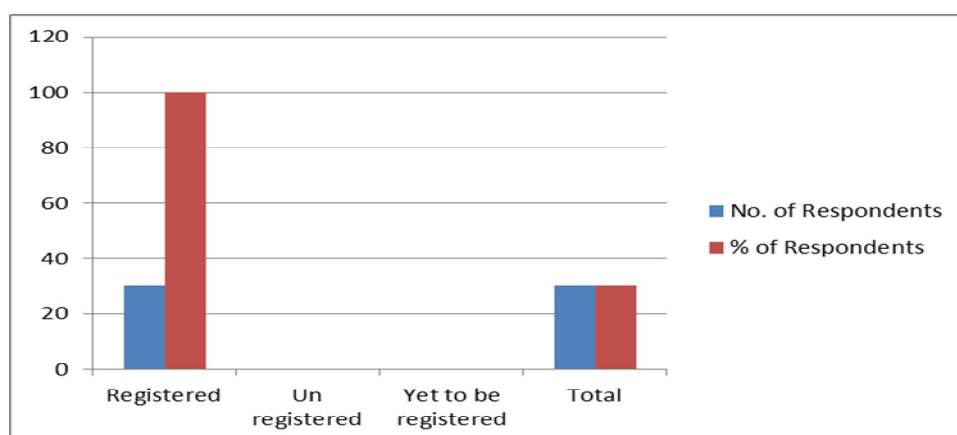
Chart-1 Showing type of organization



**Interpretation:** The above analysis indicates that maximum respondents representing 86.67% are proprietors of business. 6.67% represents partnership firm and private limited.

**2. Table showing type of dealers**

Type of Dealer	No. of Respondents	% of Respondents
Registered	30	100
Un registered	0	0
Yet to be registered	0	0
Total	30	30

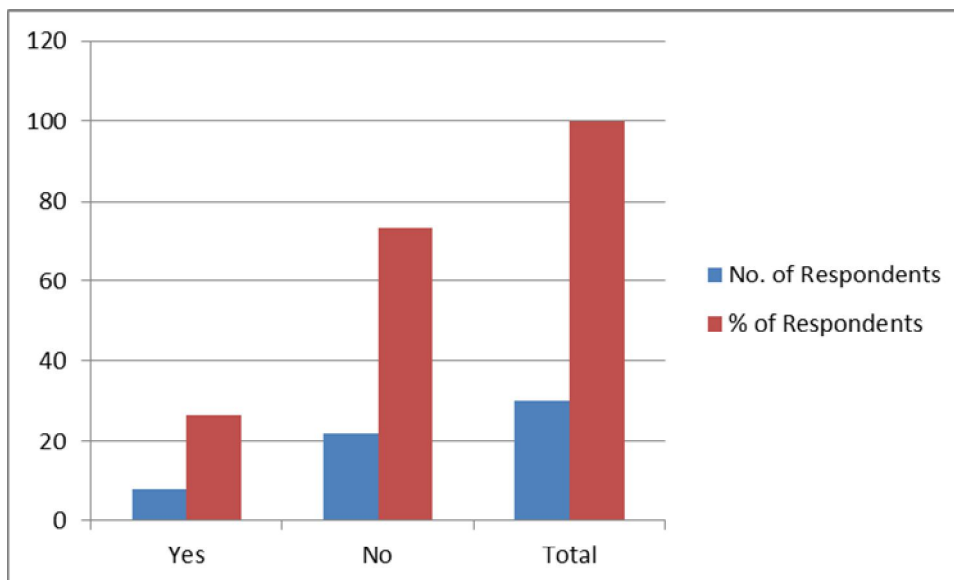
**2. Showing the type of dealers**

**Interpretation:** The table supra and also chart provided indicate that all are registered dealers Under GST.

### 3. Table showing Composition taxable persons

Response	No. of Respondents	% of Respondents
Yes	8	26.67
No	22	73.33
Total	30	100

### 4. Showing the composition taxable persons

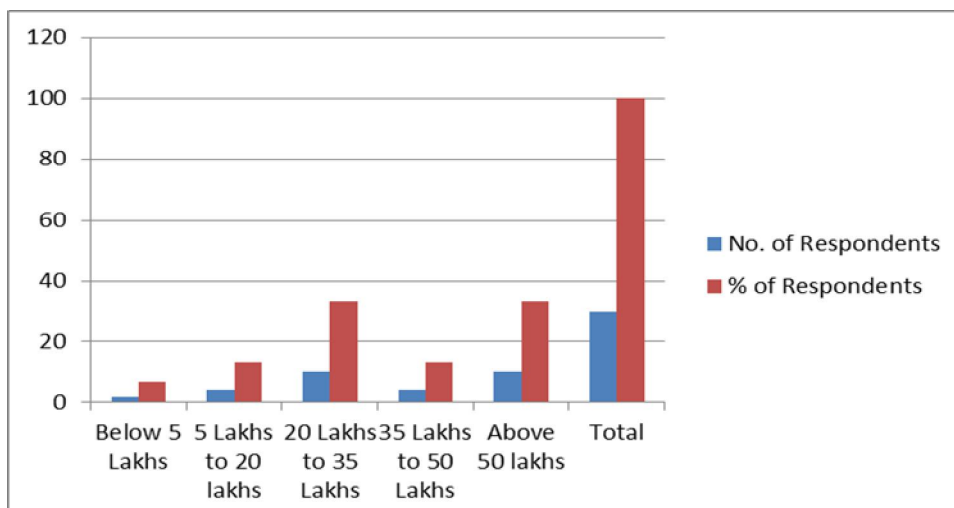


**Interpretation:** The table shows the option Yes which means that they are under composition Scheme of GST and No indicates that they are not in composition but liable to pay tax under regular rates. 22 dealers are under non- composition scheme and 8 of the total are in composition scheme of GST.

### 4. Table showing annual turnover of dealers

Annual Turnover	No. of Respondents	% of Respondents
Below 5 Lakhs	2	6.66
5 Lakhs to 20 lakhs	4	13.33
20 Lakhs to 35 Lakhs	10	33.34
35 Lakhs to 50 Lakhs	4	13.33
Above 50 lakhs	10	33.34
Total	30	100

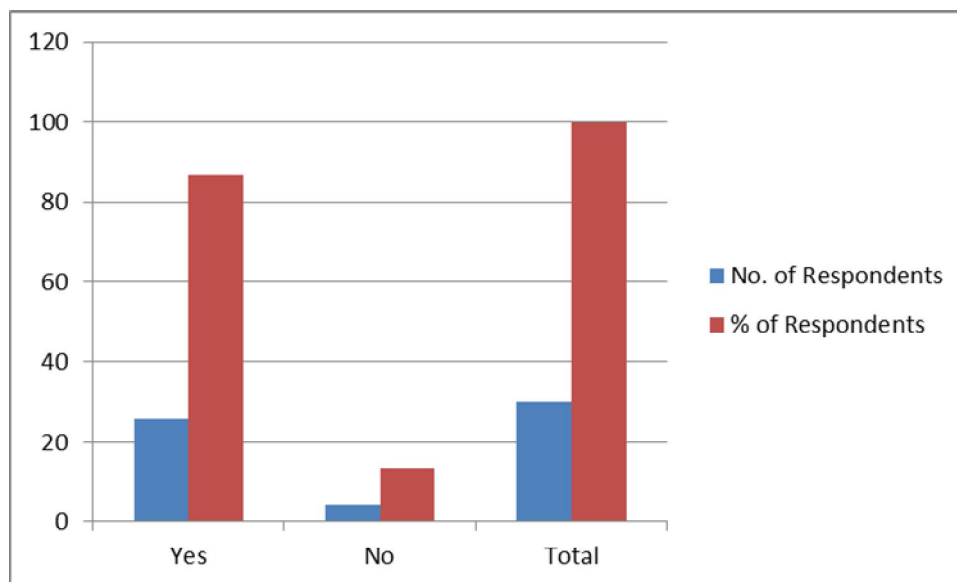
### 4. Showing annual turnover of dealers



**Interpretation:** The above analysis indicates that while 2 dealers representing 6.66% have an annual turnover of below 5 lakhs, 10 dealers representing 33.33% have an annual turnover of above 50 lakhs.

**5. Table Showing the satisfaction of dealers with introduction of GST**

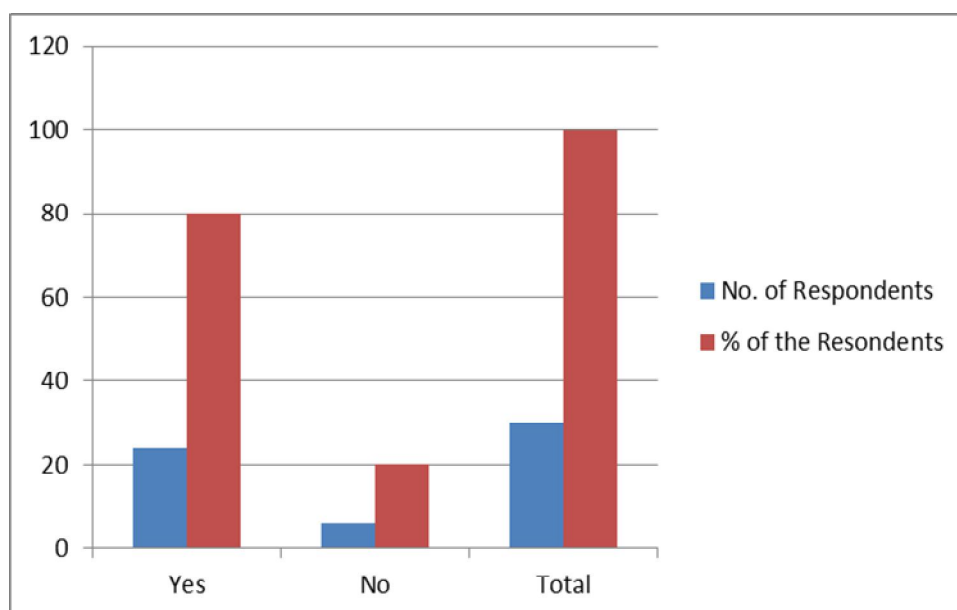
Response	No. of Respondents	% of Respondents
Yes	26	86.67
No	4	13.33
Total	30	100

**5. Chart showing the satisfaction of dealers with introduction of GST**

**Interpretation:** As the above analysis indicates, 26 dealers are satisfied with Goods and Service Tax representing 86.67% and 4 dealers representing 13.33% of total are not satisfied.

**6. Table showing whether dealers avail the benefit of input tax credit or not**

Response	No. of Respondents	% of the Respondents
Yes	24	80
No	6	20
Total	30	100

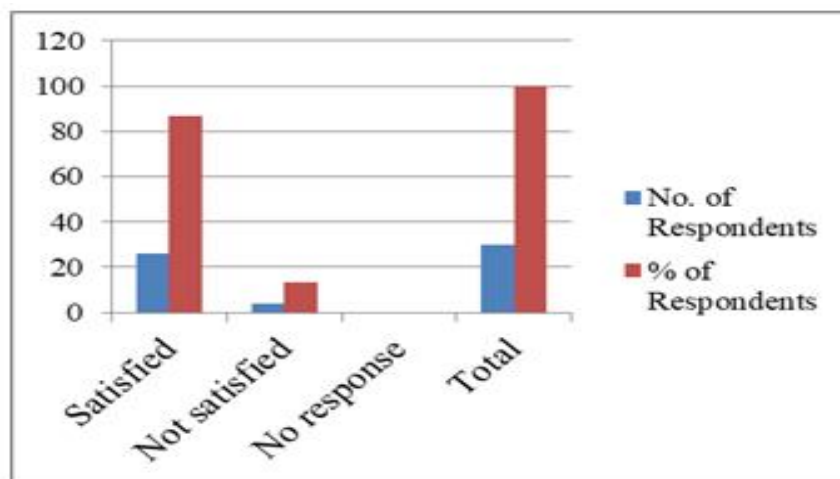
**6. Chart showing whether dealers avail the benefit of input tax credit or not**

**Interpretation:** Table of analysis shows that 24 dealers who are under GST normal provisions avail the benefit of input tax credit and only 6 dealers who are under composition scheme do not have option of availing the benefit of input tax credit.

# 7. Table showing satisfaction with new system of accounting

Response	No. of Respondents	% of Respondents
Satisfied	26	86.67
Not satisfied	4	13.33
No response	0	0
Total	30	100

# 7. Chart showing satisfaction with new system of accounting

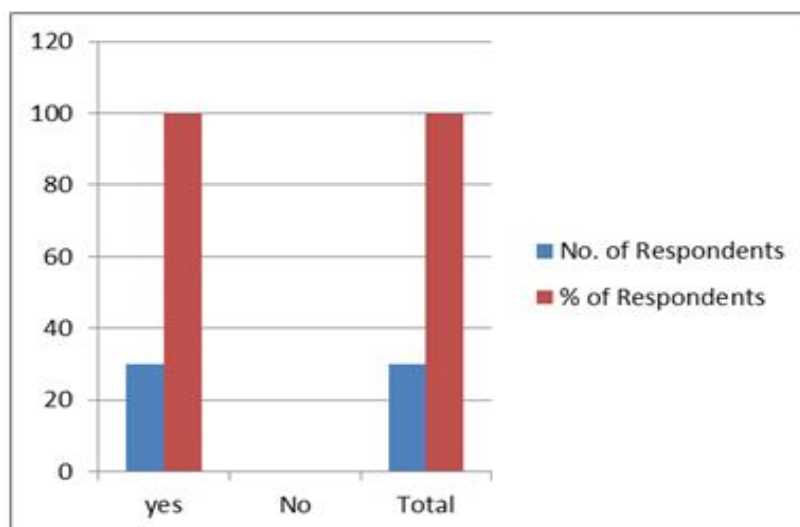


**Interpretation:** The data analysed indicates that majority of dealers representing 86.67% are satisfied with the new system of accounting introduced. Only 4 respondents say that they are not satisfied.

# 8. Table showing whether dealers take the help of auditors in accounting and tax compliance

Response	No. of Respondents	% of Respondents
yes	30	100
Total	0	0

# 8. Chart showing whether dealers take the help of auditors in accounting and tax Compliance

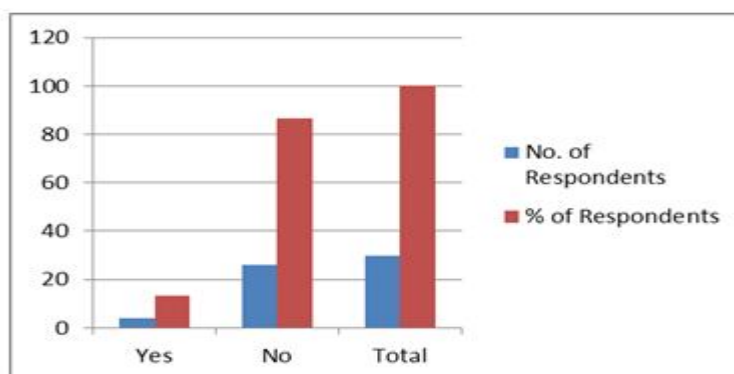


**Interpretation:** The analysis shows the fact that all the dealers take the help of auditors for their accounting and other tax related matters.

# 9. Table showing opinion relating to the effect of GST on the business of dealers

Response	No. of Respondents	% of Respondents
Yes	4	13.33
No	26	86.67
Total	30	100

## 9. Chart showing opinion of relating to the effect of GST on the business of dealers

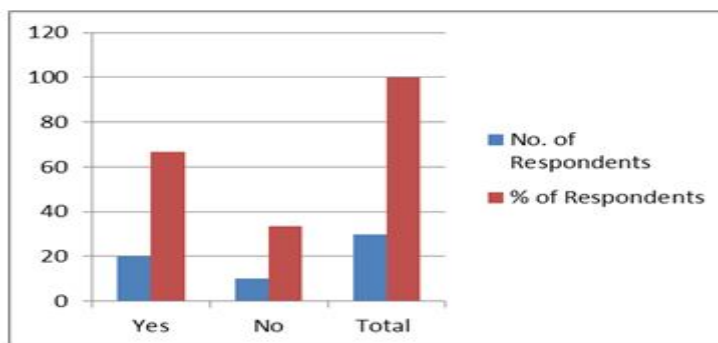


**Interpretation:** Analysis indicates that while 4 dealers say that their business is affected due GST, 26 dealers say that it has not affected.

## 10. Table showing response regarding issue of tax invoice

Response	No. of Respondents	% of Respondents
Yes	20	66.67
No	10	33.33
Total	30	100

## 10. Chart showing response regarding issue of tax invoice

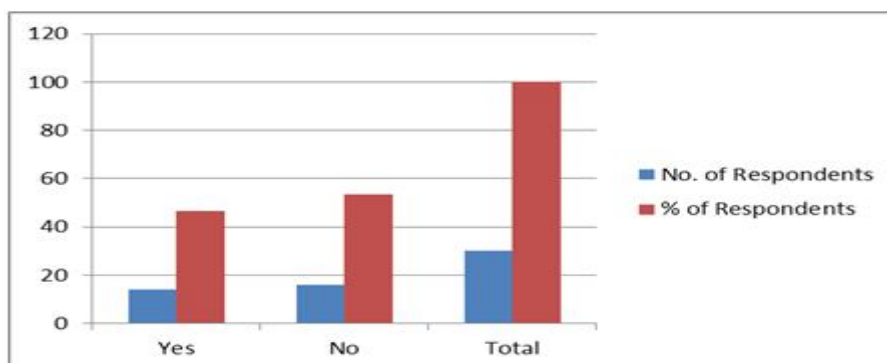


**Interpretation:** In respect of issue of tax invoice, 20 dealers representing 66.67% say that they would tax invoice and remaining 10 say that they would not issue.

## 11. Table showing Opinion of dealers whether Government can collect more taxes under GST

Response	No. of Respondents	% of Respondents
Yes	14	46.67
No	16	53.33
Total	30	100

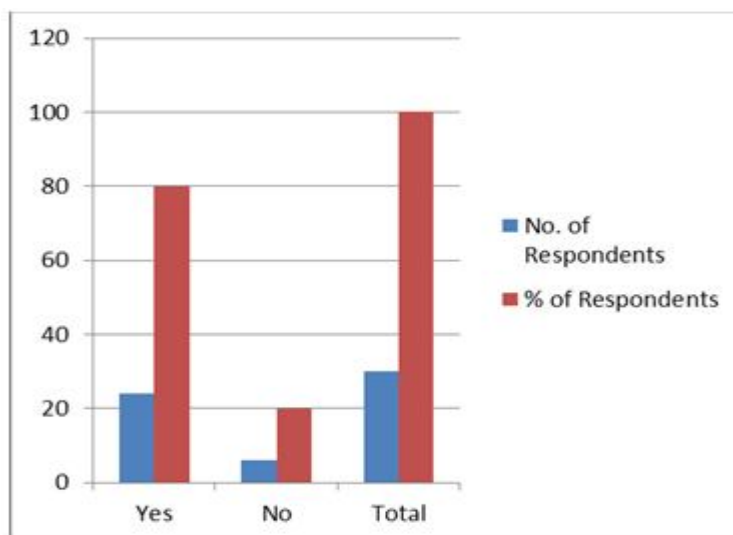
## 11. Chart showing Opinion of dealers whether Government can collect more taxes under GST



**Interpretation:** From the above analysis, it is clear that while 14 dealers say the Government can collect more taxes under GST. 16 dealers are of the opinion that the Government is not able to collect more taxes.

**12. Table showing elimination cascading effect under GST**

Response	No. of Respondents	% of Respondents
Yes	24	80
No	6	20
Total	30	100

**12. Chart showing elimination cascading effect under GST**

**Interpretation:** It is clear from the above that 80% of respondents say that the cascading effect is eliminated under GST and only 20% say that it is not eliminated.

**FINDINGS OF THE STUDY****Study related to impact of GST on the business of dealers revealed the following**

- The maximum respondents representing 86.67% are proprietors of business. 6.67% represents partnership firm and private limited.
- All respondents who were interviewed are registered dealers under GST.
- Among the dealers, 8 are under composition Scheme of GST 22 are not in composition but liable to pay tax under regular rates.
- While 2 dealers representing 6.66% have an annual turnover of below 5 lakhs, 10 dealers representing 33.33% have an annual turnover of above 50 lakhs.
- 26 dealers are satisfied with Goods and Service Tax representing 86.67% and 4 dealers representing 13.33% of total are not satisfied.
- 24 dealers who are under GST normal provisions avail the benefit of input tax credit and only 6 dealers who are under composition scheme do not have option of availing the benefit of input tax credit.
- Majority of dealers representing 86.67% are satisfied with the new system of accounting introduced. Only 4 respondents say that they are not satisfied.
- The analysis shows the fact that all the dealers take the help of auditors for their accounting and other tax related matters.
- Analysis indicates that while 4 dealers say that their business is affected due GST, 26 dealers say that it has not affected.
- In respect of issue of tax invoice, 20 dealers representing 66.67% say that they would tax invoice and remaining 10 say that they would not issue.
- From the above analysis, it is clear that while 14 dealers say the Government can collect more taxes under GST. 16 dealers are of the opinion that the Government is not able collect more taxes.
- It is clear from the above that 80% of respondents say that the cascading effect is eliminated under GST and only 20% say that it is not eliminated.

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**CONCLUSION**

To sum up and to say the study related to the impact of introduction of GST over the business of dealers at Chintamani area that Goods and Service tax has not much affected the business of dealers and they added that the present system is of a little change that has been brought forward by retaining input tax credit as it was in the value added system but only attempt that was made to introduce one rate of tax for a particular product in the country as it is decided by Central Government under GST Council. It is felt that one way it is better that same rate of tax prevails in the entire nation which does not much affect the price of product as it was in the earlier case. By subsuming the different types of taxes in GST regime, a sort of confusion is avoided and reform has been brought in accounting and tax compliance matters. It is felt over all a good system and in the long run it will benefit the Government in collecting tax revenue.

**REFERENCES**

- Indirect Taxes- Law and Practice- VS. Datey- Taxmann Publications
- Goods and Service tax-Law and Accounts- V.S Datey- Taxmann Publications
- Goods and Service tax- Dr. B. Mariappa- Himalaya Publishers
- Goods and Service Tax- Sri. Swaminathan and Abirami- Kalyani Publishers
- Goods and Service tax- Law and practice- Gaur and Narang- Kalyani Publishers
- Corporate Professionals Today (Weekly)
- taxmann com gst module
- GST.HUBCO - Monthly Goods and Services Tax (GST) Magazine
- GST Tax Rate on HSN Product - 49021020 - Newspapers, Journals
- 5 Things to Know About India's Goods-and-Services Tax - Briefly - WSJ
- GST Goods and Services Tax in India | OMICS International
- GST Tax Rate on HSN Product - 49021020 - Newspapers, Journals

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- [gst.ictacademy.in/Resources.aspx](http://gst.ictacademy.in/Resources.aspx)
- <https://cleartax.in/s/gst-training>
- <https://elearn.icai.org>



## EASE OF ACCOUNTING THROUGH TECHNOLOGICAL ADVANCES: AN OVERVIEW OF OPPORTUNITIES AND OBSTACLES OF CONTEMPORARY ACCOUNTING PLATFORMS

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### ABSTRACT

*Accounting, the business language, has been serving every corner of the business since its beginning. Now-a-days, The accounting industry is undergoing a number of new trends like artificial intelligence, cloud accounting, ,digital transformation, Internet of Services e.t.c., but they're game changers. Through this technological advances manual work is being automated. The main aim of this advancement is focused on the improvement of the client experience. Although basic concepts of accounting remain constant, the process of collecting and reporting financial transactions and performance has become more accurate and well-organized. Accountants no longer need to spend as much time in calculating and checking numbers, leaving them free to partner with small businesses in financial planning and creating growth strategies. Although accounting industry 4.0 is in boom stage, many stakeholders are not quite sure about what it is, what its benefits are or how it will shape the future of accounting. This paper has made an attempt to provide a theoretical overview of technological advances in accounting covering its concept, benefits, shortcomings, comparison with the traditional one, and some other new aspects that may shape the accounting process in the coming years. The information has been collected and prepared depending on the most recent studies and researches conducted by accounting professionals and expert opinions.*

**Keywords:** Accounting, Accounting software, Industry 4.0, Internet of things, Smart factory, Cloud accounting

### INTRODUCTION

**Accounting:** Accounting is an organized way of recording, classifying, analyzing and reporting of Monetary transactions of a business. Accounting allows an organization to report the financial status of the business, and look at statistics such as net profit.

**Accounting software:** Financial records are part of an organization's institutional memory. Accounting software is the backbone of a good system. It is the record for all monetary transactions, as well as the primary tool (and reference manual) for staff as they do their jobs. One of the big advantages of electronically managed documentation is that the workflow and approval process is more rigorous. A good policy looks at all possibilities, such as who can approve a transaction if the primary person is sick or on vacation. The better accounting and document management systems enforce these policies, as well as check to see that expenditures are within budget limits and that approved vendors are not being controls in place, particularly in who has access to the accounting system. Financial and economic information provide a way to allow users access to information. Possibility of effective and timely exchange of data between suppliers and Stakeholders increases efficiency of organization. It is necessary to use good accounting software to run and boost the company more successful. companies using new advanced technology in accounting can compute income and expenses and can set working capital turnover that have maximum benefit and minimal harm in least time with great speed.

### THE HISTORY BEHIND INDUSTRY 4.0

To understand how Industry 4.0 became today's buzzword; a glance of its evolution can help us how this revolution in particular is different. The following table shows stages of the evolution of production/manufacturing and the various industrial sector.

**Table-01: Industrial revolution**

BASIS	TIME PERIOD	TECHNIQUE USED	OUTPUT
<b>Industry 1.0</b> { 1 <sup>st</sup> Industrial Revolution }	1760-1840	Water and steam power	Mechanical production
<b>Industry 2.0</b> { 2 <sup>nd</sup> Industrial Revolution }	1870 -1914	Electrical Energy	Mass production
<b>Industry 3.0</b> { 3 <sup>rd</sup> Industrial or Digital Revolution }	1950 - 1970	Electronics & IT	Automatic production
<b>Industry 4.0</b> { 4 <sup>th</sup> Industrial Revolution or Smart factory }	present	Merging of Real and Virtual worlds	Cyber Physical Production System(CPPS)

Source: Deloitte.

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**OBJECTIVES**

**The main objectives of the present study are**

- To get awareness about the industrial revolutions.
- To study the current technological improvements in business.
- To know about cloud computing in accounting.
- To compare traditional accounting with that of cloud accounting.
- To study advantages and difficulties/challenges of fourth industrial revolution.

**LITERATURE REVIEW**

To justify the need of present study, following literatures have been reviewed:

**TahminaKhanom(2017)**analysed that Cloud Computing can be beneficial to accounting firms that take it up, allowing for the analysis of huge volumes of information immediately and compiling half yearly or annual reports as and when needed. The opportunity this technology holds for concerns and accounting institutions are endless in an economy that needs better services that take less time and cut costs.

**ShabanMohammadi and Ali Mohammadi(2014)**observed that the main driving force behind cloud computing are wireless networks, reducing storage costs and improving the software which can compact with the contemporary accounting platforms.

**JoernPloennigs, John Cohn, and Andy Stanford-Clark, IBM (2018)** assessed that the value of IoT is not only in collecting the data, but in building business cases where the insights from analyzing data are creating additional value.

**CYBER-PHYSICAL SYSTEMS**

A cyber-physical system's objective is to integrate computation and the processes. It enables the computers and networks to monitor the manufacturing process. Three stages are involved in creating such a system:

1. **Unique Identification:** This is the rudimentary level language by which machines can interact. For this purpose RFID (Radio-frequency identification) is used to identify a specified mark that is attached to an object.
2. **The assimilation of Sensors and Actuator:** The assimilation of sensors and actuators will enable movement of a machine that can be controlled and can also read changes in its environment.
3. **The helping hand of Sensors and Actuators:** The sensors and actuators enabled machines to store and scrutinize the data. Cyber-physical systems are equipped with many sensors and actuators that can be inter-connected for the trafficking information.

**Impact of Cyber- Physical Systems on Accounting**

The significance of cyber-physical systems on the business models and accounting concerns are indirect. Therefore, the impact of the systems on e-accounting platforms is limited and indirect.

**The Internet of Things (IOT)**

IoT is the technology enabling the inter-connection of all types of devices through the internet to exchange data, optimize processes, monitor devices in order to generate benefits for the industry, the economy, and the end user. It is composed of network of sensors, actuators, and devices, forming new systems and services. In short devices connected through internet and talking to each other are Internet of things.If IoT is the basic infrastructure, then on top of that comes CPS, CPPS, and IoS, and the whole is industry 4.0.

**Impact of IOT on Accounting Practices**

The implementation of IOT will bring changes in the business concerns on the flow of data, from billing, resource planning, and core accounting systems. This will have worthy effect on the audit system and thereby on transactions of business.

**The following are the important contributions that will give for accounting systems**

1. Optimization of cost and time
2. Track assets and Inventories
3. Performance optimization and satisfaction
4. More accurate quotes

**The Internet of Services (IOS)**

It is now possible to see that in present world every electronic device is likely to be inter-connected to another device through the internet. With the great improvement in electronic and smart devices, it creates complexities in the use of each device as we add on. The IOS simplifies all devices that are inter-connected to get the maximum benefits of them by easing the process.

**Cloud Accounting Software**

The **cloud** is a platform that stores data online, rather than locally on your computer like on-premise applications do. This makes us to enable the data being anywhere in the world from any device at any time with availability of an online connection.

There is not a unified definition of cloud computing until now, as it is a metaphor for the internet. In the cloud computing all the resources are arranged together in the cloud storage center, where users can enjoy unlimited resources and computing power as long as they use a terminal to attach the internet. The concept of 'cloud accounting' was first put forward by Ping and Xuefeng (2011). Cloud accounting has been defined by them as the utilization of cloud computing in internet to build a virtual accounting information system, i.e., cloud computing plus accounting equals cloud accounting.

**Scope of application of cloud computing**

The concept of cloud computing is not completely new, but the cloud technology is present extensively over the past few years as quickly human aspects of life such as education, telecommunications, Internet banking services including online bill payment Electricity, water and gas, Order online video, online reservation, Internet shopping, Internet voice and video calls, chat, Search the web world, social networking and e-mail, games Computers, academic research, etc., affect and especially by a change in the functional areas of management Web content, document management, financial management, email management, E-commerce business models in line with the accounting has evolved.

**Benefits of cloud computing in Accounting**

The benefits of this new technology are:

1. Acceleration of time.
2. Follow without physical presence.
3. Real-Time Information Updating.
4. Connect to other computer systems easily anywhere in world.
5. Immediate Fixes.
6. Automatic Data Back Up and Restoration.
7. Low-cost computers for users.
8. Increased computing power.
9. Store unlimited capacity building.
10. Collaboration easier.
11. Universal access to documents.
12. Access to the latest version.

**Disadvantages of cloud computing in Accounting**

1. Requires a constant internet connection.
2. Does not work well at low speeds.
3. Security problems.
4. Lack of a comprehensive understanding of control.

**Industry 4.0-Obstacles and Challenges**

- **Security:** The biggest challenge for implementing the techniques of Industry 4.0 is the inherent risk of security present in Information Technology. This online inter-connection will give opportunity to security violations and data theft.

- **Capital:** The transformation requires a big investment in a up gradation of technology. The decision to make huge investment will have to be on top management. The risks involved must be calculated and considered seriously.
- **Employment:** While it remains premature to anticipate changes in the conditions of employment with the Industry 4.0, it can be said that employees will have to train himself to acquire different skill set. This may lead to increase in employment rates. Different forms of education must be introduced to meet the changing requirements.
- **Privacy:** This not only the customer's concern, but also the producers. In such an interconnected industry, producers need to collect and analyze data. To the customer, this might look like a threat to his privacy. Small or large companies who haven't shared their data in the past will have to work their way to a more transparent environment. Bridging the gap between the consumer and the producer will be a huge challenge for both parties.

## CONCLUSION

Industry 4.0 is definitely a revolutionary approach to manufacturing techniques. The concept will push global manufacturers to a new level of optimization and productivity. Cloud accounting is the utilization of cloud computing in internet to build a virtual accounting information system, i.e., cloud computing plus accounting equals cloud accounting. Smart manufacturing and cloud accounting etc., technologies enables *real-time* collection of data, analysis, and decision-making. Not only that, but customers will also enjoy a new level of personally customized products that may have never been available before. As mentioned above, the economic rewards are immense. However, there are still many challenges that need to be tackled systematically to ensure a smooth transition. Pushing research and experimentation in such fields are essential. While speculations regarding privacy, security, and employment need more study, the overall picture is promising. Such approach to manufacturing industries is truly revolutionary.

## REFERENCES

1. Tahmina Khanom (2017), "Cloud Accounting: A Theoretical Overview", IOSR Journal of Business and Management (IOSR-JBM) e-ISSN: 2278-487X, p-ISSN: 2319-7668. Volume 19, Issue 6. Ver. V, PP 31-38.
2. Shaban Mohammadi and Ali Mohammadi (2014), "Effect of Cloud Computing in Accounting and Comparison with the Traditional Model", Research Journal of Finance and Accounting ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online). <https://iiste.org/Journals/index.php/RJFA/article/view/18484/18751>
3. Joern Ploennigs, John Cohn, and Andy Stanford-Clark, IBM (2018), "The Future of IOT", IEEE Internet of Things Magazine, vol. 1
4. Åkeson, Linus. Industry 4.0: Cyber-Physical Systems and Their Impact on Business Models. 2016, <http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-44379>.
5. <https://ieeexplore.ieee.org/document/8614274/metrics#metrics>
6. [https://www.comsoc.org/system/files/2018-10/IOTMAG\\_2018\\_Sep.pdf](https://www.comsoc.org/system/files/2018-10/IOTMAG_2018_Sep.pdf)
7. [www.wikipedia.org](http://www.wikipedia.org).
8. [www.iosrjournals.org](http://www.iosrjournals.org)

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**SIGNIFICANCE OF WORKFORCE ANALYTICS IN TALENT MANAGEMENT—INDUSTRY 4.0  
FRAMEWORK**

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**ABSTRACT**

*The inclusive purpose of human resource management is to ensure that the organization able to achieve objectives through its manpower. The aim of this study is to provide a framework with the basic concepts of workforce analytics in talent management at the organization. With the help of statistical models and techniques work force analytics collects worker-related data and analyze it, allowing leaders to improve the effectiveness of people related decision making and human resources strategy. While people analytics focuses on the personnel aspects, workforce analytics focuses on the workforce. Workforce analytics can be used to help refine and improve assessments that potential candidates for employment and current employees should take. Workforce analytics can be used to quantify employee emotions, sentiments, relationships, interactions, decisions, company culture and more. Work forces analytics can be used proactively manage workforce talent. There are many ways to use workforce analytics in talent management, although the best uses must be driven by a strategy that requires dedication to skillful execution. Workforce analytics measures efficiency of work force and provides right information for making decisions and improve the productivity of organization through identification of the loop holes of the workforce management process. The objective of this paper is to identify the significance and ways of improving talent management with workforce analytics tools. This paper mainly discusses workforce analytics tools as the best practice of workforce management. This study is conceptual in nature and secondary data is used from different research works for understanding the workforce analytics concept and its necessity for talent management. Talent management plays a vital role to improve organization's efficiency. The findings of this paper are talent acquisition, talent management through workforce analytics.*

*Keywords: Workforce analytics, Talent acquisition, Talent management*

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**INTRODUCTION**

The inclusive purpose of human resource management is to ensure that the organization able to achieve objectives through its manpower. High Quality and productivity of the workforce are very important for every organization. This is possible through talent acquisition, after acquiring the right talent develop them through proper training and employee engagement activities and make strategies to retain them. To manage talent in the organization will be possible through optimum decision making; it is possible when they have HR data. Organization use work force analytics to gather information about various talents and develop their skills and leadership qualities. In simple terms work force analytics is the process of gathering, organizing and analyzing the data related to hr functions like recruitment, talent management, employee engagement, performance and retention to ensure better decision making in all these areas.

With the use of statistical models work force analytics gather worker-related data, allowing enterprise leaders to optimize human resource management. Workforce analytics is the study of your workforce from the past to the present. Workforce planning is related to workforce analytics because it is the continuation process, the study of your workforce from the current into the future. Human resource and workforce data is very complex, but with technology, it is easier to understand, maintain and analyze your people.

Talent means the sum of a person's natural ability to learn and grow. Talent management means to acquire the talent, develop them as high skilled and knowledgeable employees and retain them through fixing fair compensation and increase satisfaction to meet organizations objectives effectively. The skills of attracting highly skilled and knowledgeable workers of integrating new workers and developing and retaining current workers to meet current and future business objectives. Talent management plays vital role to manage the tangible asset (HR) which is useful to achieve and develop employees as well as organization. The purpose of talent management is to identify, select, develop and retain talent for long period of time for organization success.

Workforce analytics can be used in all major phases of talent management such as talent acquisition, retention of the talent and nurturing the talent. Organizations are taking the aid of workforce analytics to manage their talent today.

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**REVIEW OF LITERATURE**

As per Beeline (2012) report, the workflow and productivity of work force can be enhanced more efficiently and effectively if we can measure the human dimension of a firm in a better way. Work force analytics is used to understand the essence of human element in the organization.

Gartner (2012) stated that, workforce analytics as an advanced set of data analysis tools and metrics for comprehensive workforce performance measurement and improvement. It analyzes the hiring process, training and development, and assists to fix fair compensation and benefits, as well as standard ratios that consist of time to fill, hiring cost, and retention rate, replacement rate, time to start and offer and acceptance by employees.

Berenio 2011 stated that Workforce analytics enables managers to collect information about different talents, then develop their skills and make them to use effectively to face new challenges and leadership development. Further it provides information Which influence the maximization of workforce analytics, which includes defined challenges for the workforce, consistency in collecting the data and making the platform easy to use.

Lance Jensen Richards (2013), The overall objective of HR analytics are to measure the performance of employee and organization, so that it helps organization to see where they stand in terms of productivity and where to focus on for achieving their revenue goals and customer satisfaction.

Shivakumar Rudrappa (2014), said HR analytics is a complete HR automation for measuring an effective strategic workforce management in the organization. HR analytics automation is a global talent management application that has been designed to facilitate a changing work environment. It is flexible and designed to handle proliferating employment, measurement and wage models, and it provides an integrated HR service experience.

Robinson (2012) explored that possible benefits of Workforce Analytics includes shorten the hiring cycles ,avoidance of costly mistakes in performance evaluation, improved retention of talents and provide better training on return on investment.

Success factor (2012), Explored that work force analytics can identify and address the loopholes in the firm's talent mix and the solutions to overcome for business results.

**OBJECTIVES OF THE STUDY**

- To know the significance of talent management for organization success.
- To understand the ways to improve talent management through workforce analytics.

**RESEARCH METHODOLOGY**

The validity of any research depends on the systematic collection of data, and analyzes the data in a sequential order.

**DATA COLLECTION**

This study is based on secondary data which has collected through various sources like internet, journals etc. This secondary data is useful to understand work force analytics and how it plays active role in making decisions relate to recruit, develop and retain the manpower in the organization.

**Significance of talent management for organization success**

Talent management plays a vital role in the business strategy since it manages one of the important assets of the organization i.e., its Human Resource.

This is the reason organizations put effort to manage employees, help them to enhance their skills and capabilities in order to retain them. Here are some reasons why organizations should invest on talent management.

**To attract talent**

Strategic Talent management provides an opportunity to the organizations to attract more skilled and talented employees who are available. It creates a unique identification to the employer that can attract potential talents, and in turn, make them to contribute more for the better improvement of the organizations' performance and results.

**Motivate the employees**

Motivation means giving psychological encouragement to the people. Strategic talent management helps the organizations to motivate the employees and enable them to put their full efforts and make them to feel engaged to achieve objectives effectively and efficiently.

**To enhance employee performance**

It is easier to identify right fit employee rather than making decisions at hiring new employee. Talent management will be useful to identify the employee's performance that will be the best fit to the job and make them to stay longer with the organization.

**Employee engagement**

Engaged employee creates positive environment in the organization which leads to increase employee productivity, successful implementation of organizational change and increase customer loyalty. Talent management allows companies to feel employees more engaged through fair procedures and development techniques which helps in increasing retention rate in the organization.

**Talent Retention**

**Talent retention refers to the ability of an organization to retain its employees for long period time. Organization creates an environment** that makes employees feel like asset to the organization, set the goals clearly etc will help the employees to continue their contribution for longer. This will be possible through talent management strategy only.

**Improve business performance**

Talent management helps employees feel engaged, motivated, develop their skills and allowing them to work in the direction of the accomplishment of organization's goals, which in turn, increases client satisfaction and business performance.

Investing in talent management surely is a great reward for the organization, now the question is, how to improve talent management? Modern days organizations are using work force analytics to improve talent management.

**The ways to improve talent management through workforce analytics**

There are many ways of using work force analytics in talent management, but the optimum use of work force analytics must be driven by the best strategy and proper execution. To help the organization identify right people or expand existing effort, here are some ways how work force analytics will manage talent.

**Talent Acquisition**

Work force analytics help HR make right decisions from the very beginning. Sophisticated analytics give companies an alternative to applicant tracking system. Work force analytics are meant to search applications and resumes based on more comprehensive algorithms. This will help to acquire right talent faster.

Work force analytics may also support existing work and aid the hiring decision-making process. Rowan said that it is necessary to hire the right people for the right job instead of keeping inefficient people whose skills are not matching with the job.

**Talent Nurturing**

Successful measuring an individual's potential is key to identify top performers easily. It will help the organization to groom and reward them based on their performance. Work force analytics can help to weed out poor performers early to cut the cost of training and manage the top performers is important to maintain healthy bottom line.

Work force analytics can be used to identify skill gaps in employee and to prescribe the correct training need. The most important part of analytics is developed to achieve business objectives effectively through management of talent.

Analytics can help track trends in who leaves the work force whether it is through termination or resignation, if a certain time of the year is more likely to cause turnover. Workforce Analytics helps Human Resource Management understand the big picture about the health of the company.

**Talent Retention**

One of the major factors that cause employees to leave is compensation. Work force analytics can be used to analyze and determine fair compensation on the basis of data collected from various sources, years of service, performance etc.

Organizations usually conduct pre-hiring analysis to know the behavior of the candidate. This will help to avoid problematic candidates. This Pre-hiring analysis is a new type of work force analytics which is useful to predict the undesirable behavior of candidate.

Organizations can use work force analytics to understand deeply the employee capabilities and make them to identify their career paths, retain and groom potential successors. In this case apart from identifying training needs, Work force analytics can be used to predict the time between promotions and this information can be used to retain talent.

#### Benefits of work force analytics in talent management

Sl. no	Benefits
1	Acquire the best talent
2	Identify and fill the skill gap
3	Understand employee's performance
4	Reduce employee turnover
5	Provide employee data for optimum decision making
6	Enhance productivity of the organization

This conceptual paper reveals that work force analytics provide more benefits to the organization in many areas like to acquire the best talent quickly, helps to identify the skill gap and provide training to fill those gaps, better understanding of employee performance through availability of data, increase employee engagement programs which are helpful to increase satisfaction in turn reduce employee turnover, work force analytics provide data to take optimum decisions to manage talent in the organization.

#### Companies which are using work force analytics

Sl.no	Company name	Purpose/use of work force analytics
1	GOOGLE	To evaluate hiring process
2	IBM	Increasing successful sales people
3	ROYAL DUTCH SHELL	Identifying good idea generator
4	XEROX	Increasing Employee Retention

Modern days so many companies are using work force analytics for many uses. Those are using work force analytics not only in pre hiring process but also using in performance evaluation, fixing fair compensation, generating right idea at the right time based on the employee data, nurturing the talent and retain the talent for longer period of time.

#### FINDINGS & CONCLUSION

This paper mainly concentrates on the significance of talent management for the organization and use of work force analytics to improve talent management. Talent is an innate ability to do extremely well at a job. Talent management is an organization's ability to recruit, develop and retain them for longer time. Talent is an important and necessary skill for people in the work force to acquire. Finding talented people is not a difficult job, but makes them to stay for the same organization is the challenge. Modern day's organizations are using work force analytics to manage the talent. Work force analytics describes a set of tools that measure and organize employee data. Work force analytics provide more benefits to the organization like create better hiring process, increase worker's engagement by understanding their needs and satisfaction and find the areas where efficiency can be improves with automation etc. This tool provides detailed information about employee performance, determines the right people for the right position, make them to feel engaged and satisfies through fair compensation which leads for managing the talent at the organization.

#### REFERENCES

- Mr. Cora Ilamas, "The importance of talent management and why companies should invest in it, May 2018"
- Mr. Marianne Chrisos, "Work force analytics tools to improve talent management, May 2018"
- Mr. Pam Baker, "Nine ways to improve talent management with workforce analytics".
- HRT News Desk, "How work force analytics improve Talent Management, July 2017".
- Mr.Dana Liberty, "The importance of work force analytics, Nov 2018".
- Jyotiranjya hota, "Work force analytics approach: An Emerging trend of work force management, sep 2013"



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**ENVIRONMENTAL FRIENDLY GREEN TECHNOLOGY USED BY CONSTRUCTION INDUSTRIES IN BANGALORE**

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**ABSTRACT**

*In the older times, people were content with the simplistic way of living, Huts, Farms, Irrigation, where the simple way of life. With the growing need for better living, man started to ignore them, and wanted to live a comfortable life. Comfort was given the name of high-end construction (buildings) in a fast-moving life. The emergence of buildings meant the use of toxic materials, chemical products, which pollute the environment. Over the last 10 years, there has a substantial increase in the use of technology in this field. However, with the necessity for a greener environment, it has diverted towards building a sustainable development. In other words, constructing a building, which will provide a healthy and breathable space for its residents with long-term investments. Green building is the emerging topic in this agenda. This field is expected to give high level of innovation and modification in the life balance as same as the information technology bang which occurred two decades back.*

*The ignorance and disregard to the ever-expanding 'Green building' thought is the biggest challenge among the Indian Respondents. This is evident with the low performance of the demand by the client towards Green Technology, clearly indicating the upheaval need for educating and communicating it to the Indian developers and consumers.*

*This study attempts to identify parameters covered by the residential establishments (Apartments, Flats & Office Spaces) for achieving the LEED/GRIHA ratings for the purpose of Green Building certifications in Bangalore, India.*

*The practical analysis of the research can educate the public on the emerging technology utilized for the wellbeing and protection of the public.*

*The certification program created by the various governing bodies in and around the world can be conveyed through the research.*

*Keywords: Green Technology, Construction Industries, LEED, GRIHA, Environment-friendly.*

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**INTRODUCTION****CONCEPT OF GREEN TECHNOLOGY**

Green Technology refers to the use of eco-friendly materials and products for a sustainable living environment. This technology utilizes the materials available and transforms it into zero-waste materials, an age-old practice in India. This field is expected to give high level of innovation and modification in the life balance as same as the information technology bang which occurred two decades back. The objective for a greener way of living is:

- Sustainability: The term sustainability requires providing the society with necessary and basic demands, without hampering the natural resources.
- 'Cradle to Cradle' design: The production of materials that can be reused and reclaimed fully without ending up in garbage, is the 'Cradle to Cradle' design concept.
- Source reduction: The main reason for waste generation implies in the pattern of production and consumption. The aim should be to provide a systematic procedure in changing this pattern for reduced wastage in the production process as well as in the final consumption.
- Innovation: Creating innovative technique in agriculture and natural extraction of resources, which will not hamper the environment.
- Viability: The growth in the economic activity through sustainability will benefit the environment, provide faster implementation and provide career opportunities that will protect and preserve the planet.

The different forms in which better sustainability and viability is achievable through the fulfillment of the various areas of environmental concepts:

- Energy: Creation of alternative fuels, innovative energy generation, and energy efficiency and enhancement in the same.

- Green Building: The concept of 'Green Building' covers everything from the selection of the building to the location of the building.
- Environmentally preferred purchasing: The interference of the governance in providing innovative products and resources to reduce or to exclude the use and generation of toxic substances.
- Green Nanotechnology: Green Nanotechnology is the merging of green chemistry with green engineering to collaborate with green technology.

However, India is slowly and steadily recognizing the emerging trend for a greener society through the emergence of Green building in countries like US. S. Srinivas, Principal Counselor the Indian Green Building Council (IGBC), a body that certifies green constructions is stating to provide a 10% hike in the consumption of Green technology through Green building in a period of 2-3 years. Not all the technologies used are 21<sup>st</sup> century innovations. Green construction in India uses a generous mix of modern science and methods that are nearly 400 years old. For example, The Confederation of Indian Industry's (CII) Institute of Quality in Bangalore uses Wind Power technology to continuously supply air in the building. The same technology is evident in the Inspector General Office of Police in Gulbarga, and Aquamall Water Solutions buildings in Dehradun.

### **CONCEPT OF GREEN BUILDING**

The concept of Green Building Movement was started in India when CII Sohrabji Godrej Green Business (IGBC Head Quarters) building in Hyderabad was awarded with the first Platinum rated Green Building rating in India. Ever since this, there has been a tremendous support in the Green Building movement over the years. At present, more than 4000 building projects are utilizing the various green strategies. As a forefront, it is become amicable to provide the general public, residents and developers with the education on green technology.

### **FEATURES OF GREEN BUILDING**

The concept of Green Building is to reduce the usage of energy, water, natural resources and reduce wastage, in return providing a healthier and safer environment to live in. The salient features of Green Building are:

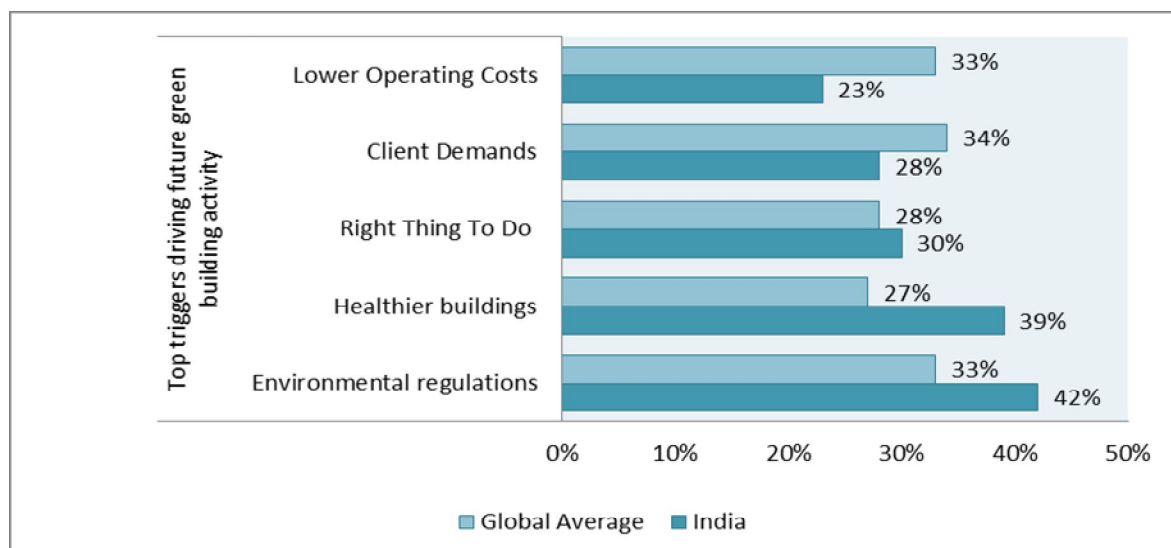
- Site Sustainability: These building must have easy accessibility to public facilities in terms of transportation. There should be natural topography for clean and clear breathing space. Car parking facilities availability for the visitors must be sufficient with electric charging facilities.
- Water efficiency: Reduction in water wastage by providing rainwater harvesting facilities. Recycling rainwater and using it for flushing toilets, gardening, washing and so on.
- Reduction of energy up to 40%: every green building must have the capacity to reduce its energy consumption by installing energy-saving equipment and appliances.
- Resource Management: Green building are build from renewable, non-toxic reusable and recyclable materials. For manufacturing building low emission materials are used like low volatile organic compound paints are used by the constructor.
- Indoor Environmental Quality: Proper ventilation is the main target of a green building. The construction of green building is required to compulsorily design proper ventilation system, which provides filtered, clean air and proper lighting. Indoor lighting helps in controlling the dampness, which is one of the causes of inheritance by dust mites, bacteria and generation of various deadly diseases.

### **GROWTH OF GREEN BUILDING**

The percentage of respondents doing the majority of their projects green in India is expected to nearly double by 2012 from 28% to 56%. New Green building in India is being driven, mostly by environmental regulations and healthier buildings.

### **CHALLENGES**

However, India do faces the challenge of proper guidance about Green building to the occupants. The ignorance and disregard to the ever-expanding 'Green building' thought is the biggest challenge among the Indian Respondents. This is evident with the low performance of the demand by the client towards Green Technology, clearly indicating the upheaval need for educating and communicating it to the Indian developers and consumers. Other challenges reported by a higher percentage of respondents from India than the global average are lack of trained / educated green building professionals (27%) and lack of availability of green products in their market (21%). Again, both of these suggest that India is still an emerging market for green building.



Source: 2018, World Green Building Trends 2018 Survey Figure 1.2 Top Triggers Driving Future Green Building Activity

### CERTIFICATION AND LEED RATING SYSTEM FOR GREEN BUILDING IN INDIA

Green building is a LEED-certified (Leadership in Energy and Environmental Design ) building. LEED is established by the US Green Building Council (USGBC), the organisation promoting sustainability through Green Buildings. LEED rating system assesses various building based on the criteria set for green building certifications. To receive LEED certification, building projects have to satisfy certain minimum criteria and earn points to achieve different levels of certification. Currently India has more than 4,300 projects with about 4.7 billion square feet building area registered for green technology. In order to get the LEED certification the building project must have to get ratings from the rating agencies. The three main rating systems for Green Buildings in India are:

- **IGBC:** The IGBC Green Interior Rating Program is associated with designing a specific list of requirements criterion fulfilled by the tenants-occupied commercial spaces. The ratings are suitable for not only office spaces but also for hotels, restaurants, resorts, IT spaces, banks, hospitals, and other buildings. A third party assessor carries out the certification of project who are trained by International Agencies & IGBC. The certification will comprise of two stages - assessment followed by IGBC site visit.
  - At the completion of the project, the design and construction aspect of the project will be assessed.
  - After this, a site visit will verify the usage of green features implementation by the project.
  - The mandatory requirements / credits of the program at the preliminary assessment are only considered as anticipated. These mandatory requirements/ credits are not awarded until the final documents are submitted, along with additional documents showing implementation. If there are changes after the preliminary assessment, such changes need to be submitted during the IGBC site visit.
  - IGBC will recognize Interior projects that achieve one of the rating levels with a formal letter of certification and a mountable plaque.
- **GRIHA:** GRIHA is India's National Rating System for Green buildings, which has been developed by TERI (The Energy and Resources Institute) and is endorsed by the MNRE (Ministry of New and Renewable Energy). It is based on nationally accepted energy and environmental principles. Its target is to accomplish the level of certification both on a national and international level. Its assessment procedure involves a base of 34 criteria and award points on a scale of 100 to the building. In order to qualify for GRIHA certification, a project must achieve at least 50 points
- **BEE:** The Bureau of Energy Efficiency (BEE) was established by the Government of India on 1<sup>st</sup> March 2002, under the provision of the Energy Conservation Act, 2001. The mission and vision of Bureau of Energy Efficiency is to assist in developing policies and strategies in control with market principles and self-regulations. This is turn, will reduce the energy intensity of the Indian economy, which covers the prime objective of Energy Conservation Act, 2001, framework. For this the various stakeholders, and their participation is vital in sustained adoption of energy efficiency in all sectors. The broad objectives of BEE are as under:

- To exercise leadership and provide policy recommendation and direction to national energy conservation and efficiency efforts and programs.
- To coordinate energy efficiency and conservation policies and programs and take it to the stakeholders
- To establish systems and procedures to measure, monitor and verify energy efficiency results in individual sectors as well as at a macro level.
- To influence multi-lateral and bi-lateral and private sector support in implementation of Energy Conservation Act and efficient use of energy and its conservation programs.
- To demonstrate delivery of energy efficiency services as mandated in the EC bill through private-public partnerships.
- To interpret, plan and manage energy conservation programs as visualized in the Energy Conservation Act.
- Other Rating Scheme is:
  - **EDGE**: EDGE software application developed by the International Finance Corporation (IFC), is a green building certification aimed at building new residential and commercial buildings in a more resource efficient manner. It connects that the hypothetical costs, savings and payback periods for green building measures to help developers and buildings make the apt business decision for a green building. If any building or projects achieves the target of 20% reduction in usage of energy, water and other energy efficient resources as compared to the conventional buildings are eligible for EDGE green building certification.

## LITERATURE REVIEW

*Samari et al., 2013*, explains that Green Building is serving as a base for sustainable construction development process.

*Glavinich, 2008*, explained the concept of Green Building as meeting the pre-requisites of a building performance standard which reduces the disruption to, and enhances the ecosystems in the native, provincial and universal circumstances in the whole life cycle.

*Allen et al., 2015*, explains that the design of green building helps to enhance the residents' health and the preservation of the surrounding.

*Chen, Yang, & Lu, 2015*, explains that the technology used by LEED AND BREEAM requires a passive design, which is easily sorted into building layout, envelope thermo-physics, building geometry, and air tightness and infiltration.

*Hossam & Molina-Prieto, 2015*, explains that under the passive cooling strategy, the Solar shading and radiative cooling are in abundant use. In Solar shading, local materials like terracotta tiles, hay, inverted earthen pots and date palm branches help to reduce the indoor temperature considerably.

## RESEARCH METHODOLOGY

### MAIN ISSUE OF THE RESEARCH

Karnataka is home to 41 green buildings, the fourth largest figure in any state in the country, out of them 39 are in Bangalore. Though the penetration level is just around 5%, the India Green Building Council (IGBC) is satisfied with the appreciation showed by the residential sector towards Green Building. By 2030 it is predicated by the Industry, that the Commercial buildings are on the verge to turn into Green Building. Hence, the emergence of Green Building totally relays on the Building owner's decision to have a sustainable development environment for his building. The level of sustainability to be achieved through the LEED / GRIHA rating is still a challenge.

### OBJECTIVE OF THE RESEARCH

The main focal point of objective of the research is to identify scoring of the attributes achieved by the Green Buildings in Bangalore. The achievement of these building under the IGBC-LEED ratings is measured through Trend Analysis.

### DATA AND METHODOLOGY

To achieve the objective of the research the researcher has taken seven companies data that are playing major role in the field of green building. This study attempts to identify parameters covered by the residential establishments (Apartments, Flats & Office Spaces) for achieving the LEED/GRIHA ratings for the purpose of Green Building certifications. For the research methodology, descriptive and conceptual approach is adopted taking case studies of Green Building certified residential establishments and office spaces. For descriptive

approach the comparison between possible points and points achieved have been applied. For conceptual research, the definition of the following attributes are covered:

1. Site Sustainability
2. Water efficiency
3. Energy Consumption
4. Resource Management (Materials used)
5. Indoor Environmental Quality
6. Innovation

For the descriptive analysis, the case study of the following residential establishments and office space are considered:

- Aquilla Heights Atris-Polaris-Vega
- BCIL –TZED Homes
- CISCO –BGL16
- Essars Waters Edge
- TATA Xylem Business Park
- WIPRO EC Tower 17
- Yahoo Software Development India

#### ANALYSIS AND INTERPRETATION

Table 3.1 Table showing LEED Ratings achieved by residential and office space establishments in Bangalore, Adopted from En3 ratings data, 2017 (\*PP- Points Possible, PA-Points Achieved)

Name of the Construction Houses	Site Sustainability Features		Water Efficiency		Energising the Building		Resource Management		Indoor Environmental Quality		Innovation		Total		LEED Certification
	PP	PA	PP	PA	PP	PA	PP	PA	PP	PA	PP	PA	PP	PA	
Yahoo Software Development India	7	6	2	2	14	8	14	6	17	10	5	5	59	37	GOLD
Aquilla Heights Atria-Polaris-Vega	10	9	23	19	19	9	10	9	6	6	5	4	73	56	GOLD
BCIL-Tzed Homes	21	21	11	11	34	37	8	14	12	17	6	6	96	110	PLATINUM
CISCO-BGL16	9	6	20	19	21	11	12	9	9	4	4	4	75	53	PLATINUM
Essars Waters Edge	15	11	5	4	14	5	11	5	11	9	5	5	61	30	GOLD
TATA Xylem Business Park	15	11	5	4	14	5	11	5	11	9	5	5	61	39	GOLD
WIPRO EC Tower 17	13	9	6	3	17	6	13	5	15	7	5	5	69	35	SILVER

Table 3.1 has depicted the residential establishments and office space in Bangalore (Source [www.en3online.com/projects/case-studies/](http://www.en3online.com/projects/case-studies/) (\*PP- Points Possible, PA-Points Achieved)). Similar to these projects, many other are slowly but steadily coming under the stride of Green Building. India's Green Building market is estimated to double by 2022 at 10 billion sq. ft. valuing around 35-50 billion, driven by increasing awareness level, environmental benefits and government support.

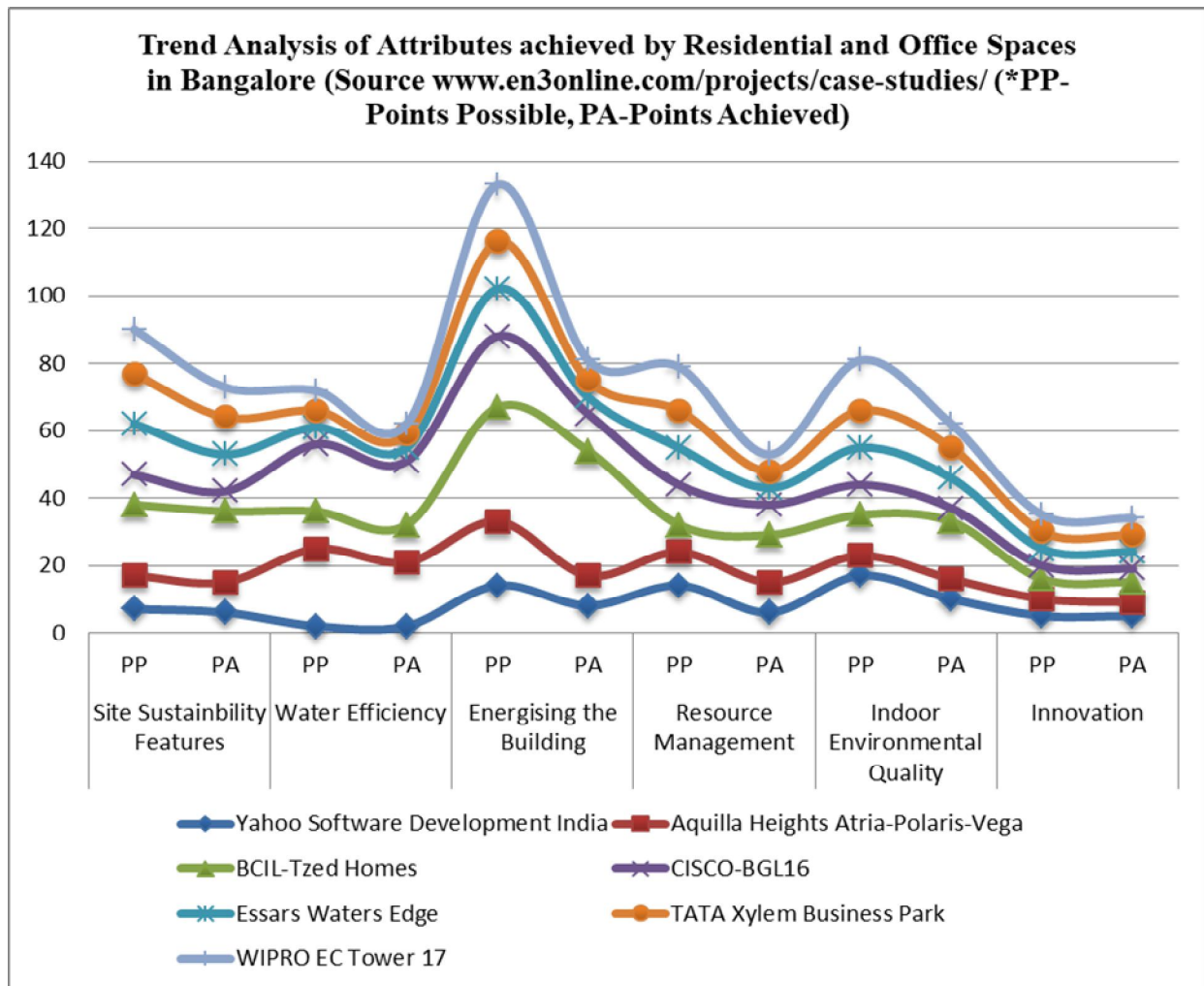


Figure 3.1 shows the level ratings received by these buildings under IGBC-LEED for securing the title of Green Building rating system (Source: <https://igbc.in/igbc/redirectHtml.htm?redVal=showLeednosign>). The ratings are compared to identify the best practice undertaken by these Green Buildings. In Conclusion BCIL-TZed Homes and CISCO-BGL16 achieved the Platinum, the highest criterion under IGBC ratings followed by Yahoo, Aquilla Heights, Essar Waters Edge and TATA Xylem Business Park. There are many other areas, which are contributing towards Green initiatives in and around their surroundings.

#### CONTRIBUTION OF THE RESEARCH:

- The theoretical approach of the research will create a platform for further studies for various researchers, academicians, students and layman.
- The practical analysis of the research can educate the public on the emerging technology utilised for the wellbeing and protection of the public.
- The certification program created by the various governing bodies in and around the world can be conveyed through the research.
- The basic face value of the research is to make an attempt on the education of the Green Building in the Academic and professional level.

#### CONCLUSION

This research has underlined that besides looking at the resource efficiency, the main target is always the well being and health of the public. The research study showed the various criterion fulfilled by the residential and office space achieved in order to certify under IGBC-LEED. The ratings are compared to identify the best practice undertaken by these Green Buildings. In Conclusion BCIL-TZed Homes and CISCO-BGL16 achieved the Platinum, the highest criterion under IGBC ratings followed by Yahoo, Aquilla Heights, Essar Waters Edge and TATA Xylem Business Park. There are many other areas, which are contributing towards Green initiatives in and around their surroundings. This is through the interaction with the users of green buildings, and their Governing bodies like IGBC. All efforts put in today will bear the fruit for tomorrow.

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**REFERENCES**

- Compendium of Environment Statistics, India, 2015, Government of India, Ministry of Statistics and Programme Implementation, [www.mospi.gov.in](http://www.mospi.gov.in)
- Confederation of Indian Industry, Impacts of Green Buildings on Occupants Well-being, published by IGBC, 2017
- IFC World Bank Group, (2016), Green Buildings /market Intelligence India Country Profile.
- Mamta (2015) Green Building: A New Wave In India, IJSRM, Volume 3, Issue 12.
- Murthy R, (2015), Facilitating Green Building Adoption – An Optimization of Decision Support Tool, IIMB.
- [phys.org/news/2009-05-feasible-renewable-energy-sources.html](http://phys.org/news/2009-05-feasible-renewable-energy-sources.html)
- SmartMarket Report, (2018), World Green Building Trends 2018.
- [www.beeindia.gov.in/](http://www.beeindia.gov.in/)
- [www.en3online.com/projects/case-studies/](http://www.en3online.com/projects/case-studies/)
- [www.gbci.org/press-kit-edge](http://www.gbci.org/press-kit-edge)
- [www.green-technology.org/what.htm](http://www.green-technology.org/what.htm)
- [www.grihaindia.org/](http://www.grihaindia.org/)
- [www.hindustantimes.com/india/india-for-green-technology/story.html](http://www.hindustantimes.com/india/india-for-green-technology/story.html)
- [www.thehindubusinessline.com/news/real-estate/indian-green-building-market-to-double-by-2022/article23391602.ece](http://www.thehindubusinessline.com/news/real-estate/indian-green-building-market-to-double-by-2022/article23391602.ece)

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## ROLE OF TECHNOLOGY IN SUSTAINABLE TOURISM GOVERNANCE

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### ABSTRACT

*The paper discusses theoretical approach to the use and application of technology in governance of sustainable tourism. The discussion further manipulates the integration of technology for further inclusion in the future perspective of sustainable tourism governance. The constructive and the destructive outcome of the technology influence the implication in sustainable tourism governance. However the study focuses on the constructive implementation of technology for the sustainable management of tourism. The objective of the study is to identify the role and importance of technology in the sustainable tourism development. The outcome of study is helpful for the policy makers to identify and implement various developmental indicators in the process of integration of technology and sustainable tourism governance.*

*Keywords: Technology, Sustainable Tourism, E-Tourism, Tourism Development*

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### INTRODUCTION

Tourism and technology go hand-in hand. It is technology which is considered critical for tourism, (Buhalis, 2003), since it does not just influence economic growth, but plays a major role in the prosperity of the Fraternity in the long run, (Liburd, 2005). Information service is a major ingredient of tourist facility. Though invisible it is invaluable to tourists. Though absence of an up-to-date information, with quick retrieval facility, leads to poor tourist facility. The technological developments in the field of communication and computers, therefore, be properly utilised for establishing tourist information network. **Tourism Fraternity in Goa a Perspective, thesis by MC Mathai (1989).** The objective of the study is to identify the role and importance of technology in the sustainable tourism development. The outcome of study is helpful for the policy makers to identify and implement various developmental indicators in the process of integration of technology and sustainable tourism governance.

### OBJECTIVES

- To study the role of technology in sustainable tourism governance.
- To study the impact of technology in sustainable tourism governance.
- To suggest various measures to integrate the technology in sustainable tourism grievance.

### LITERATURE REVIEW

Academicians and researchers have argued that there has always been an ambiguity associated with sustainability practices, preventing it from having one precise definition, in spite of being an important pillar of tourism growth, Hardy, A 2002; Lou, J. 2009. According to Ciegis et al., 2009; Pearce (1990); Sharpley, 2000, the concept of sustainability was initiated from the environmental consciousness that garnered importance in the world in the 1970s. The United Nations Summit on the Human ecosystem which is also famously known as known as **Stockholm summit 1972** was one of the first most important global event which discussed on sustainability practices.

According to the publication by Schwass, R. D, **Introduction to Sustainable advancement** , UNWTO **program**, he mentioned that it was at the World Conservation Strategy, produced in 1980 with the support of WWF, FAO, UNEP, and UNESCO which first discussed the phenomenon of sustainable advancement and was the first document to link the “conservation of nature to the process of resource advancement for human needs.” Later on at the **Brundtland Commission, in 1987**, this practice was expanded. He further went on to mention that the convention defined sustainable practices as the kind of progression that mitigate the needs of the present without overlooking the ability of future entrants to meet their own needs.

**The United Nations Ecosystem Programme** and **World Tourism Organisation** define sustainability phenomenon as “Tourism that takes full account of its present and future economic, social and environmental impacts, addressing the needs of traveller and the business ecosystem .

The usage of Information Communication Technology in tourism has remained focused mostly on Fraternity functions, technological innovations and consumer and demand dimensions, Law, Buhalis, 2008. However, usage of ICT can still be used in other areas in tourism, helping in sustainable tourism advancement (STD).



**Frew, Ali, 2000**, in their research paper predicted that the application of ICT to sustainable tourism advancement will hold the capacity to not only in the expansion of E-Tourism research but beyond.

There are various ICT based tools and applications which can be used for information management; Geographical Information System (GIS), Tourism Information System (TIS), Computer Simulation, Ecosystem Management Information Systems (EMIS), Destination Management Systems (DMS), Information Management of Weather, Climate and Ocean Changes, Economic Impact Analysis Software, Global Positioning System (GPS), etc. **Ali, 2010**.

Some of the Information Communication Technology which plays a role the involving the local community of any destination and track their participation includes Geographical Information System (GIS), Community Informatics (CI), and Computer Simulation. Another area where ICT plays an important role is that of efficient energy usage, with massive threats such as global warming and climate change. The sector of travel and tourism, along with hospitality, is known to consume huge amounts of energy. Be it for transportation to, from and at the destination, or providing various tourist facilities as well as services at the tourist destination, **Becken, 2002**. Viewing the larger picture, besides manufacturing, one of the most critical sectors that impact sustainability is the sector of transport and accounts for an estimated 75%–90% of all greenhouse gas emissions caused by tourism, **Gossling, 2002; Ceron & Dubois, 2003**. Therefore, managing the negative impacts of tourism on sustainability is of utmost importance.

### **CONCEPT OF SUSTAINABLE TOURISM**

Tourism is an activity of leisure, recreation and entertainment where people visit other place than the usual Ecosystem for more than 24 hours but not more than one consecutive year. Sustainable tourism a category of tourism in which the tourists visit an attraction, their activity in a destination causes low environmental impact and supports socio-economic growth and advancement of local community. Sustainable tourism has the advantage of involving in the various stakeholders for the better growth and development. In other words sustainable tourism is the triangular relationship between the tourism Fraternity, holiday makers and the socio-economic and environmental condition of local community. Sustainable tourism has the following objectives,

- Sustainable use of local resources
- Reduction of over consumption of resources and reducing the waste
- Conservation of biodiversity
- Local community involvement in tourism activities
- Income generation to local community

### **TECHNOLOGY IN SUSTAINABLE TOURISM:**

Technology comprises of tools and instruments, knowledge and culture which is important for the survival of human being. Today technology reached all the spheres of tourism fraternity. Sustainable tourism adopted information based communication tools and technology for destination management, location based services, transportation and geographical based system, virtual tourism, to measure the impact of pollution and location based services etc. Positively technology has reduced the negative impacts sustainable tourism.

### **ROLE AND OBJECTIVES**

Technology in sustainable tourism aims at reducing the waste, boosting recycling process, change in the production process, controlling the pollution and effective utilisation of the available resources.

Various modern technologies associated with sustainable tourism. They aim at quality enhancement of sustainable tourism. The major concern of sustainable advancement includes access to clean water, access to clean energy, inclusion of clean and unpolluted environment, effectively and efficiently managed natural resources and effective governance. These areas need effective technology to manage.

**Forecasting software:** Forecasting software monitors the change in the climate, atmosphere and the ocean. Thus the software helps to predict the change factors so that immediate action can be taken to make a destination sustainable. Identification, analysis and immediate action may bring positive change in a destination.

**Virtual Tourism:** A virtual tour is an artificial presentation or simulation of an attraction, location or a tourist site with the sequence of fairly arranged videos and images. Virtual tour may reduce the tourist traffic to a destination which will result in sustainable advancement . Accessible tourism can promote the virtual tourism.

**Artificial Intelligence:** Artificial intelligence is a software enabled technology to market the tourism products and services. AI enables the tourism Fraternity to better understand the need and requirements of tourism tourists and visitors. Accumulation and integration of data, real time interventions are the major objectives of artificial intelligence. Today hotels, resorts and the tourist attractions can easily direct their clients and customers through artificial intelligence.

**Tourism Information system:** Tourism information system is a computer based system in which the tourists gather information about an attraction. Tourism information system covers the vast area of attraction, accommodation, transportation and amenities in a destination. This will help a traveller to choose the destination.

**Location based services:** Location based services target at a customer based on the real time global positioning system. Hotels and Restaurants nearby, fuel stations nearby, traffic information, sights nearby are the examples for location based services. Location based service is designed to educate a traveller to know about the people, culture and the prevailing conditions so that the traveller can make a quick decision.

**Global positioning system:** Global positioning system is a satellite based navigation system which enables the users to track their destination, access to the weather report and other necessary information about a destination. Today GPS has become the integrated part of travel Fraternity. Majority of tourists depend on GPS for their travel decision making. GPS has greater role in minimising the travel impact on the Ecosystem of a destination.

**Intelligent transport system:** Intelligent transport system assists the tourists to get updated information about the ground transportation facilities to a destination. Tourists can make decisions regarding the transportation facilities. Intelligent transport system recommends mobile based applications which induce people to opt public transportation facilities.

**Geographical information system:** Geographical information system generally used to capture, store, manage, manipulate and display large amount of data through internet or mobile application. The travellers can access to this data while making their holiday. GIS reduces the burden gathering information in a destination, avoids congestion and makes travel more perspective.

**Destination management system:** Destination management system gives complete information about a tourist destination. Destination management system has crucial role in deciding a destination, pre trip information and on arrival information. DMS helps in creating effective internal and external networks which helps in long term positive impact on the economy of a destination.

### **IMPACT OF MODERN TECHNOLOGY**

Innovation in technology has huge impact on the Ecosystem and economy. Hours of travel has reduced drastically. Apparently sustainable tourism witnessed greater impact of technology. The world is experiencing growing concern towards carbon di oxide emission. Number of applications assists the tourist in choosing the best destination. Applications (App) guide the tourists about rules and regulations, accommodation and transportation facilities, climatic conditions, availability and the nature and features of destination. Modern travellers are also concerned about how their travel benefits the local community. Thus one of the functional objectives of modern technology is to make the world more sustainable.

### **FUTURE PERSPECTIVE**

Technology helped in the better management of tourist attractions. Technology has promising role in marketing and innovative advancement of tourist attractions. Future destinations need technological integration and stake holders to make the destination more attractive. In this context technology will play predominant role in destination development. An integrated developmental approach needs better communication between the tourists, destination and the local service providers. Local community will also play crucial role in the developmental process. Communication and technology in future needs to aim at integrating all the above stake holders for better development. Technology will also help the local community to understand the psychology of traveller and the consequences of tourism activity in their area. Technology will support the destination stake holders in critical decision making, new business ventures, monitoring the carbon emission and destination cleanliness.

### **CONCLUSION**

The theoretical study analyses the innovative approaches of technology in sustainable tourism governance. In terms of technology travel and tourism sector today highly developed, however Fraternity requires timely growth and advancement. The business centric approaches of tourism Fraternity need to concentrate on integrating the business, technology and the sustainable advancement for the better governance. Future studies have greater scope for integrating the business, technology and the local community for the better tomorrow.

**REFERENCES****Journals and PhD Thesis**

- Subramanian, Malathi: "A Study of the advancement potential of tourism sector and its employment pattern in Sindhudurg district of Maharashtra state" unpublished research thesis submitted to SNDT Women's University, Church gate, Mumbai, 2010
- Gadad, Anupama: "Potentiality of Tourism Fraternity In Karnataka A Case Study of Uttara Kannada District", unpublished research thesis submitted to Karnataka State Women's University, Vijayapur, 2015
- Sawarkar, Kranti P: "Potential for tourism advancement in Vidarbha region Maharashtra", unpublished research thesis submitted to Bundelkhand University, Jhansi
- Galhate, Sunil Runjaji: "Potential for eco-agri-rural tourism in Aurangabad district problems and prospects", unpublished research thesis submitted to Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, 2009
- Naganna, Konade Bhairappa: "Potential and Prospects for Advancement of tourism in Bijapur District and its Environs"
- Subash , Dr. T., "Potential challenges and opportunities in Tourism in India:", published by IJRAR-International Journal of Research and Analytical Reviews [ VOLUME 2 I ISSUE 4 I OCT. – DEC. 2015]
- Uniyal, Mahesh & Sharma, "Sustainability in Tourism Development: Issues and Challenges Ahead", published by IRJBM – December – 2013 - Volume No – VI
- Manoj, P. K, "Sustainable Tourism in India: A Study from a Global Perspective with Focus on Tourism Prospects of Kerala", March 2008
- Duc , Tinh Bui, "Tourism Fraternity Responses to the Rise of Sustainable Tourism and Related Environmental Policy Initiatives: The Case of Hue City, Vietnam" unpublished research thesis submitted to Auckland University of Technology, 2009
- Afza, Dr. Noor, & B.V, Srinivasa Murthy "Problems and Prospects of Tourism Fraternity in Karnataka".
- Tran, Huu Thuy Giang, "An exploration of the potential for sustainable tourism advancement on selected Vietnamese islands", unpublished research thesis submitted to Southern Cross University, New South Wales, Australia, 2016
- Mara, Ursache, "Tourism and sustainable regional development, European union and developments", unpublished PhD Abstract submitted to Alexandru Ioan Cuza University, Romania, 2015
- McDonald, Janine R., "Understanding sustainable tourism advancement from a complex systems perspective: a case study of the Swan River, Western Australia", unpublished PhD Thesis submitted to Edith Cowan University, Australia, 2006.
- Ciegis, R., Ramanauskiene, J., & Martinkus, B., "The concept of sustainable advancement and its use for sustainability scenarios. Engineering Economics", (2009).
- Pearce, D. W., & Turner, R. K., Economics the Ecosystem and the natural resources. Baltimore: Johns Hopkins University Press (1990).
- Sharpley, R., "Tourism and sustainable advancement : Exploring the theoretical divide." Journal of Sustainable Tourism, (2000).
- Spindler, E. A. "The sustainability history: The origins and effects of a popular concept.", in I. Jenkins & R. Schröder edition of Sustainability in Tourism: A Multidisciplinary Approach, 2013
- Hardy, A.; Beeton, R.J.S.; Pearson, L. Sustainable tourism: Conceptual overview and its position in relation to conceptualisations of tourism. J. Sustain. Tour. 2002
- Lu, J.; Nepal, S.K. Sustainable tourism research: An analysis of papers published in the journal of sustainable tourism. J. Sustain. Tour. 2009
- Fuchs, M., & Höpken, W. (2005). Towards @Destination: a DEA-based decision support framework. In: A.J. Frew (Ed.), Information and Communication Technologies in Tourism 2005 (pp. 57-66). New York: Springer.

- 
- Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the internet - the state of eTourism research. *Tourism Management*, 29(4), 609-623.
  - Frew, J. A. (2000). Information and communications technology research in the travel and tourism domain: perspective and direction. *Journal of Travel Research*, 39(2), 136-145.
  - Ali, A., & Frew, A. J. (2008). ICT for sustainable tourism: an emergent framework.
  - Ali, A., & Frew, A. J. (2008). ICT for sustainable tourism: an emergent framework.
  - Becken, S. (2002). Analysing international tourist flows to estimate energy use associated with air travel, *Journal of Sustainable Tourism*

**Books**

- Bhatia, A.K. : "TOurism Development – PrincipIes & Practices" Sterling Publishers Pvt. Ltd, New Delhi, 2007
- Bhatia, A.K. : "International Tourism Management" Sterling Publishers Pvt. Ltd, New Delhi, 2006

**Websites**

- Schwass, R. D. (n.d.). Global conservating strategy of the union of world for the conserve natural resources and nature. Archived on September 25, 2017, from <http://www.eolss.net/Sample-Chapters/C13/E1-45-02-05.pdf>
- Susntaibale Deleopment of Tourism retrieved on September 17, 2017 <https://sustainabledevelopment.un.org/>
- Sustainable Advancement Goals Retrieved on <http://17goals.org/division-for-sustainable-development/>

**Reports**

- UNWTO Barometer archived dated September 18, 2017 [http://cf.cdn.unwto.org/sites/all/files/pdf/unwto\\_barom17\\_03\\_june\\_excerpt\\_1.pdf](http://cf.cdn.unwto.org/sites/all/files/pdf/unwto_barom17_03_june_excerpt_1.pdf)
- Sustainable goals of United Nations for development [http://cf.cdn.unwto.org/sites/all/files/pdf/sustainable\\_development\\_goals\\_brochure.pdf](http://cf.cdn.unwto.org/sites/all/files/pdf/sustainable_development_goals_brochure.pdf)
- Report of United Nations The Brundtland Commission 1987 archived, February 28, 2019 <http://www.un-documents.net/our-common-future.pdf>
- United nations report United Nations Conferenc on Human Environmental Retrieved on February 26, 2019 <http://www.un-documents.net/aconf48-14r1.pdf>

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**A STUDY ON INFLUENCE OF AUTOMATION ON INDIAN AGRICULTURE**

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**ABSTRACT**

*Agriculture is contributing 18 Percent of share towards India's national income. Indian Cultivation contributes about half of the job opportunities for the Indian people.*

*We are producing pulses, rice, wheat, spices hugely in the world. Our agriculture also supports agro based business, viz., dairy, meat, poultry and etc.*

*India has emerged as the second largest producer of fruits and vegetables across the globe. It also produces agricultural stuff like Paddy, wheat, pulses, groundnut, natural products and so on.*

*Our Cultivation methodology has totally changed into a new transformation. Cultivation and harvesting has been completely automated in the field of agriculture.*

*This paper focuses mainly on the transformation of traditional method of cultivation into modern method of cultivation.*

*Keywords: Cultivation, Development, Automation, Traditional.*

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**INTRODUCTION**

India is a land of Cultivation, and hence a lot of water is required for farming. Since water is precious and scarce by nature, we need to conserve water and hence we can adapt automated irrigation for cultivation. By this project we can control the moisture content of the soil in the cultivating field. The auto water flow detection is fitted in the field. This will help the user to use water more economically in future.

India is a country where 60 to 70% of share in economy generates from cultivation. By using the automated techniques and by reducing traditional agricultural practices, it is possible to increase agricultural productivity. Water is getting exhausted due to unplanned use of water in recent times. And hence, the ground water level is decreasing because of low rainfall and scarcity of land water and heavy deforestation. Therefore, there is a requirement of automated water generating method in the cultivation which saves water and also supplies water in a most effective manner.

We need to use highly sophisticated agricultural equipment in order to increase the yield and quality of agrarian products. Presently, Indians have started using the smart phones which even led the farmers to ease their farming by adapting smart phone kit with regards to farming. The bore wells are controlled by the farmers through their smart phones where in olden days, they used to visit personally to the field to turn on and off the bore well.

Farmers started adapting the automations by using the non renewable resources like Solar energy and wind energy by planting solar panels and setting up equipments for generating wind energy in mountain areas to generate their own electricity. There is a requirement of use of modern style of automated cultivation, which has been adapted by the agriculturally advanced nations.

**INFLUENCE OF NEW TECHNIQUES OF CULTIVATION ON OUR COUNTRY****1. Automatic Labor**

Robotic Labor is the new gene of the Artificial intelligence. Unlike the other industries, even the cultivation has not been exempted from the use of automated techniques like robotic labor. Most of the farming activities depend upon the traditional way of techniques rather than modern techniques.

**2. Tractors without drivers**

As we know, the tractor is the vital part of a farm, which can be used for many tasks in the field of cultivation. It reduces the human effort that the present human is bearing. At this juncture, new tractors are capable of self sufficient with the inclusion of viewing sensors and remote monitoring system.

**3. Auto Seeding and Planting**

Seeding machines simplifies the task of manual labor by covering more ground much faster than a human labor. Effective seeding requires, planting seeds at the correct depth, and spacing plants at the appropriate distance. Seeding use to take so much of time for the farmer in olden days, but presently a farmer is doing it in no time and allowing himself to utilize the same time in other works.

**4. Auto Irrigation technology**

This system helps farmers to a prudent distribution of water to the crops in the field. Sensors are used continuously to monitor the health of the crops. They are operated with the sensors that are fit surrounding to the system of watering.

**5. Maintenance of Pest**

Automated system also eliminates the problem of growth of unwanted plants and enables a farmer to control pest which are problematic aspect of growth of plants. This also eliminates the labor problem.

**6. Auto Harvesting**

Automation would help us by knowing when the crops are ready to harvest. Automated system of cultivation enables farmers to make agricultural process like Ploughing, harvesting and collecting fruits.

**7. Decreasing the work of labor**

The main intention behind the introduction of automation is to reduce the manual labor, to enhance productivity. Use of modern technology improves yield per hector. For example: highly yielding variety seeds, chemical fertilizers, organic fertilizers, pesticides and so on.

**8. Drone management**

Farmers cannot see the picture of their farm completely, but this invention has made them to get the clear picture of their farm from the top. This aerial view will help the farmer to see the visuals at a negligible cost. As, all the farmers cannot afford to hire the other expensive methods of viewing technology to watch the photographs. All the pictures which are collected by the drone will help the farmer for analyze the crop health and to access quality of the soil and also plan the planting location to optimize the land use.

**9. Auto Crop Spraying**

As disused earlier, the farmers cannot afford helicopter and small aircrafts for spraying the crops. Thus, the Farmers got the invention called Drone. This drone will help them to spray the crops over the field. This drone is fixed GPS Navigation, Laser measurement, ultra sonic positioning and cameras, which will help the farmer to spray the crops easily and quickly over larger hectares of land.

**10. Smartphone Kit**

Smartphone tools can be adapted to observe the changes and growth of crops and soil can be logged in the form of pictures, pin pointing locations, soil colors, water, plant leaves and light properties.

**OBJECTIVES**

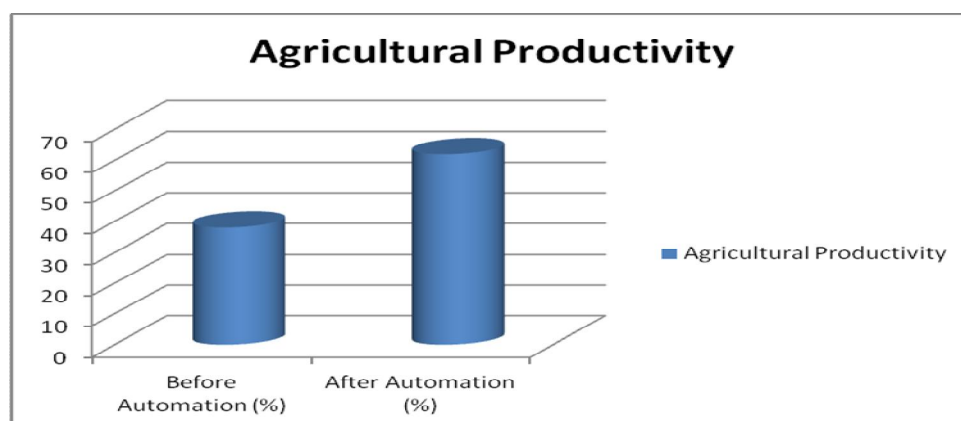
This study mainly focuses on the influence of Automation on Indian Agriculture. This study also concentrates on the difference in the productivity on introduction of automation of technology. The automation tools taken in the study basically concentrates on Agriculture tools and techniques adapted in modern day agriculture.

**METHODOLOGY**

The present study depends on both primary and secondary data. The primary data is gathered from the survey conducted through questionnaire. The total Sample size taken for the study was thirty and the sample space was totally Bangalore - Karnataka (India). The tool for the collection of information used was Questionnaire. The secondary data is used to collect the information on Automation in Agriculture.

**Table-1.1: Shows the transformation of agricultural productivity before and after the automation:**

	Before Automation (%)	After Automation (%)
Agricultural Productivity	38	62

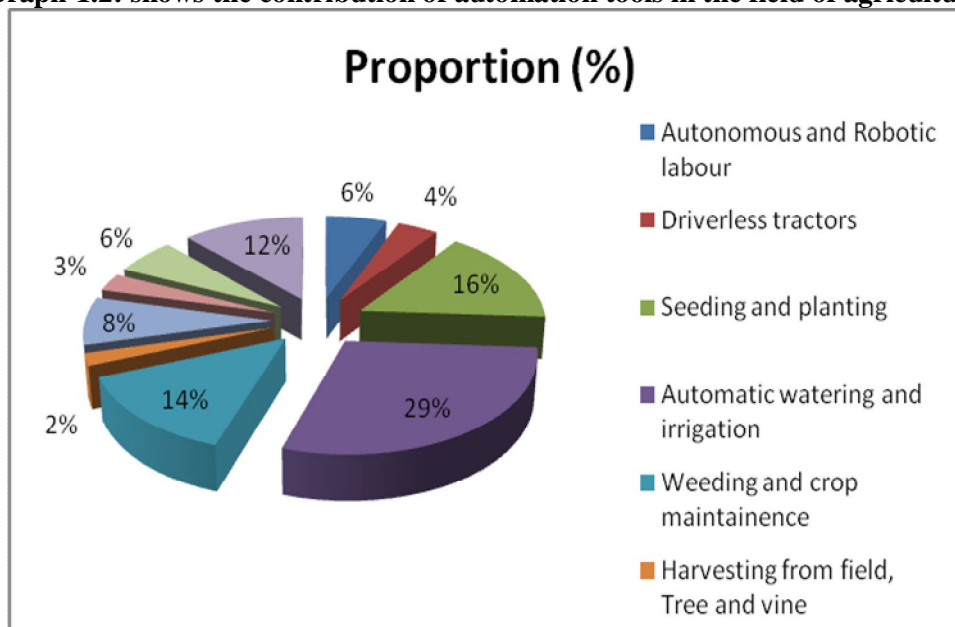


From the above table and graph, it is clear that there is a significant increase in the productivity after the introduction of automated based farming. We can notice a difference of 24% in the agricultural productivity after adapting the automation in the field of agriculture.

**Table-1.2: shows the portion of automated tools in the field of agriculture:**

Automation Tools	Proportion (%)
Autonomous and Robotic labor	6
Driverless tractors	4
Seeding and planting	16
Automatic watering and irrigation	29
Weeding and crop maintenance	14
Harvesting from field, Tree and vine	2
Reducing labor, increasing yield and efficiency	8
Drones for Imaging, Planting and More	3
Crop Spraying	6
Smartphone tools	12

**Graph-1.2: shows the contribution of automation tools in the field of agriculture:**



From the above chart and graph, it can be depicted that there is a significant contribution of automated techniques towards agriculture. Different methods of automation have been contributed their share in the field of agriculture. Among the various automations brought in the agriculture, we can see that majority of the contribution and adaption by the farmers is done in automatic watering and irrigation and seeding and planting. Rest of the automations is still in progress in adaption.

## FINDINGS

1. We can see that there is the interest in the farmers to adapt the automation but they lag in funds.
2. We can also notify that the farmers are still restricted themselves in the traditional method of agriculture.
3. We see that the automation is in less growth as because of lack of Governmental support.

## CONCLUSION

Agricultural sensors have been invented to meet the increasing worldwide demand for food. These are simple to use, cheap and help collect and apply data, so that resources can be used most efficiently. The sensors are contributing to solutions that extend beyond farms, including pollution, global warming and conservation.

Autonomous farm vehicles can use improved wireless data transmission and acquisition from smarter, smaller unmanned aerial and unmanned ground vehicles. There is an increase in the productivity of agriculture due to introduction of automation and automatic tools and techniques. It can be seen that the farmers are trying to adapt the automations which the other country farmers are doing. But only the difference is, the farmers of other nations are getting educational support and financial assistance from the Government and NGO's.

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**REFERENCES**

1. Agriculture at a Glance 20th Revised & Enlarged Edition by **S K Bhoi, N Pandey, S Shinde, V K Pandey & B B Singh R K Sharma** (Author)
2. <https://www.engineering.com/DesignerEdge/DesignerEdgeArticles/ArticleID/16653/Smart-FarmingAutomated-and-Connected-Agriculture.aspx>
3. [https://link.springer.com/chapter/10.1007/978-3-540-78831-7\\_63](https://link.springer.com/chapter/10.1007/978-3-540-78831-7_63)
4. <https://economictimes.indiatimes.com/small-biz/startups/features/smart-farming-this-startup-has-a-new-irrigation-method-one-that-uses-just-an-app-avanijal-agritech/articleshow/62248946.cms>
5. [https://en.wikipedia.org/wiki/Agricultural\\_robot](https://en.wikipedia.org/wiki/Agricultural_robot)



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**A STUDY ON INFLUENCE OF ARTIFICIAL INTELLIGENCE IN ACCOUNTING**

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**ABSTRACT**

*Artificial Intelligence (AI) is rapidly changing a global accounting technology which has changed from journal and ledger to computer software entry. In order to build a positive vision for the future it is necessary to develop a deep understanding of AI that helps to solve the accounting and business problems and their practical challenges. The implementation of AI technology in the field of accounting brings the dynamic changes and development in accounting industry. AI helps the professionals to focus on greater advisory roles that bring values to the clients. The process of accounting department will be trimmed down and the accountants will be more focusing on cost control process. The transactions such as account payables, travel expenses, fixed expenses; general ledger, financial reporting, and pay roll are automated through AI. Robots will be the future accounting digital assistants for performing all accounting tasks both physically and mentally. For the successful implementation of AI in accounting field it is necessary for the country, universities, individuals should work together.*

*Keywords: Artificial Intelligence, Robots, Payroll, and Account Payables*

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**INTRODUCTION**

AI plays an important role in all the financial institutions which are operated globally and it is expected to take over all core functions which save the cost and their operation efficiency. The history of AI is dates back to more than 25 years ago which mainly concentrates on the areas of financial reporting and auditing. AI is applied to all the aspects of accounting where they provide accurate results from the output of a company. However they cannot be replaced by the human intelligence. AI software helps to frame the conclusions from huge quantities of data and adjust its activities based on those conclusions but it is also system that can learn quickly within a fraction of time and can be applied to the whole company. At present 76% of Indian companies feel that they have lack of accounting professionals for the adoption of AI. In short term AI brings opportunities for accounting professionals in order to improve their efficiency and to understand deeply the advantages of AI which adds more value to business. In a long term view AI raises the opportunities for more dynamic change as system acts as humans which helps to make proper decision making.

**LITERATURE REVIEW**

Odoh longinur chukwidi (2018) found that AI has changed the accounting profession from hand written journals and ledgers to computer and software entry and the major technologies of AI includes Expert systems, Neural networks, Robots, Fuzzy logic and it was also noted that the stages of AI literature in accounting disciplines involves the development and use of expert systems. AI also takes over the power of decision making from humans which will be a difficult job for accounting professionals.

Amelia A Baldwin, Carol E Brown and Brad S Trinkle (2006) says that AI research in auditing and accounting has been done by accounting research and most of the research involved are expert system technology, The Implementation of AI in auditing and assurance helps in proper decision making. Some of the expert systems have been in use such as ADAPT, Deloitte Touche's Audit planning Advisor, Price waterhouse planet. Most of these systems helps in risk assessments.

Jaixin luQingyun Meng (2018) found that the implementation of AI in the field of accounting lacks experience at the beginning stage and it involves huge investment which yields lesser return. Many company's mainly focus on short term profit which is one of the main reasons they stop adopting AI and also suggest that universities should give proper education to the graduates so that they come up with adopting new technologies in the mere future.

ICAEW, IT Faculty says that the impact of AI in the future, understanding the technology and implementation of these technologies in accounting plays a vital role and it was found that machine learning produces accurate results which changes in the capabilities of an organisation. In order to adopt the AI in accountancy, accountant should try to learn skills in the areas of technology and data. It should also give prominence to soft skills, critical thinking and adaptability. Milklos Vasarhelyi & Alex Kogan (2016) found that expert system continuous to play a important role in the work of accountant. They assist less skilled practioners in handling routine as well as complex tasks; they can be used as proper decision tools by the financial experts, auditors and individual companies.

Cindy Greenman (2017) says that the implementation of AI technology in auditing and accounting field where new software helps the accountants to do the work easily. The latest evolution of products of products are cloud based such as quick works online which will be a part of book keeping task for business, cognitive technology facilitates the auditors to automate those task that have been done manually by humans

### **OBJECTIVES OF THE STUDY**

- a. To map the growth of AI in the field of accounting
- b. To analyze the impact of AI on accountants.
- c. To understand the Limitations on the implementation of AI in accounting.

### **SCOPE AND LIMITATIONS OF THE STUDY**

The study limits only to implementation of AI in the field of accounting and to analyses the growth and problems faced by the industries on the implementation of AI and information gathered is purely based on the secondary sources.

### **GROWTH OF AI IN ACCOUNTING**

AI helps to recognize the down trend, where humans cannot do it. If AI based software already catalogs entries for human only to check there is significant time savings and reduce the error. This helps humans to perform high skilled and interesting tasks.

- a. Individual learning: AI software uses more than 65 data points in order to review the receipts and invoices. It also checks the calculations and verified whether the issuer is correct with all the details which include value added tax identification numbers. When the software has learned to handle the supplier, activities are handled automatically. So AI helps to self-learn and constantly improve its ability to allocate information. Even the customers can check their billing and expense data through online whenever it is required.
- b. Automatic Check: Smacc is a developing AI implementation to help the further automate and streamline bookkeeping task which reduces the work of accountants. Cloud-based accounting software packages such as quick books which has already automated by 80%. Professional accountants have to keep a track of receipts and provide accounting reports. They also act as consultants who advise on tax planning, operations, review client goals etc.
- c. Developments of bots: bots are already adopted in many industries. According to Deloitte's 2015 survey of global business leaders, automation is a top software priority. Transactions to be automated are account payables, travel expenses, fixed assets, general ledger, financial reporting, payroll. Drones and robots could be an accounting digital assistants of the near future by completing more predictable accounting task.
- d. In overall accounting department will be trimmed down and the employees will more focus on strategic and value added incentives like process improvement, cost control and capital optimization.
- e. Large quantity of data: AI can process huge amount of data more than humans where the results will be more accurate. Algorithms help to make good decision making which will be more consistent and better than experts.
- f. Difficult and changing patterns: AI can pick up weaker or more complex patterns in data than humans. Machines may be better in environments that can be found less predictable.

### **IMPACT OF AI ON ACCOUNTANTS**

AI has reduced the job of an accountant. But still without human nothing cannot be done. Professional accountants should upgrade their skills and knowledge's and have to adopt to the latest technology. AI is expected to create 2.3 million jobs by 2020, replacing the 1.8 millions of employees. AI systems will demonstrate at least some of the following behaviors associated with human intelligence such as planning, learning, reasoning, problem solving etc.

- a. Productive and efficient: accounting professionals can adopt automation for unnecessary and repeatable task to save time and assist more clients. This process will reduce the billing hours and helps to keep more productive.
- b. Innovative: Accounting industry has always been solution oriented. New technologies may show new problems and will ask for new solutions. As an industry proper training has to be given to the professionals in order to over come with the advancement of new technology
- c. Decision oriented: AI simplify the operations, but the analyses of data will in the hands of professionals.

Making decisions based on data will create demand for accounting professionals, so that it creates more employment opportunities for accounting professionals.

### **LIMITATIONS ON THE IMPLEMENTATION OF AI IN THE FIELD OF ACCOUNTING**

- a. Managers don't understand latest technologies: For those professions that require the specific methodologies, information analysis, report preparation, and many cumbersome processes (i.e. bookkeeping, transaction coding, etc.). But it difficult to understand the technologies where the professionals lack skills and they never try to adopt the new technologies.
- b. Technologies have been oversold in the marketplace: some of the top rated companies such as deloitte, KPMG purchased the technologies for the making themselves to adopting themselves into new technology. The latest technological products are more "cloud" based, such as the QuickBooks Online, where they are highly sold into the market.
- c. Lack of experience in the initial stage: the implementation of automation technology is more extensive and the implementation scope is only at the level of financial reporting. It has not entered to the core areas of accounting such as financial experts and it has not much influence on the change of accounting standards. The implementation of AI in the accounting industry is still in infancy stage and lacks of experience have bought lot of difficulties to development of AI.
- d. Huge investment and slow return: in order to adopt the AI in the accounting field, it is necessary to design a unique AI system that should be according to the rules of an enterprise. After the introduction of new technology, it is necessary adjust the manpower and the daily operation mode of an company. Once the Accounting Information System is completed, proper training should be given to the employees. Due to these features of intelligent systems, enterprises need a large amount of resources in the initial stage and many enterprises may focus on short term profits instead of making strategic adjustments.
- e. Lack of Accounting Personnel Training Program in Colleges: most universities have organized relevant courses in computerization of accounting. As it is influenced by many internal and external factors, there are some problems such as the improper contents of courses, the lack of link between theoretical knowledge and practical implementation, and the difficulty of forming scientific computerization system, where the requirements cannot be fulfilled at times. College graduates are the main force of the accounting field in the future.

### **FINDINGS**

- a. Machine learning is slowly merging into business and accounting software. As a result many accountants will be experienced with machine learning without realizing it.
- b. AI helps to make appropriate decision making with accurate results with less time and cost.
- c. Implementation of some of the software packages helps the industry to prepare their financial reports with less time consuming
- d. Drones and robots could be the accounting digital assistance for performing accounting tasks which is a recent trend in AI
- e. Professional accountants need to concentrate more on their cost control, capital optimization, objectives, and bringing new changes in the procedure of accounting.
- f. Small company who is willing to earn profit in short term could not adopt AI tools.
- g. AI creates jobs for 2.3 million by 2020 and companies will be occupied with the employees with highly qualified professionals.
- h. Lack of proper training is given to the employees since AI is highly expensive and involves huge investments.
- i. Lack of co-ordinations between the universities to include the content of AI in the syllabus. So next generation will be without a knowledge of AI.

### **CONCLUSIONS**

The implementation of AI technology in the accounting field is an developing trend, which will bring dynamic changes and development to the accounting industry. Accountants, as expert and as a decision makers, use both ways of thinking – they apply their knowledge to specific situations to make good and sound decisions, but also make quick productive decisions based on extensive experience in their field. Accounting roles are already

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changing in according to new capabilities in data analytics. In turn accountants are well placed to work effectively with data analytics, as they combine high levels of data with strong business awareness. These trends will accelerate with AI. Some roles will continue to emphasize technical accounting expertise and human deals with the difficulties of AI. Other roles such as increase collaboration or outsource to help them derive the right meaning from data and models. There will also create new jobs. In addition to skills, accountants may need to adopt new ways of thinking and acting in order to make the most of machine learning tools.

**REFERENCES**

- Odoh logines chukwudi (2018) “AI in Accounting firms” Research gate publications.”
- Daniel E Oleary & Robert (2017) “The impact of AI in accounting work expert systems use in Auditing & tax.”
- ICAEW Thought Leadership (2017) “AI and the future of Accountancy.”
- Jiaxin Luo (2018) “Analysis of the impact of AI Implementation on the Development of Accounting Industry, open Journal of Business and Management.”
- Cindy Greenman (2017) “Exploring the impact of AI on the Accounting profession Journal of Research in Business, Economics and Management”.
- Des Yanien “ AI and the Accounting Profession in 2030”
- Haven EE. 1998. “The fuzzy multicriteria analysis method: an implementation on NPV ranking. International Journal of Intelligent Systems in Accounting, Finance and Management.”
- C.R.Kothari (2016) Research Methodology.
- Griffin O. “ How AI will impact accounting. Economia; 2016.”
- Amelia A Baldwin, Carot E Brown and Brad S Trinkle (2006) “Opportunities for AI development in the accounting domain”

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**A REVIEW STUDY ON ROLE OF GEN Z IN THE EVOLUTION OF INDUSTRY 4.0**

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**ABSTRACT**

*Workforce today is made up of as many as four generations with multiple demands and ever-declining levels of engagement. Since 2015, Gen Z has been active into the workforce. And as they do, they're bringing changes. Not only will they challenge the way we work and create new demands in the labor force—which already consists of four generations—but they are also colliding with millennial, who now balance more than half of the working population.*

*Gen Z is the most ethnically diverse and technologically knowledgeable generation. Gen Z has a informal, individual and straight way of communicating, and social networking is a vital part of their lives. They are a Do-It-Yourself generation. The Gen Z will step a foot in the companies in the Upcoming years but little is known of this generation about their characteristics, needs, attributes and work style. They seem to have different attitudes towards work than the previous generation. Without proper understanding of this generation, organization will find complications to hire and retain them for the sustainable growth of the organization. By understanding them, the companies can asserting what can impact their recruitment and retention success through paying attention to what this generation indicate in the workplace. The growth of Industry 4.0 technologies—from robotics and the internet of things to artificial intelligence and cognitive—has transformed the nature of work. In this paper, we observe the characteristics and preferences of the Gen Z from the existing literature so that organization can anticipate and build work place appropriate for them which in turn impact the organizational performances in this industry 4.0*

*Keywords: Gen Z, Millennial, Industry 4.0*

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**INTRODUCTION**

The new generation coming to light in the workforce in industry 4.0, the Gen Z also known as the I Generation, was born after 1995 to 2000. Business have been so highly concentrated on analysing out how to attract and develop the millennial workforce. That, many failed to observe an important new evolution. The next generation of workers has officially entered the workplace with technology at their fingertips. The Z Generation represents the greatest generational shift that the workforce has ever seen. This generation presents great challenges to HR leaders, educators and all in the workforce. India, in 2015 had the worlds largest Gen Z force of 256 million. It had the highest share of the youngest workforce behind the Philippines and reflects the young and growing population of the Gen Z workers in India. The characteristics of this generation are unique and exclusive, which could be properly utilized for an effective and productive upcoming workforce. They are the most officially educated generation in history, they are the first global and most technologically literate generation who think in hyperlinks multi-task and absorb information from multiple sources. They are well networked, more effectively present, extremely broad mindedness handled by greater exposure to digital media and spend significant time on social networks than the earlier generation. The digital native generation is constantly use different media simultaneously. Changing the work place is natural for them and ready to switch jobs without compromises as they do not prefer to be stuck at one place

In Indian circumstance, companies that search upcoming managers into their companies for a particular set of skills and abilities. An attempt should be made to train and teach the Gen Z managers based on the curriculum that pays attention to the development of executive skill is required in the actual job market. The researcher focuses to draw attention to the job-related characteristics, the attitude and desire towards work of the Gen Z managers. it is important to recognise the talent from the Gen Z and realize their benefits to sustain the growth of the company.

By understanding the characteristics and the preferences of the Gen Z. Groom them to become the future leader of the company. Without this paper understanding companies will find difficulties in engaging and retaining the best talented candidates of the Gen Z and will also fail to motivate and inspire them in turn will impact the organization performance.

**REVIEW OF LITERTURE**

**Meera Mathur & Shaheema Hameed** in their paper ,

The Gen Z of India include 20.1% of the total population is predicted to bring about a drastic change in the upcoming workforce. By the end of this decade, the workplaces are attacked to grasp various differences to

make use of the definite advantages. This generation will bring to the productivity levels and faces of organizations worldwide. They research paper tells that the behavioural ability of the Z Generation which can be mapped to develop the managerial skills that are potential in their multi-tasking and technologically understanding abilities.

**Brkljac, M[ilan] & Sudarevic, T[omislav] (2018).** Sharing Economy and Industry 4.0 For today's markets, dominated by new types of technologies, execution of the principles of the "Industry 4.0" provides competitive advantage. Production processes work toward automation and decrease of the work performed by humans. On the other hand, sharing economy is the increasingly represented form of the exchange in the leading world economies. Its roots are grounded in innovations and technologies that were brought by „Industry 4.0“. It contributes to their perception of such environment that will bring restructuring of the workforce, employees and the customers. Understanding the relationship between the sharing economy and the "Industry 4.0" will provide the capacity to gain the principles that could lead to these changes, while the conducted research of the behaviour of millennials in relation to the sharing economy will provide a possible way to understand their role in the "Industry 4.0".

### **OBJECTIVES OF THE STUDY**

- Understanding the characteristics of Gen Z.
- Gen Z perspective in their work place
- Gen Z role in the evolution of industry 4.0

### **CHARACTERISTICS OF GENERATION Z**

Gen Z is a casual individual and straight way of communicating, social networking is a required part of their lives they are a Do-It -Yourself generation In the study conducted by Dan Schawbel Gen Z tend to be more entrepreneurial, trustworthy, tolerant and less motivated by money than Gen Y. they are more realistic about their work expectation and confidence about their future. Gen Z tend to be impatient. Instant-minded with a high dependency on the technology and low attention period. Independent, self-directed. Most demanding, greedy, possessive and qualified generation so far.

1. Gen Z are technologically advanced and knew how to use a smartphone from an early age
2. Gen Z population have never seen the world left without the internet. texting and messaging on mobile apps or online platform, sometimes even over in person face-to-face communication
3. Another characteristic of the Gen Z population is that they grasp plenty of new information every day. Gen Z kids extend many hours a day in social media or searching the internet for information
4. Being independent self-confident and freedom is also some of the key characteristics of Gen Z, they do not depend on their parents as much as previous generation did. The reason is that technologies allow Gen Z to start earning money at a very young age than their parents and also they think that their future jobs is derived from their hobbies
5. Gen Z are environmentally aware they value the eco-friendly and healthy lifestyle much more than any previous generation. Maybe this generation will absolutely have a positive effect on the environment
6. Multitasking is also one of the positive quality of Gen Z. Due to their extraordinary ability to process and grasp lots of information within seconds, Gen Z kids can easily handle several tasks at once.

### **PREFERENCE OF GEN Z AT THE WORKPLACE**

As preferences of work and workplace are different when compare to Gen X, Y And Gen Z, it is critical to understand the preferences of the Generation Z so that proper way of communication is recognized and good environment is created in the organization. It is also important to recognise what motivates Gen Z for the organizational productivity.

- They choose clarity, self-support, flexibility and personal freedom which are natural characteristics of Gen Z work ethics and ignoring them could result to irritation and discouragement among they colleagues, reduced productivity, low confidence and a lack of employee engagement. They expect to be informed, to be allowed, to be responded, and to have their responses heard and respected.
- They should have enough independence to prove themselves and earn immediate recognition. And this generation has never lived in a world without a smart phone or an iPad, they expect not to lose all these gadgets when they going to the office.

- They wish in face to face communication and want to take them seriously. They prefer the managers to listen to their ideas and value their opinions. It indicates that the workplace should be less about age and more about ideas and offering. they also want to work for an honest leader and want them to be open and do not hide information from them because of their young age
- They choose working environment should be learning and professional development opportunities as they believe their education has not given the required skills to deal with the real-life problems. Work place that encourage their entrepreneurial skills, work environment which is friendly and allow them for their flexible plan are the qualities that the Gen Z looks for a job. Technology is the necessary part of their lives and prefer organizations is an important activity workplace that supports and allow them to communicate
- They prefer office workplace that is easy to adjust within. And they work for a leader with honesty and sincerity They desire to work for an organization that signify straightforward relationship with community and social responsibility.

### **INDUSTRY 4.0 SKILLS TO SUCCEED**

Businesses increasingly need to have a strategy and advantages of the right technologies. In the environment of industry 4.0, we see the increasing importance of digitalization to over come the effective physical world

Some of the following life-changing technologies in digitalization influencing industry 4.0 are

1. Virtual reality
2. Advanced Robotics
3. Additive manufacturing
4. Cloud computing and IOT
5. Data security
6. Artificial intelligence
7. Automation of intelligence through machine learning and big data
8. Autonomous system
9. Blockchains
10. Genetics and Nano Technologies

With advancements and development of new technological, one of the biggest challenges for countries and organizations is having the right talent. In the world economic most of the current in-demand opportunities or specialties in industry did not exist a decade ago. The report highlights that the biggest change in the employment is technological. In Gen Z we are observing a fourth dimension of job satisfaction. They will likely find satisfaction in motivating, networking, conflicting and lead to teamwork participation with other generation.

Industry 4.0 is exerting force on advancement in medical technology, almost secure life prediction in the developed world to give way to 100 years. This means that the people have to work for 60 to 65 years if they enter the work at 25. To guarantee the decades of productivity, Gen Z workers will have to keep their skills applicable, non-stop, learning, improves their ability and develop new skills.

### **ROLE OF GEN Z IN WORK PLACE**

Gen Z has noticed millennials facing difficulties in financial stability so they are more careful in choosing education and career path as there is a lack of job and financial security has effected millennials to slowdown their life events such as purchasing home and starting families. Gen Z may be more loyal toward security and money. This is a practical generation — they care about creating a difference but they are ultimately motivated to make sure that they have a secure life outside the work. Gen Z also finds out that there's a need for continuous skill development in order to stay connected. Their parents taught them the value of working hard, and that no one will hand them their success. This Gen Z is willing to work hard, but they expect more to be rewarded for it.

1. Gen Z Is Motivated By Security
2. Gen Z Wants Independence

3. Gen Z May Be More Competitive
4. Gen Z Will Multitask (More Than Millennials)
5. Gen Z Is More Entrepreneurial
6. Gen Z Want To Communicate Face To Face
7. Gen Z Are True Digital Natives
8. Gen Z Want To Be pamper

The millennial employees were easily inattentive, always texting and social media, just wait until you start working with Gen Z! These young people have continuously lived in a connected world, and they are used to non-stop updates from plenty of apps. These future entrepreneurs can make great employees. They are likely to grasp as much knowledge as they can and take on many different challenges to run after their goal of starting their own company in the future. This generation start working on a document in the afternoon and open it on their phone on the way to home they pull their laptop again while watching TV. They don't have as much of a cruel work pressure between work and home, this could change the workplace even more in the coming years.

### **METHODOLOGY**

It is the secondary research paper as we have reviewed from the above mentioned articles and tried to understand the nature and role of GEN Z better as they are the future workforce to explore INDUSTRY 4.0.

### **CONCLUSION**

Changes brought by the industry 4.0 will require increased training for the future workforce. Gen Z seems to have different requirements and motivating factors than the earlier generations. As they making waves that have not fully realized by the business world still. This generation will move its own unique needs upon the workplace as they enter the organizations. It is important for the organization to find out what is important to the Gen Z in advance to boost attractiveness within and outside the industry in order to acknowledge a corporate culture and workplace to gain special advantage in the search for top talent employees from the Gen Z which in turn will sustain the organizational growth and remain a winning organization throughout. One thing is certain. Among the Gen Z we will see members upcoming with great success. The wave of industry 4.0 to become the next Rockefeller, Jobs, Musk or Zuckerberg of their generation.

### **REFERENCES**

- Brkjac, M. (25 10 2007). sharing economy and industry 4.0. *DAAAM international symposium*. Vienna, Austria: DAAAM international.
- Mathur, M. (september 22-24 2016). A study on behavioural competencies of the z generation. *international conference on management and information system* (pp. 63,64). MLS university.
- Singh, D. A. (feb 2 2006). understanding the generation z the future workforce. *south asian journal multidisciplinary studies*. Amarkantak ( M.P): university multidisciplinary research institute pvt.Ltd.



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**ENGAGEMENT OF TECHNOLOGY IN FINDING THE EFFECTIVENESS OF HRIS TOOLS IN INDIAN B-SCHOOLS**

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**ABSTRACT**

*In the digital world, people are resistant to change. The digital technology has grown so much that people use the information technology in all their activities. The current research was conducted to understand the extensiveness of the usage of technology in the educational sector. It is understood that there are ample no of tools (off the shelf or customized) that are available to be used in the educational institutions. For the current study, the researcher focussed the study towards the B-Schools in India. The respondents were from various B-Schools across India. The study was to understand the effectiveness of the Human Resource Information System tools in Indian B-Schools.*

*Keywords: Information Technology, HRIS, B-Schools, TAM Perceived Usefulness,(PU), Perceived Ease of Use (PEOU), Attitude towards use (ATU), Behavioral Intention of Use (BIU), Actual System Use (ASU).*

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**INTRODUCTION**

Human Resource Information System (HRIS) is an application tool related to Human Resource database which includes a customized database of employees in an organization – be it personal data of the employee, skill sets, compensations and benefits, loan details, leave details, or any other. HRIS is a system not only used to acquire, store, handle, analyse, sort, distribute, relevant information concerning human resources in an organization / institutions, but also includes individuals' procedures, and policies and necessary data to manage HR functions. This has led to inexorable development of the usage of the HRIS tools. In order to concentrate more on the strategic enterprise of the organization, the HR department takes necessary measures to efficiently handle all the functions of the HR department. An HRIS serves two major purposes in organizations - One relates to administrative and operational efficiency and the other to its effectiveness of usage.

The main purpose of an HRIS tool is to improve the efficiency with which data of employees and human resource activities are compiled and stored in the repository. Many human resource activities can be performed more efficiently and with less paperwork if automated and better information is available. Second purpose of the usage of an HRIS tool is more strategic in nature and related to human resource planning. Having accessible data enables human resource planning and managerial decision making to be based to a greater degree on information rather than relying on managerial perceptions and intuitions. The success of any organization in a complex and changing environment depends largely on the efficient management of its human resources. For a long term strategic planning decisions, it should be aligned with a well-defined HRIS tool. The different core subareas of HRIS include personnel details, payroll details and reporting details. An integration of Human Resource Management with Information System that incorporates technology helps managers to perform the HR related functions in an effective and systematic way. The system does acquire, store, manipulate, analyse, retrieve and distribute pertinent information regarding human resources. To make necessary decisions, the HR managers and the line managers require necessary Human Resource information. This information will be regarding the Job, Position and People. The HRIS system focus on these 3 modules for information related to the same: **Information related to Job** - performance planning and review, succession and planning, job facilities administration, training and development, occupational safety and health. **Information related to People:** recruitment, selection and placement, termination, holidays and leave administration, career development. **Information related to Positions:** job descriptions and personal profiles, work design, organization structure, employment terms and conditions, payroll administration, remuneration management. The various reasons for HRIS tools to be used in the organization or any institutions are the increased competitiveness by improving HR practices, produce a greater number and variety of HR operations, shift the focus of HR from the processing of transactions to strategic HRM, make employees part of HRIS and reengineer the entire HR functions.

India faces critical human resource shortages because of the lack of comprehensive, reliable and up-to-date data and an absence of commonly agreed definitions and analytical tool. The study here points out the need for a national HRIS framework to move all states to a web-based platform with common technologies and data structures. The study also suggests the need for building in-house technical capacity for developing, deploying and maintaining the system.

## LITERATURE REVIEW

According to **Maryam Alavi (1992)** and **Patricia Carlson (1992)**, the study indicates the external environment, organizational environment, technological environment attributes to the orientation of management. As information becomes more prevalent in organizations and societies, care needs to be taken in order to retrieve the relevant data according to the requirement of the functional departments.

**Raymond McLeod JR, Gerardine DeSanctis (1995)** in their study mentions that HRIS is the most recent in a progression functionality oriented information system, which reflects the trend towards end-user computing. The study emphasises on the usefulness of the research-flow approach which reveals the strengths and weaknesses of the current status of the HRIS. The indication of good environment within the firm of the HRIS is the large number of firms that engage in formal, long range information planning. As the HRIS does a better job of providing management with information about people and their jobs, it will solidify its position in the firm as a valued information system.

**Parbudyal Singh and Dale Finn (2003)** in their study relates to various challenges and prospects of HR department because of the usage of the HRIS automated system in all the functional aspects of HR.

**Sharon Pande, Preeti Khanna (2012)** technology has been instrumental in transforming the field of Human Resources in delivery, support and management of HR processes in an effective and efficient way.

**Zachary R. Steelman, Bryan I. Hammer, Moez Limayem (2014)**, in their research made studies to examine the Technology Acceptance Model (TAM) and the expectation disconfirmation theory (EDT) to explore the potential difference in demographics, psychometrics, structural model estimates and measurement invariances.

**Kamilah Kamaludin<sup>1</sup>, Kamil Zaki Kamaludin (2017)**, mentions in their research article that the objective of their study was to user acceptance, lack of acceptance instigated by resistance were investigated to know and understand the low levels of system usage. The main issue in information management is to ensure that the right person uses the relevant information in a timely manner.

## STATEMENT OF RESEARCH PROBLEM

The process of measuring the effectiveness of HRIS tool in Indian B-Schools was developed through research questions, setting hypotheses and analysis. The intellectual evolution of Human Resources Development with the introduction of Information Systems has taken the HR Department to greater heights today in terms of effective functioning of the department; establish the administrative and the strategic focus of HRD.

## OBJECTIVES OF THE STUDY

The HRIS tools used in B-Schools of India can be evaluated and analysed for its effectiveness by having an explicit understanding of the context of individuals and groups which consequently comprehend, interpret, use and engage with the technology.

Based on this view the following objectives have been framed for the study:

- i. To understand how the Perceived usefulness (PU), Perceived ease of use (PEOU), Attitude toward using (ATU) and the Behavioral intention to use (BIU) of the HRIS tool (according to the Technology Acceptance Model –TAM) is enhancing the standard of the actual usage of the system.
- ii. To study and understand the proportion of people in various B-schools of the country who easily familiarizes with the usage of HRIS tools for their activities.

## METHODOLOGY

### Sampling Design

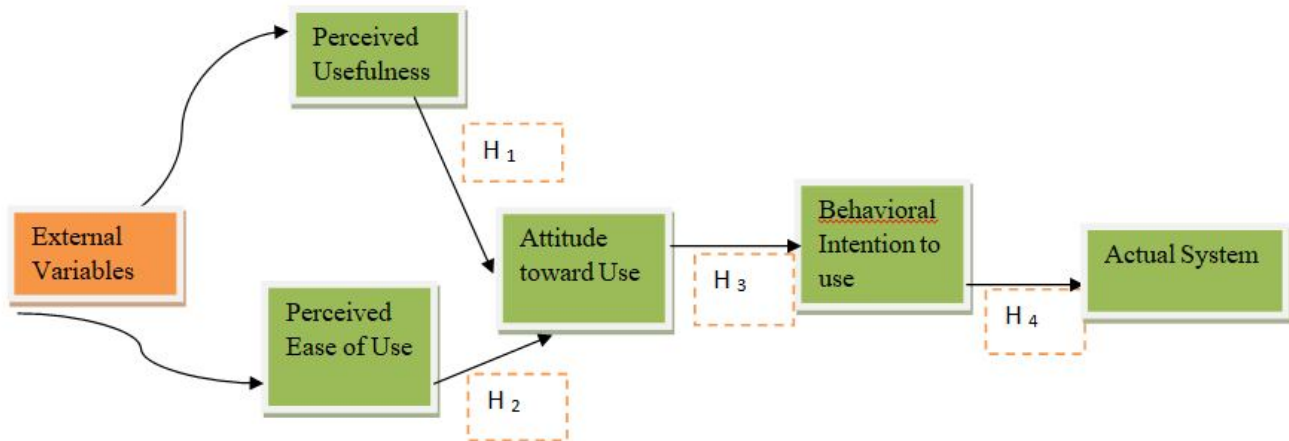
The sampling design used for the study is the Convenient Sampling. The convenient sampling is also called the availability sampling that relies on collection of data from the population that are available conveniently. For the current study, Facebook questions / polls were used to collect the data. From the existing numerous B-Schools in India, 81 B-Schools responded from different zones which is the convenient sampling made.

## HYPOTHESIS

**H<sub>0</sub>:** Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Towards Change (ATU), and Behavioral Intention for Use (BIU) do not influence Actual System Usage (ASU)

**H<sub>1</sub>:** Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Towards Change (ATU), and Behavioral Intention for Use (BIU) influences Actual System Usage (ASU)

**Based on the Hypothesis the following model has been adopted**



\*Source: The researcher adapted the TAM model to set the Hypotheses for the study

## DATA ANALYSIS

### Correlation

Correlation is the technique used to test relationship between quantitative variables or categorical variables. In other words, it is a measure of how things are related. The study of how variables are correlated is called correlation analysis. The most common correlation is the Pearson's Correlation Coefficient. It is used to test for linear relationships between data.

Applying correlation test to the current study, as per Technology Acceptance Model (TAM), the different constructs are Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Towards Change (ATU), and Behavioral Intention for Use (BIU). The analysis done here is to check if there is a positive correlation between various constructs mentioned or not. The data is said to be of high correlation if they are strongly linked together.

Table-4.5.1

Variables	Coefficients (r)	Significance(p)	Result
PU	0.313**	0.000	Significant
PEOU	0.354**	0.000	Significant
ATU	0.292**	0.000	Significant
BIU	0.325**	0.000	Significant

\*\*. Correlation is significant at the 0.01 level (2-tailed).

### RESULT

The result of Table 4.5.1 indicates that there is correlation between the independent variables Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude towards Use (ATU) and behavioural Intention towards Use (BIU), and the dependent variable – Actual System Use (ASU) by the parents and students. The result of Pearson's correlation indicates that the independent variables or constructs showed significant influence on Actual System Usage (ASU). The test showed that the score of Pearson Correlation Coefficient as 0.000 which was statistically significant at 1 percent level significance. Therefore, the null hypothesis is rejected and the alternate hypothesis is accepted. The results suggested that all the four constructs act as significant influencer of HRIS tool towards Actual System Usage (ASU).

### Multiple Regression Analysis

In addition to the Pearson correlation test, multiple regression analysis is also conducted to evaluate the role of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Towards Use (ATU) and Behavioral Intention towards use (BIU) as predictors of Actual System Usage (ASU) of the HRIS tool. The summary of the result shows the correlation between the independent and dependent variables as shown below:

The summaries of multiple regression model with respect to PU, PEOU, ATU and BIU as predictor of ASU of HRIS is presented in the following table:

Table-4.5.2: Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.488 <sup>a</sup>	0.238	0.23	0.645

**Predictors: PU, PEOU, ATU and BIU**

The above regression table shows the relationship between the dependent variables of HRIS tool and independent variables PU, PEOU, ATU and BIU of users - parents and students.

The result reveals that there is degree of association between the dependent and independent variable. The results of the above test show that the coefficient of determination i.e.  $R^2 = 0.230$  and R (correlation coefficient) = 0.238, hence it is proved that there is a relationship between the dependent and independent variable. This shows that the HRIS tool increases the Actual usefulness of system among the parents and students.

**Fit of the Regression Model by ANOVA**

The significance of the regression model is tested by ANOVA. The ANOVA for the regression model is given in the following table:

**Table-4.5.3: Fit of the Regression Model by ANOVA**

Model		Sum of Squares	Degrees of Freedom	Mean Square	F	Sig. (p)
1	Regression	62.912	1	12.582	30.213	0.000**
	Residual	201.569	8	0.416		
	Total	264.482	9			

\*\*1% significance level

**Predictors**

- Predictors:(Constant), PU, PEOU, ATU and BIU
- Dependent variable: ASU.

From the result of the above table, it is shown that the regression F-ratio shows a measure of how much the model has improved the prediction of the outcome compared to the level of inaccuracy of the model. The F ratio is 30.213. The observed p value is 0.000 which is much below the critical p- value of 0.01, hence the null hypothesis is rejected and the alternative hypothesis is accepted. The result of the ANOVA test implying that the model is reliable to predict the PU, PEOU, ATU and BIU on ASU of HRIS.

**Coefficients of Regression Model:****Table-4.5.4: Coefficients of regression model**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.312	0.151		8.665	0.000**
	PU	0.088	0.021	0.181	4.146	0.000**
	PEOU	0.092	0.026	0.162	3.491	0.001**
	ATU	0.086	0.024	0.167	3.613	0.000**
	BIU	0.076	0.023	0.145	3.281	0.001**

\*\*1% significance level

\*5% significance level

a. Dependent Variable: ASU

The  $\beta$  value explains the relationship between PU, PEOU, ATU, BIU and ASU. The result of the regression analysis shows that there is a strong positive relationship between the dependent and independent variable whereas the PEOU ( $\beta = .092$ ), PU ( $\beta = .088$ ), ATU ( $\beta = .086$ ), BIU ( $\beta = .076$ ), are predictors and influence the users to use HRIS tool. Further the results show that the PEOU has a highest influence on ASU followed by PU, ATU and BIU.

**CONCLUSION**

The main issue in information management is to ensure that the right person uses the relevant information in a timely manner. Without this aspect of user acceptance, any new IS will be utilized merely superficially, mostly as a means of storing data electronically, which will hinder its maximum potential from being explored. And also it is the most important functions of the HRIS is to facilitate HR planning by enabling organizations to better match and utilize their organizational talents and skill sets. In addition to HR planning, the HRIS enhances HR efficiency, provides cost savings, decreases substantial administrative burden on HR staff, and enables HR professionals to become strategic business partners in organizations. Hence it is proved that the HRIS tool is accepted by the users and also the users are ready use this technology in the future also.

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**REFERENCES**

- Buzkan, H. (2016). The Role of Human Resource Information System (HRIS) in Organizations: A Review of Literature. *Academic Journal of Interdisciplinary Studies*. doi:10.5901/ajis.2016.v5n1p133
- Dr. Mohinder Chand, D. M. (2013). Human Resource Management in Hospitality Multinational Enterprises: An Empirical Analysis. *IOSR Journal of Business and Management*, 10(4), 17-28. doi:10.9790/487x-1041728
- Heinrich, R. (2014). Predicting the Mutual Performance Impact between Business Processes and Information Systems. *Aligning Business Processes and Information Systems*, 111-132. doi:10.1007/978-3-658-06518-8\_8
- Kamilah Kamaludin1, Kamil Zaki Kamaludin (2017). *International Review of Management and Marketing*. doi:10.32479/irmm.6983
- Murphy, F., Seddon, P., & Staples, S. (2000). Testing Hammer and Stanton's Reengineering Success Diagnostic. *Australasian Journal of Information Systems*, 7(2). doi:10.3127/ajis.v7i2.277
- Pande, S., & Khanna, P. (2012). Leveraging Human Resource Information Systems: Alignment of Business with Technology. *International Journal of Computer Applications*, 56(3), 22-29. doi:10.5120/8872-2851
- Singh, P., & Finn, D. (2003). The effects of information technology on recruitment. *Journal of Labor Research*, 24(3), 395-408. doi:10.1007/s12122-003-1003-4
- Steelman, Z. R., Hammer, B. I., & Limayem, M. (2014). Data Collection in the Digital Age: Innovative Alternatives to Student Samples. *MIS Quarterly*, 38(2), 355-378. doi:10.25300/misq/2014/38.2.02

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**A DISCOURSE ANALYSIS OF THE DEVELOPMENTAL POLICY IN THE STATE OF PUNJAB, INDIA**

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**ABSTRACT**

*This study is an epistemological enquiry into the definition of 'development'. The introduction of new technologies by the state perpetuates the dominant discourse of the times. Green Revolution is one such technology that changed the paradigm of farming in the state of Punjab, India. The developmental ideology of those times paved the way for technological interventions and made the Punjab farmers the stipendiaries of the new system. But this newly- acquired technology has had many negative effects on agriculture as a whole and the Punjab farmer is negotiating these changes as was found through this study conducted in Punjab. This study seeks to critically analyse the definitions of development and the 'tokenism' of social responsibility as projected through such development by the state. The field work helps to engage with three kinds of stakeholders - viz. Farmers, Civil Society Organisations and Policy Officials, through In-depth Interviews. The analysis and theory is based on Foucauldian Discourse Analysis, specifically the notion of the 'subject' and the 'panopticon'.*

*Keywords: Social Responsibility, Social Costs, Development, Tokenism*

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**INTRODUCTION**

According to (Jodhka, 2007) Green Revolution was introduced in Punjab in order to bring (i) self- sufficiency to the country (ii) create a food basket for the country (Jodhka, 2007) (iii) a modern and scientific method of farming in order to guard against famines. The idea of Green Revolution was presented to India by the World Bank (Shiva, 1987) and was executed by MS Swaminathan, who is also known as the father of Green Revolution in India. This form of agriculture was invented by American agronomist Norman Borlaugh. Green Revolution was handed over in a packaged form to the farmers in Punjab in the year 1968.

**THE DOMINANT DISCOURSE OF GREEN REVOLUTION**

Jodhka (2007) mentions that, Punjab farmers benefitted from Green Revolution due to High Yielding Varieties of seeds that brought about an increase in production per hectare. Punjab produces 22 percent of the country's wheat, 9 percent of rice and 24 percent of cotton (Jodhka, 2007). The farmers in Punjab are affluent which is reflected in the land holding patterns (Shergill, 1986; Jodhka, 2007).

While Green Revolution was successful in some parts of India as well, it was Punjab that it primarily came to be identified with. The statistics available on different indicators of agricultural growth in Punjab are evidence that amongst all the states of India, the growth rate of Punjab was the highest during 1960s and 1980s, in the sphere of agriculture. "The annual rate of increase in production of food grains during 1961–62 to 1985–86 for the state was more than double than that for the country as a whole" (Jodhka, 2007). The percentage of High Yielding Varieties of seeds in the total area under food grain cultivation in Punjab was almost 73 % in 1974–75, whereas the all- India production was only 31 %. It rose to 95 % in 1983–85, as against the country's average of just 54 %. According to one estimate, of all the tractors owned in India, one-third was owned by Punjab farmers (Jodhka, 2007).

And since the notion of a Green Revolution was popularized by the World Bank, by making it financially viable (Shiva, 1988), it praises the achievements of the state in one of its reports, published in 2004.

Punjab is India's most prosperous and developed state with the lowest poverty rate. At the end of the 1990s, more than 94 per cent of Punjab's citizens were above the poverty line, 70 per cent were literate, 94 per cent of the six year olds were enrolled in primary schools, 72 per cent of children under twelve months were immunized, 99 per cent of households had access to safe drinking water, and the average life expectancy of its citizen was 68 years (Jodhka, 2007).

World Bank also presented that according to India's National Human Development Report, published in 2001, Punjab was ranked at the second position in terms of overall level of human development (Jodhka, 2007). The World Bank report tried to bring out the disparity in the conditions of living in Punjab as compared to other states by stating that the citizens of Punjab had achieved a certain socio-economic level that Indians in other state would not be able to achieve in their life-time (Jodhka, 2007).

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**RESEARCH METHODOLOGY**

The research methodology of this study is informed by tenets of critical theory. According to critical theory, all “thought is mediated by power relations that are socially and historically constituted, and mark ideological inscriptions on knowledge generation” (Kincheloe and McLaren, 2004).

**In-depth Interviews**

The field work comprised of data-collection in the form of in-depth interviews. According to Patton (1987) in-depth interviewing, is a form of data collection technique that researchers can use to elicit information from respondents. This technique of interviewing facilitates a well-rounded understanding of the respondents’ point of view (Patton, 1987). In-depth interviews involve asking respondents open-ended questions, and indulging in the probing- technique wherever deemed useful by the researcher (Patton, 1987).

Since this study aims at exploring the discourses of stakeholders which were found missing in the existing scholarship on Green Revolution, (as reflected by the review of literature available). A review of the literature available on Green Revolution reveals that there is a lack of scholarship that takes into account the voices of people that affected the adoption of Green Revolution as technology by the state. This hence, essentially becomes an inquiry on choice of policy by the state. The voices that have been taken into account for this purpose are those of policy makers (executives), activists and off course the farmers.

**The Stakeholders Interviewed**

(i) Farmers - A bricolage of narratives was collected from farmers interviewed and engaged in the cultivation of water-intensive paddy but are troubled by receding water aquifers. These include twenty four interviews of both landlords, who were not involved in day to day farming as well as farm labourers.

(ii) Activists- Workers of NGOs and civil society organisations were interviewed in an attempt to locate the resisting discourses. They can be clubbed under the title of activists.

(iii) Policy Officials- One of the important stakeholders to this exploration is the policy makers and people who execute these policies. For the purpose of this study, I conducted in-depth interviews officials representing policy makers. Most of who came from the functionalist paradigm as policy makers or executives and engineers. Six government officials were interviewed to substantiate the dominant discourse.

**FINDINGS AND ANALYSIS**

The findings are being presented as the discourses of privilege and resistance of all the stake holders, which are as follows:

The discourse of the farmers : Farmers may have been the stipendiaries of the Green Revolution technology , but a discourse analysis of their narratives presents discourse of resistance. The farmers are negotiating with: (i) the sale of farming land by landed *zamindars* (ii) Speculative land sales (iii) land sale since the next generation does not want to engage with farming (iv) corporatization of agriculture (v) Hoarding of food grains to negotiate higher prices.

**Skepticism towards farming as a mainstay**

The new generation, points out that it is extremely difficult to get an electricity connection. Seeing the plight of his father he is skeptical to get into farming himself, since he is facing so many problems with electricity and water supply. He adds that Foreign Direct Investments are allowed to come to Punjab, and then he can have an assured income on a month to month basis by giving it on contracts. The younger generation is more inclined towards the corporatization of farms.

**Unemployment amongst Punjabi Youth**

Due to a socio- economic and cultural connotation of being ‘Zamindars’ or land-holding communities the youth of Punjab do not engage in farm jobs as contract labour. There is a preference for non-farm related vocations, even though there are many opportunities in agri-business. Many farmers who has sold – off most of his agricultural land, aspires for his son to choose a career more adept to an urban set-up. The son of a farmer had completed his Engineering studies and was unemployed but still unwilling to work as a farmer. There is social stigma attached to working on farms. This was clear in an interview with him, where he points out that he will be considered ‘backward’ if he engages in farming. This is the reason that lakhs of migrant laborers find work opportunities in Punjab’s agricultural sector while some of Punjab’s own workforce remains unemployed. This was also observed in another village of Punjab where the landlord, did not work on his land but had employed other farm workers to tend to the crops.

With the improvement in levels of education people are not keen for manual jobs in Punjab. Agriculture is considered low-paying yet high- risk involving business, as compared to the nature of jobs that are available in urban centers, as was reflected in the interviews. The next generation of farmers in Punjab looks forward to well-paying jobs or corporatized agri-business. This is a discourse of resistance.

### **Loss of Land, Loss of Agency**

Land lords and other farm workers narrate that most of the farmers who have sold off their land have bought land elsewhere. There is a mixed sense of pride as well as loss. Most of such land which has been bought is further away from their earlier farmlands. Such landlords are no longer directly involved in day to day farming. They have given land for contract farming to farm workers and contractors. Hence, there is a change in lifestyle of farmers in villages of Punjab as they are no longer working on their lands, instead have been reduced to or in some other way empowered to become land lords. In a conversation one farmer reveals that farm land is only seen as a symbol of status that will fetch dowry when he gets married or it may be used as mortgage in case he chooses to migrate to a foreign country and take up a loan for the same purpose. The problem of farmers arises from the state's control over land and irrigation facilities.

The farmers interviewed refer to land mafia which is a term used for real estate agents who may also operate as 'land developers'. Land development is a normalizing term which is easily used as a substitute for real estate transactions. In other words, the people in villages of Punjab understand the sale of farming land for construction of buildings as 'development' of the area.

### **The role played by the policy officials- Tokenism**

The discourse of the policy officials is the dominant discourse of 'development'. Their narratives reflect the following findings: (i) maintaining the dominant discourse of Green Revolution as an idea of development (ii) the methodical approach of the Punjab Agricultural University (iii) construction of dams for development and irrigation (iv) lack of a new way of defining dark zones (v) poor supply of electricity for irrigation

### **The discourse of Civil Society Organisations**

The only stakeholders who were aware of and understood the concept of Green Revolution were the activists, who question the homogenizing discourses. While most of them were skeptical of the actual utility of the concept in a country such as India, most of their concerns stemmed from socio-technological development that is not sustainable and is ruining the environment and indigenous farm skills. Dr. Anil Gupta informed that many rice varieties had been lost due to the introduction of HYVs, which he understands is a result of 'western' agricultural practices imposed on the third world. Dr. Vandana Shiva alludes to the violent imposition of Green Revolution as a reason for terrorism in the state of Punjab. She also points out that Indian farms are experiment fields for western knowledge that are backed by supranational organizations such as the World Bank.

Green Revolution is just another moniker that is laden with hegemonic interests. Indian policies continue to be influenced by such concepts. By adopting the 'modern' western technologies of farming and the increasing pressure on farmers to produce more per acre, India has become a subject of scrutiny in the international trade discourse of food negotiation for land sales with corporate on behalf of farmers. Hence the policy officials have an ideational power over the creation of the discourse of Green Revolution.

## **CONCLUSION**

### **The Absent Discourse - farmers**

The discourse of farmers is not just misplaced but there is little evidence in the data collected to prove that there is a farmers' discourse at all. The conventions and round tables that discuss agricultural issues such as food grain production and the Green Revolution consumption are not a part of the imagination of a Punjab farmer. While they were aware of the concept of Green Revolution, the farmers did not have any knowledge about where their produce was being sold or if it was being exported or not. Hence this is a subalternisation (Spivak, 1988) of the Punjab farmer. The assumption of naturalized power roles by scientists and policymakers create a marginalizing discourse. The panoptic gaze (Foucault, 1978) created to control farmers as subjects marginalizes the farmers and they are systematically alienated from the discourse on Green Revolution. In the case of Punjabi farmers this symbolic event was the Green Revolution and the existential crisis that they face on a daily basis and that shapes the nature of their livelihood and earnings in the problem of water scarcity. Green Revolution changed the life of farmers and farming as a practice forever in Punjab. It is evident in the farming technology and the capitalist mode of food production. The narratives of farmers that have been gathered through field work showcase the effect that Green Revolution continues to have, even after forty five years of its first introduction. Green Revolution is one such event that has changed Punjab forever.



The narratives of various stakeholders help in identifying the roles that these stakeholders play in the legitimization of discourses on Green Revolution. These discourses have been identified as discourses of privilege and resistance. Hence this study seeks to juxtapose the narratives the stakeholders and analyze them by deconstructing the narratives of the stakeholders.

The farmers who are privileged, use the Green Revolution as a site to couch their discourse which is discursively contested by activists and NGO workers, to prove that the farming practices are extremely exploitative. The policy officials and executives run a system of - “constant, coded, systematic observation, run by a differentiated hierarchies” (Foucault, 1972), present a picture of maintaining the dominant discourse of development while being oblivious of international politics of supranational agencies. This was evident from the lack of knowledge of Green Revolution and the subsequent consequences that it can have on the future of agriculture or trade in India (specifically Punjab). The hydrocracy around agriculture creates a situation that supports exploitative farming practices due to bore-well irrigation, use of modern farming techniques – such as paddy cultivation, creation of monocultures, use of fertilizers and other forms of capitalistic inputs along with the other risk that is the constant shrinking due to sale of agricultural lands.

## REFERENCES

- Foucault, M. (1972). *Archaeology of Knowledge*. Pantheon Books: New York
- Foucault, M. (1973) *The Order of Things. An Archaeology of the Human Sciences*. New York: Vintage Books.
- Foucault, M. (1977) *Discipline and Punish: The Birth of the Prison*. Harmondsworth: Penguin.
- Foucault, M. (1979) *The History of Sexuality. Vol. 1*. Harmondsworth: Penguin.
- Foucault, M. (1980) ‘Truth and power’, in C. Gordon (ed.) *Power/Knowledge. Selected Interviews and other Writings 1972–1977*. Hemel Hempstead: Harvester Wheatsheaf.
- Foucault, M. (1987) *The Use of Pleasure. The History of Sexuality. Vol. 2*. Harmondsworth: Penguin.
- Foucault, M. (1988) *Care of the Self. The History of Sexuality. Vol. 3*. Harmondsworth: Penguin.
- Foucault, M. (1979). *The Birth of Biopolitics*. Eds. Michel Senellart. Palgrave Macmillan: London
- Foucault, M. (1994). *Governmentality*. (Eds) J. Faubion, *Power: the Essential Works of Foucault*. Eds. James D Faubion. pp. 200-222. London: Penguin Books.
- Jodhka, S.S. (2007) *Beyond “Crises”: Rethinking Contemporary Punjab Agriculture in Globalisation, governance reforms and development in India*, Choudhary, K. (Eds.) New Delhi: Sage
- Kincheloe, J. L., & McLaren, P. L. (1994). *Rethinking critical theory and qualitative research*. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 138-157). Thousand Oaks, CA: Sage
- Patton, Q.P. (1987). *How to Use Qualitative Methods in Evaluation*. New Delhi: Sage
- Shiva, V. (1978) *The Violence of Green Revolution: Ecological Degradation and Political Conflict in Punjab*, Penguin Macmillan: London
- Shiva, V. (1988.) *Geopolitics of Food: America's Use of Food as a Weapon*. *Economic and Political Weekly*, 23(18), pp. 881-882
- Shiva, V. (1991), *The Violence of Green Revolution: Third World Agriculture, Ecology and Politics*. New Delhi: Zed Books
- Shiva, V. (1992) *Environmental Extremism*. *Economic and Political Weekly*, 27 ( 47), p. 2564
- Shiva, V. (1994). *Conflicts of Global Ecology: Environmental Activism in a Period of Global Reach*. *Alternatives Global, Local, Political*, 19( 2), pp. 195-207
- Shiva, V. (1995), *Biotechnical Development and the Conservation of Biodiversity* (Eds) Vandana Shiva and Ingunn Moser, in *Biopolitics: A Feminist and Ecological Reader on Biotechnology*. Zed Book Ltd. : London
- Shiva, V. (2006). *Resisting Water Privatisation Building Water Democracy* (paper at) . World Water Forum, (pp. 1-22). Mexico City.
- Singh, S. (2004). *Crisis and Diversification in Punjab Agriculture Role of State and Agribusiness*. *Economic and Political Weekly*. pp5583-5589.
- Spivak, GC (1988) "Can the Subaltern Speak?" *Marxism and the Interpretation of Culture*. Ed. Cary Nelson and Lawrence Grossberg. Urbana: University of Illinois P, 271-313.

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**PROPENSITY OF ONLINE SHOPPERS: A DEMOGRAPHIC PERSPECTIVE**

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**ABSTRACT**

*Today's Internet users spend more time on their mobile apps for online shopping, rather than using traditional websites. Usage of mobile apps for online shopping has become an integral part of everyday life. Contrary, little is known about the factors that govern their usage, particularly the role of demographic factors. Understanding their target audience demographic trends help online vendors to stay ahead of the competition and develop marketing strategies based on demographic preferences. Against this backdrop, the study pursues to analyze online shopper's propensity to engage in online transactions in terms of amount spent on online shopping, purpose of online shopping and the mobile app engagement with a focus on demographic attributes. Finally, the study demonstrates inclination of online shoppers from the demographic perspective using the Chi square analysis. This study offers contributions to both academics and practitioners.*

*Keywords: demographic, online shoppers, propensity, online shopping app.*

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**INTRODUCTION**

Online shopping is becoming popular because one can get a wide variety of things at one place which is not possible in the conventional way of shopping. Consumers are reluctant to buy online, due to the increase in access to the internet via desktop and mobile. Various e-commerce platform is becoming famous and is in demand among the people all around the world, this is because millions of products are made available worldwide through the various e-commerce site. Shopping online gives an opportunity to customers to buy a wide range of products of his/her favorite brands and choices, with low prices, comparison made easier, shop the products of their choice 24/7 and 365 days, and above all less compulsive shopping. This is proved by various researchers Alba et al., (1997) opined that online shopping saves time and offers convenience, reduces the costs which otherwise would have been incurred on searching the goods (Seo & Kim, 1999), provides products at a price cheaper than brick-and-mortar store (Foley & Sutton, 1998; O'Conner & O'Keefe, 1997).

Shopping online via apps are the latest trend now at latest. Criteo survey one of India's leading performance marketing technology company revealed that 74% of participants in the survey have 2 to 3 e shopping apps on their phones. So, it is important for retailers to understand the propensity of online shoppers. There is sufficient evidence from conventional studies to support the effect demographic factors including gender, education, income, age, households, business and geographical areas at different socio-economic levels (Salomon & Koppelman, 1992) on purchase decisions, but there is less empirical evidence to support this phenomenon in online purchasing context and thus, the online consumer behaviour is an emerged as a research area (Cheung, Chan, & Limayem, 2005). Study of demographic influences on online shopping decisions has taken place since 1995 (Fram & Grady, 1997; Mehta & Sivadas, 1995; Sultan & Henrichs, 2000; Stafford et al., 2004; Punj, 2011; Richa, 2012; Rahaman, 2014).

As Online shopping is entering into a consolidation phase, there is a need for research in differentiating individual differences in usage of online shopping apps among online shoppers. This consumer demographic study can help e-retailers to make decisions based on the characteristics of the online customers. Hence, the present study aims to attain a better insight on inclination of online shoppers and the interplay of some demographic factors of online shoppers on usage of online shopping apps by customers in Bangalore city.

**LITERATURE REVIEW**

Reviews on shopping through internet have shown that customer demographics affect the purchase intentions in a significant manner (Kunz, 1997). The results of the study found that men are more likely to purchase via internet, and those who intend to shop online are likely to be young. Their study also presented that customers living in large metropolitans prefer less shopping online as compared to people who live in suburban areas. Also, Kim, Zhao, & Yang, 2008; Laforet & Li, 2005; Sabbir Rahman, 2012 identified that demographic variables such as age, gender, and level of income play a facilitating role as they influence the consumer perception and their behavior that motivates them towards online shopping. Studies by Fram & Grady, 1997; Mehta & Sivadas, 1995; Sultan & Henrichs, 2000 have testified that gender, marital status, residential location, age, education and household income are important interpreters of internet purchasing.

In a study by Donthu & Garcia (1999) on consumer characteristics connected to online shopping found that consumers who look for convenience and variety do more shopping online. Such people were also set up to be

more innovative and spontaneous. Siu and Cheng (2001) found that economic benefits, product availability, security risk were important factors in categorizing online shoppers. Mehrdad Salehi (2012), conducted a study to identify factors influencing consumers of online shopping. They identified nine variables namely attractiveness, believability, validity, originality, appearance, sitemap, quick loading, security and promotion. The findings of the study indicated that among the factors the first five factors influenced consumers online shopping and security was the factor that most influenced online shopping.

Though the significance of apps has been widely recognized, the factors leading to its usage are currently understudied. Indeed, academic research on analyzing app usage have predominantly focused on characterizing dominant usage patterns and the perspectives where usage occurs without examining the demographic factors influencing it. Most of the conventional research studies have concentrated only on impact of demographics on behavior of online shopping. Hence the present study aims to draw more insights in the area of study.

### OBJECTIVES OF THE STUDY

- To explore the influence of demographic factors on mobile App engagement.
- To find the impact of demographic factors on the amount spent on online shopping.
- To find the impact of demographic factors on the purpose of online shopping

### HYPOTHESIS

The following hypothesis were framed based on the aforesaid objectives:

H1: The demographic factors have a significant association with the mobile app engagement.

H2: The demographic factors have a significant association with amount spent for online shopping.

H3: The demographic factors have a significant association with the purpose of online shopping.

### RESEARCH METHODOLOGY

The present study uses an explanatory research that aims to examine the association between one variable with other variables. The primary data for the study is obtained using a structured questionnaire from 300 respondents who have purchased products through online based on random sampling method through google forms. The self-administered questionnaire had two parts. The first part measures the demographic profile of respondents namely gender, age, income, marital status. Second part consists of 4 questions measuring the propensity of online shoppers towards online shopping viz., amount spent on online shopping, category of online shopping, mostly use online shopping application, and the purpose of using the application. The data was analysed using Chi-square Analysis to prove the hypothesis.

### ANALYSIS AND INTERPRETATION

This part of the paper deals with analysis and interpretation of the study on propensity of online shoppers' behaviour. Suitable statistical tools were applied on the data collected from the sample respondents and is presented in the form of tables under different headings:

#### Mobile App Engagement

In order to test if there is any significant relationship between the demographic variables such as gender, Age, marital status, Income, occupation and nativity and the mobile app engagement of online shopping by the respondents. Chi-square Analysis was performed. to prove the following hypotheses:

H1: The demographic factors have a significant association with the mobile app engagement.

**Table-1: Association between demographic factors and Mobile App Engagement**

Demographic Factors	Chi-square Value	Sig	Strength of Association
Gender	3.347	0.341	0.139 (Very Weak)
Age	5.243	8.813	0.101 (Very weak)
Marital Status	3.901	0.272	0.15 (Very Weak)
Income	12.69	0.177	0.15 (Very Weak)
Occupation	4.732	0.857	0.09 (Very weak)
Nativity	9.322	0.408	0.134 (Very weak)

The above table shows that the chi-square value does not show any significant association with the mobile app engagement. It is evident that from the p values that none of the demographic factors showed significant relationship with mobile app engagement. Hence the hypothesis is rejected.

**Amount spent on online shopping**

To analyse the impact of demographic factors on the amount spent on online shopping the following hypothesis was framed and chi square analysis was performed:

H2: The demographic factors have a significant association with amount spent for online shopping.

**Table-2: Association between demographic factors and amount Spent on online shopping**

Demographic Factors	Chi-square Value	Sig	Strength of Association
Gender	2.936	0.71	0.12(Very Weak)
Age	26.823	0.03*	0.327(Moderate)
Marital Status	10.202	0.07	0.243(Weak)
Income	26.882	0.03*	0.394(Strong)
Occupation	18.396	0.242	0.18(Very Weak)
Nativity	24.939	0.05*	0.219(Moderate)

\* Significant at 5 % level

From the above table, it is evident that the chi-square value is significant with respect to age, income and nativity. Hence the hypothesis is accepted in these cases. There is a significant association between the demographic factors such as age, income and nativity and the amount spent on online shopping. With regard to the other aspects, there seems to be no significant association between the demographic variables such as gender, marital status, and occupation and the amount spent on online shopping. Hypothesis for these factors is rejected.

**Purpose of online shopping**

In order to test if there is any significant relationship between the demographic variables such as gender, marital status, age, education, occupation and income and the purpose of online shopping by the respondents, Chi-square Analysis was performed. For this purpose, the following hypotheses were framed:

H3: The demographic factors have a significant association with the purpose of online shopping.

**Table-3: Association between demographic factors and purpose of online shopping**

Demographic Factors	Chi-square Value	Sig	Strength of Association
Gender	13.986	0.016*	0.314 (Moderate)
Age	15.043	0.448	0.170(Very Weak)
Marital Status	8.778	0.118	0.205(Weak)
Income	29.967	0.012*	0.340(Strong)
Occupation	21.354	0.126	0.203(Moderate)
Nativity	18.314	0.247	0.18(Very Weak)

\* Significant at 5 % level

It is evident from the above table, that the chi square values are significant between the demographic variables such as gender, and income and the purpose of online shopping by the respondents, Hence the hypothesis is accepted in these cases. With regard to the other aspects, there seems to be no significant association between the demographic variables such as Age, marital status, nativity and occupation and the purpose on online shopping. Hypothesis for these factors is rejected.

**FINDINGS AND CONCLUSION**

The key findings of the present study are summarized as demographic factors do have considerable impact on usage of mobile app. Age, income and nativity of the respondents has a significant bearing on the amount spent on online shopping. Gender and income have a significant bearing on the purpose of online shopping. Online marketers can try to increase the amount spent on shopping and also engagement of existing customer on mobile application by offering them with more promotional offers, discounts and deals. In addition to that online vendors can think of strategies which offer products of regular use to the online shoppers via online shopping.

Those demographic characteristics that exhibited a significant relationship with the purpose of online shoppers, these factors play a vital role in profiling and segmenting online consumers. The marketers should consider such aspects which outlining their schemes for product planning, pricing, distribution and promotion. As a whole the identified associations between functions can also help developers of on line websites improve existing, and design new, products and services to satisfy customers' unfulfilled requirements.

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**REFERENCES**

- Alba, J.W. and Barton Weitz, J.L. (1997), "Interactive home shopping: consumer, retailer, and manufacturer incentives to participate in electronic marketplaces", *Journal of Marketing*, Vol. 61, July, pp. 38-53.
- Cheung, Christy & W. W. Chan, Gloria & Limayem, Moez. (2005). A Critical Review of Online Consumer Behavior. *JECO*. 3. 1-19.
- E.H. Fram and D.B. Grandy, " Internet Buyers Will the Surfers Become Buyers?", *Direct Marketing*, Vol.57, No. 10, pp. 63-65, 1995.
- E.H. Fram and D.B. Grandy, " Internet Buyers Will the Surfers Become Buyers?", *Direct Marketing*, Vol.57, No. 10, pp. 63-65, 1995.
- Donthu, N. and Garcia, A. (1999) The Internet Shopper. *Journal of Advertising Research*, 39, 52-58.
- E.H. Fram and D.B. Grandy,(1995) " Internet Buyers Will the Surfers Become Buyers?", *Direct Marketing*, Vol.57, No. 10, pp. 63-65.
- Fareena Sultan, Roy B. Henrichs, (2000) "Consumer preferences for Internet services over time: initial explorations", *Journal of Consumer Marketing*, Vol. 17 Issue: 5, pp.386-402.
- Mehta, Raj & Grewal, Rajdeep & Sivadas, Eugene. (1996). International direct marketing on the internet: Do internet users form a global segment? *Journal of Direct Marketing*. 10. 45-58.
- Mehrdad Salehi, 2012. "Differences of "Traditional Marketing" in Opposition to "Electronic Marketing","*Knowledge Horizons - Economics*, Faculty of Finance, Banking and Accountancy Bucharest,"Dimitrie Cantemir" Christian University Bucharest, vol. 4(1-2), pages 21-24.
- Siu, Noel & Mei-Shan Cheng, May. (2001). A Study of the Expected Adoption of Online Shopping—The Case of Hong Kong. *Journal of International Consumer Marketing*. 13. 87-106.
- Salomon, I., & Koppelman, F. S. (1992). Teleshopping or going shopping? An information acquisition perspective. *Behaviour & Information Technology*, 11(4), 189-198.
- Seo & Kim (1999), "An Empirical Study in the Effects of Cost Advantage in Online Transaction: Consumers' Perception of Use of Internet Shopping Malls," *Proceedings of Korean Academic Society of Business Administration*, Spring Conference, 225-234.

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**ARTIFICIAL INTELLIGENCE FOR THE INTERNET OF THINGS**

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**INTRODUCTION**

Man made brain shows the distinction between man made and natural device simply data and machines understand their own. Mankind's ambition knows no bounds. From flying in the air to walking on the moon we have come a long way in mere 60 years of modern innovation. It is surely a feat of brilliance when we talk about Who would've thought one day we will make teach it to think their own way without divine intervention of yesteryears improbability turn into devices of super works within every nook corner available in technology. Whether it be a simple chat bot that helps customers to file complaints or a supercomputer that runs analysing of path breaking experiments. Ai bots have crept into the working field in a disguise and have camouflaged themselves to appear more human than we can ever imagine. It is a scary notion to think that bots and ai simulations can not only mimic but so predict human behaviour. But that's the exact reason why their help today in indispensable.

**OBJECTIVES**

To study the importance of research activities

The aim of my study is to bring out the pros and cons and in doing so to bring into focus the giant start technology has made the consequences.

I have used the power of the language to bring out the contrast of ingenuity of artificial intelligence.

Analysis: findings of brilliant scholars and my conclusion of how far we have come since man's first invention on seeing the apple fall why?

**METHODOLOGY**

This paper studies the significance and development of artificial intelligence for the internet of things for internet innovations. After extensive desk research it is clear that appropriate training and education are essential to craft quality research. India has numerous universities and institutions offering scientific technological courses which are allied to overseas advance studies and a relative study to analyse artificial intelligence for the internet of things.

**THINGS VS MAN VS MAN MADE**

I can easily say internet has taken over civilisation a parasite that lives on human lives and social interaction thus making society co-dependent for existence. Today we dwell on the need of service knowingly or unknowingly on these ai bots. Where it will lead us only time can tell. Yes, only time will tell: and as the saying goes: time waits for no Man is a reflection man can create brainpower. authoring backbone bridges the gap its supportive applications called things. It is a mail bomb mail box mailing list mail server in other words its a mechanical human exploring brilliance has become life line intelligent motivator a being. even today sky even and technology is not bereft It is sleep stealing technology we say it is only works when nature and man manually click now world wide web www line is a vast bridge a heartbeat bringing animate invention life. but this thing keeps us the living entities awake night and day even though it is awe inspiring its something to contend with. The internet is a global communication network and the things running the computer is the brain the hardware it is the computer like man that controls the it are type 1 computers ii hardware 3 software 4 memory 5 disks 6 programming language 7 miscellaneous. These are what world wide web www does as connection to Internet cafe As the things of Internet.this businesses of integrating intelligence manually is artificial intelligence and preciseness in teaching machine learning applications; significantly in IOT. imbibing facts with insights into AI is prominent in the Internet of thingstrend investment range of manufacturing growing placements. Companies making an iot strategy assessing looking at getting values in exploring IOT

**SIGNS START UPS**

Venture capital funding and appropriations intensifying. Amazon IBM Microsoft oracle salesforce is a few vendors in iot platforms who integrate the creative ability of AI in business organisation across businesses influencing the strength of AI bringing new brain power to the efficiency of things that is what is the forecast of bringing new fun newer aids in the near future where IOT will incorporate 80 % more of the 10%

AI projects of the vital inputs of AI in the IOT have risen over three years. Nowadays proposed competences of learning-based analytics. significance of AI is detecting abnormalities draw insights from feedings to generate AI of things Examples are sounds temperature are the tools monitoring thresholds to be crossed. Learning Machine methods marks forecasts up to 25 to 30 times quicker and with better precision AI in voice and sight is a water fall in technology support and analysis empowers human needs

#### **Identifying how to evade avoidable breakdowns and avoid unplanned downtime**

Sectors like industrial production of offshore drilling of oil and gas breakdowns can bring big losses here AI plays a balancing roll because big money and life is involved

#### **Improving and upgrading smooth working**

Super computer play a big roll here with AI network and iot It also enables robots and drones to function flawlessly in enhancing risk management like cyber threats ATMs banking fraud hazardous working conditions it helps to monitor and survey public interest with the help of IOT because data deployment will be time consuming and limited and undoubtedly comprise Some years back. i had read that ARPAnet had endorsed the tcp/ip on the 1st of January 1983. Then all the world's intelligentsia joined hands and assembled the network of networks which has metamorphosed modern day arial octopus called AI1990 this entity took on the garb of www under the onus of the computer scientist Tim Berners lee. But credit for inventing the first internet goes to Robert e. Kahn vint cerf. It took man 2000 years to demonstrate how intelligently he was created. Intelligent man sleeps but the artificial intelligent man-made things never sleep. It only breaks down. Whenever there is an invention of a new tool be it the internet cell phones or smartphones or what have you it can serve for good or evil as technology is impartial it just depends on one's intentions. today computers n super computers are stress buster and stress builder. If we don't look out and rein in AI bet it can become our waterloo. It's not how smart you are that matters what really counts is how you are smart. Now artificial intelligence can't explain these two lines you need natural and live intelligence to understand and interpret it. In conclusion all i want to say is what Stephen hawking said ai is likely to be either the best or the worst thing to happen to humanity. For it is the little things that make a vital difference to the making of big things. 'Look deep into nature and then you will understand everything better'. For that is what artificial intelligence for the internet of things is all about. All praise and glory to the creator of man. Intelligent man. Shalom:

#### **CONCLUSION**

The internet of things has been gradually bringing a sea of technological changes in our daily day today lives which in turn helps to making our life simpler and more comfortable though various technologies and applications. There is lot of innumerable usefulness of iot applications into all the domains including medical manufacturing industrial transportation education governance mining habitat etc. The internet of things concept arises from the need to manage automate and explore all devices instruments and sensors in the world. In order to make wise decisions both for people and for the things in iot data mining technologies are integrated with iot technologies for decision making support and system optimization.

#### **REFERENCE**

- Tim Berners – Lee, Robert E. Kahn Vint Cerf, Stephen Hawking
- <https://www.blog.google/inside-google/googlers/vint-cerf-man-who-helped-build-internet/>
- [https://wikivisually.com/wiki/Tim\\_Berners-Lee](https://wikivisually.com/wiki/Tim_Berners-Lee)
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Liu, W.B, Wongcha A, & Peng, K.C. (2012), “Adopting Super-Efficiency And Tobit Model On Analyzing the Efficiency of Teacher’s Colleges In Thailand”, *International Journal on New Trends In Education and Their Implications*, Vol.3.3, 108 – 114.



- **Text Book:**

Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2007). *Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies* (3rd ed.). New York: McGraw-Hill.

S. Neelamegham," Marketing in India, Cases and Reading, Vikas Publishing House Pvt. Ltd, III Edition, 2000.

- **Edited book having one editor:**

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- **Unpublished dissertation/ paper:**

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- **Article in newspaper:**

Yunus, M. (2005, March 23). Micro Credit and Poverty Alleviation in Bangladesh. *The Bangladesh Observer*, p. 9.

- **Article in magazine:**

Holloway, M. (2005, August 6). When extinct isn't. *Scientific American*, 293, 22-23.

- **Website of any institution:**

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