

BIZCRAFT

Journal of
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SRMS
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RESEARCH ARTICLES

- Nice Analysis For Entrepreneurship And Innovation
- Systematic Chaos: Corporate Governance And Country Governance In India
- The Work And Workforce - An Empirical Analysis With Special Reference To India
- The Fdi And Growth Sustainability In India: An Empirical Analysis
- The Growth Of Indian Women Entrepreneurs In E-commerce
- Corporate Governance
- Government Self Employment Programs And Their Impact On Women Entrepreneurship With Reference To District Udham Singh Nagar of Uttarakhand
- Role Of Innovation And Technology In Sustainable Healthcare Delivery In India: A Conceptual Study
- Human Resource Accounting Practices: An Empirical Study Of 25 Nifty Based Companies
- Physico-chemical And Biological Characteristics Of River Ramganga At Bareilly
- Review Of Metamaterial Properties- Gain Enhancement And Polarization Control Through A Metamaterial Absorber
- The Role Of Fuzzy Logic In Interdisciplinary Study Areas Like Mathematics, Management & Engineering
- Digital Fuel Level Indicator For Separate Amount Of Fuel

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2. Abstract in around 100-150 words briefly explaining the theme of the contributed manuscript, its relevancy in contemporary management practices and research methodology, which is used for preparation of the article (if applicable).
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UP has been offering its prestigious management programme since 1996. MBA from this college is known for its quality & perfection and recognized by industries for its practical orientations. The alumni of MBA course from this college are working at leading positions in the companies of repute. The Faculty of Management Science department also conducts various value addition activities such as Campus Outreach Programmes, Management Development Programmes, Faculty Development Programmes & Interdisciplinary Seminars.

MBA from this college is ranked No 1 in the affiliating university since the beginning and awarded with Academic Excellence Awards of the university. A high degree of interaction is maintained with industries for imparting practical training. The department offers comprehensive management education blended with Entrepreneurship development, Case study, Economic policy analysis etc. Certification courses in Finance, Insurance, International Business, Project management & HR Management provides extra edge to the students of SRMS Bareilly & they are ready by to move from campus to corporate.

The department is having well equipped Class Rooms, Computer Lab, Seminar Halls, Team Rooms etc. to provide best required infrastructure for effective teaching and learning process. In order to promote research, the department publishes management journal Bizcraft (ISSN: 2231-0231,

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About Journal

Bizcraft, the Journal of Management Sciences (SRMS FMS) is a bi-annual, peer reviewed journal with national circulation.

It publishes original communications of research that advances, illuminates Management science and that educates the journal readers.

Manuscripts dealing management aspects will be considered for publication, provided. They contain results of original investigations. Articles need to be of general interest - e.g., they cross the boundaries of specialties or are of sufficient novelty and importance that the journal's readers, whatever their specialty, should be made aware of the findings.

Research papers reporting original research, review articles, correspondence on published articles will also be considered. Papers of routine nature which are merely records of interesting cases as also those dealing with modifications of routine methodology will not be encouraged.

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The SRMS FMS strongly discourages duplication/reduplication of data already published in other journals. If and when duplication is detected after publishing in SRMS FMS, the journal will be forced to 'retract' such articles.

All papers submitted to SRMS FMS are subject to peer review process. All accepted papers will be suitably edited before publication.

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Editor's Profile



Prof. Dr. Mamta Gaur

Prof (Dr) Mamta Gaur is Professor in Shri Ram Murti Smarak College of Engineering and Technology, Bareilly. She was Dean and PGP Chair in Vel tech Business School, Vel Tech University before taking up current assignment . Dr. Gaur has rich and a vast experience of 16.9 years in teaching. She is also recipient of

Teaching and Research Excellence Award – by GRABS Educational society in 2017 and Best Teacher Award in Financial Management (Vijayavani National Educational Leadership Award) in 2015 during Asia pacific HRM Congress from 11-12 September 2015.

She is also reviewer, editor and member editorial Board in various prestigious journals like JAST (Journal of Agricultural Science and Technology), Pezzottaite Journals , Academic Journals Online - Commerce & Economics (www.academicjournalonline.co.in), AR Research Publication and Conference World, International Journal of Environmental Technology and Management (IJETM) (Inderscience Journal), International E-Journal on Innovative trends in Science and Technology and BIZCRAFT (The Journal of Contemporary Management Perspective), FMS, SRMSCET, Bareilly

She has received her Master in Business Administration from IMS, Jhansi and Doctorate in Management from Bundelkhand University, Jhansi. Prior to joining Vel Tech Business School, Dr. Gaur was associated with Galgotias University, IILM-GSM as a Associate Professor of OB & HR. She has served Institute of Management Studies and Institute of Economics and Finance, Bundelkhand University as a Assistant professor for 6 years. She carried out both Academic and Administrative roles. She has Research Gate Score of 3.49 (15 Percentile). She has published 28 papers and 19 articles in the well known national and international journals and conferences. She also has 3 case study publications and 3 books to her credit.

Editors Message

Dear Readers,

It is a great honor for me and my team to work in the area of publication and we feel glad to accomplish our task of coming up with next issue of BIZCRAFT Journal of Contemporary Management Perspective for our readers.

Welcome to the BIZCRAFT Journal of Contemporary Management Perspective. BIZCRAFT is a bi annual, peer reviewed, broad-scope publication aiming to publish high-quality research and expert knowledge on topics that guarantee the functionality of the building stock throughout management domain for the enhancement of research in different areas of management. The aim of the BIZCRAFT is to give a highly readable and valuable addition to the literature which will serve as an indispensable reference tool for years to come hence strong emphasis on interdisciplinary issues has been given as we're conscious that many complex problems in the management require multi-disciplinary solutions. .

We are pleased to publish the Volume 11 Issue 2, which includes different issues of Innovation and Integration of Management Practices & Technology for Global Competitiveness and Domestic Trends that are relevant for contemporary debate. Nowadays, supply chain integration, innovation and technology transfer has become the most important source of economic growth and development. No one who has passed from the 20th to 21st century can deny that the world today has become significantly more competitive. With the advent of instantaneous communications and relatively fast transportation systems, there is truly a global manufacturing base where products can be sourced at competitive prices. It is essential that companies embrace these changes in the business environment to ensure their growth or, in some cases, survival.

Innovation is an idea, concepts, practice or object that is perceived as new by an individual or other unit of adoption. Innovation is also seen as a process of idea creation, a development of an invention and the beginning of a new product, process, technology, systems or service to the market so as to solve problems to the community. Currently innovation is an essential element for economic progress of a country and competitiveness of manufacturing industry. This provides, the appropriate degree of integration and collaboration and a core catalyst for better performance in the supply systems. However,

Dr. Gaur has conducted workshop, international Conferences / seminars in emerging trends in Management, communication skills, training and development, joyful organizations, leading India in Management Education, and knowledge management and MDPs for various organizations such as Madhya Pradesh Electricity Board, UP Jal Nigam, SBI- Jhansi and City Hospital-Farrukhabad. She has been associated with Sanjeevani (NGO), Qutub institutional Area, New Delhi for imparting Training in Counseling Skills . Has done programmes for managers in private and public sectors on issues in people management strategies, diversity management and employee relations. She commands in teaching Business taxation, Financial Management ,Strategic Human Resource Management and Organizational Behavior through innovative teaching methods. The other interest areas of teaching are International Business Management , Global HRM, Diversity Management , Performance management system, Compensation management , Strategic Change through People Management Strategy, leadership development, New Industrial Relations, and Social Security Issues for Organized as well as Unorganized Sector Workforce and Employment Law. Her major areas of research and consulting are Financial Management and Performance Management System, Compensation Management, HR as Service concept, Creating role directory, Strategic Change through People Management Strategy, Joyful Organization, Strategies for Flexibility and Change.

the process of innovation, knowledge is an essential element and in the present competitive environment innovations help gains an advantage over other organizations. Since innovations are and will surely continue to be a means for organizations to survive in today's turbulent and highly competitive environment. Innovations are a key source of a competitive advantage that determines the economic success of each organization. Also organizations wish to survive and grow in today's turbulent environment, they have to make every effort to introduce an innovative approach and creativity,

As the Editor-in-Chief of the BIZCRAFT, I take this opportunity to express my sincere gratitude to authors who have chosen the BIZCRAFT to disseminate their research. Further, I would like to thank Managing Editor and other supporting staff at Shri Ram Murti Smarak College of Engineering and Technology, Bareilly for the success of this Journal.

Too often we forget that a journal, even a scientific journal, can survive only if it meets the expectations of its readers and is fruitful to them. However, authors, before being authors, were readers; and every new work is – and shall be – inspired by a thorough literature search. New results shall always be validated by comparing them with the already existing ones. Moreover, today's readers will probably be tomorrow's authors. If we offer them a qualified, broad insight on the most innovative works in the management field, we not only serve them, but we also contribute to educate new generations of authors, thus ensuring a bright future for this journal.

We are more than happy to receive contributions for our next issue from academicians, scholars and practitioners to ensure the consistency and the success of the Journal. We welcome comments and suggestions that would advance the objectives of the Journal and help in progressing and improving to meet target of quality. I hope that these Issues will help us to better serve our readers.

We are very much grateful to our friends and all involved and contributed a lot in accomplishing this piece of work to be a successful one. All this can be achieved through constant feedback from our readers. So, please, do not hesitate to contact me with your comments, complaints and suggestions. They will surely help me in making this Transaction more and more useful and desirable.

We look forward to welcoming your submissions.

With best wishes,
Prof. (Dr.) Mamta Gaur

Leadership Challenge: Managing the organizational Agility



Dr. Anant Kumar Srivastava
Editor-in-Chief

If we analyse the organizational expenditures we could find that in most of the cases human capital is typically among the largest financial expenditure most organizations make. The organizational leaders for best performing companies have learned that the human capital must be managed strategically and efficiently. The process is complex as it requires understanding of motivational factors of the workforce. The engagement and reward system for the employee need to be carefully developed to meet strategic vision of the organization. Hence, the HR managers and senior business leaders work together to develop a system of performance management through which they can justify the recommendations for pay increases, incentive plans, employee-benefits programs and investments in nonfinancial rewards such as career development, recognition and organization climate improvement.

In recent years, senior executives have placed more importance on human capital in terms of optimizing productivity and cost effectiveness, engaging employees, developing and retaining talent and aligning the rewarding of human capital with business strategies. For a sustainable and performing organization everyone agreed that it's important to reward such employees who meet or exceed performance standards. By acknowledging the contributions of the employee and the impacts of those contributions, organizations are showing their value to the team, department and company also.

There are two general types of rewards that motivate people, intrinsic and extrinsic. Intrinsic motivation is internal to the person in that it is perceived to offer something to them and is driven by personal interest or enjoyment in the work itself. Because intrinsic motivation exists within the individual, achieving it does not depend on others. Some people believe that the most powerful rewards come from inside a person.

At this stage it is a thought provoking question that what should be the acceptable established basis for such reward. The recognition system must be balanced within intrinsic and extrinsic rewards. Further, it should be simple, appears fair and equitable to all involved, and encourages continued, similar behavior from that person and other employees. It must have be oriented in such a way the, no one sets out to be a discouraged. The philosophy of recognition and reward system is based on the notions that everyone wants to do a good job, learn how to improve if they have missed the mark, and earn a reward the next time around. So, an employee performance evaluation gives employees who aren't meeting expectations a baseline to learn how to improve in order to be viewed as successful in the future.

Generally speaking, employees want to do well and be appreciated for their hard work. The employee performance evaluation is the tool that provides the measurement for creating a pay-for-performance culture within an organization. This practice will go far in creating a workforce that is engaged, productive and loyal.

A motivated workforce can be a significant factor in organizational success. When employees are motivated to work at higher levels of productivity, the organization as a whole runs more efficiently and is more effective at reaching its goals. This is in contrast to an unmotivated workforce, who can negatively disrupt an organization and distract employees from their work. For this reason, it is imperative that senior managers must understand the power of reward systems and how they are used to influence employee behavior.

The sense of accomplishment and value of the recognition to be felt by the employee are to be perceived the senior managers to ensure the positive impacts of the reward systems. Intrinsic motivation provides that personal pat on the back or natural high that reflects a person's ability, competency, growth, knowledge and self-control over their endeavors. Employees who are intrinsically motivated tend to work at higher levels of productivity and strive to develop professionally. Intrinsic rewards include things such as: personal achievement, professional growth, sense of pleasure and accomplishment.

Extrinsic motivation on the other hand is based on tangible rewards. Unlike intrinsic motivation that is self-administered, extrinsic motivation is external to the individual and is typically offered by a supervisor or manager who holds all the power in relation to when extrinsic rewards are offered and in what amount. Extrinsic rewards are usually financial in nature, such as a raise in salary, a bonus for reaching some quota or paid time off. However, extrinsic rewards can also be as simple as getting the better office, verbal praise, public recognition or awards, promotions and additional responsibility. These material rewards can be motivating to employees because pay, time off, advancement and recognition are important to most workers. An extrinsically motivated person will work on a task that they do not particularly care for simply because of the anticipated satisfaction that will come from that also.

In today's era the greatest asset an employee can offer an organization is their intelligence, experience, problem solving ability and change-savvy persona. According to Herzberg, intrinsic rewards should be much stronger than financial rewards in increasing employee motivation. This is not to say that employees will not seek financial rewards in addition to intrinsic rewards, rather it just means that money is not enough to maximize motivation in most employees. People want to feel like their contributions matter. To help employees with their intrinsic motivation, managers should provide meaningful work and allow the workforce to make choices through a high level of autonomy. It must be intended to provide opportunities for employees to show their competence in areas of expertise and facilitate professional development so that employees can expand on their level of knowledge. It should also be oriented to offer frequent opportunities for employees to reward themselves and allow employees the opportunity to connect with those with whom they serve to obtain valuable feedback. It will ultimately give them a path to monitor their progress with milestones along the way.

Hence, a balance between intrinsic and extrinsic rewards are required to keep the workforce motivated within the organizations.

Dr. Anant Kumar Srivastava

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NICE ANALYSIS FOR ENTREPRENEURSHIP AND INNOVATION

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Abstract

The purpose of this paper is to explore the perception on entrepreneurship development and adding innovation in this process so as to make it more effective and result oriented. The capacity and willingness to grow, organize and manage a business venture along with any of its risks in order to make a profit. Entrepreneurial development today has become very significant; in view of its being a key to economic development. The objectives of industrial development, regional growth, and employment generation depend upon entrepreneurial development. Entrepreneurs are thus the seeds of industrial development and the fruits of industrial growth which are creating greater employment opportunities to unemployed youth. But to make this phenomenon more creative I have designed a NICE analysis which is to understand the need, interest, concern and expectation of the industry as well as the end user of the product or service.

This innovative analysis will help the entrepreneurs to be more successful and will provide them competitive advantages.

Keywords: *Entrepreneur, competitive advantage, innovation, industry.*

INTRODUCTION

Entrepreneurship can be viewed as a creative and innovative response to the environment and an ability to recognize, initiate and exploit an economic opportunity. An entrepreneur is an Innovator who introduces something new in an economy. Entrepreneurship is doing things that are generally not done in the ordinary course of business. Innovation may be in; introducing a new manufacturing process that has not yet been tested and commercially exploited, introduction of a new product with which the customers are not familiar or introducing a new quality in an existing product, locating a new source of raw material or semi finished product that was not exploited earlier, opening a new market, hitherto unexploited, where the company products were not sold earlier, developing a new combination of means of production. Innovation involves problem solving and an entrepreneur is a problem solver. An entrepreneur does things in a new and a better way. A traditional businessman working in a routine manner is not entrepreneurial.

Innovation leads to the dynamics that governs the interaction between science, industry, and

Society. Innovative organization wants must have to prepare for renewing the offerings and its delivery process to its stakeholders to survive in today's globalised world. This paper, concept of innovation and entrepreneurship has

been studied by the authors. The paper will also include examples of innovative entrepreneurs and how the innovation in products/services helps the business in survival and growth in present globalised market place.

OBJECTIVES OF THE STUDY

- a) To study entrepreneurship and innovation
- b) To study and present examples of innovative entrepreneurs.

I have used descriptive research design. Data has been collected from secondary sources.

ENTREPRENEURSHIP

The basic question which we ask ourselves whenever we are talking about entrepreneurship

development are -

What is entrepreneurship?

Who is an entrepreneur?

And the answers to these questions are even easier than the questions itself.

An entrepreneur is a person who develops a new idea and takes the risk of setting up an

enterprise to produce a product or service which satisfies customer needs. All entrepreneurs are business persons, but not all business persons are entrepreneurs.

Entrepreneurship is the activity which is being carried out by the Entrepreneur. Generally Entrepreneur is the concerned authority of the business, without their permission, not single changes or decisions are made. In other words, "An Entrepreneur" is an owner or manager of the business enterprise who makes money through risk or initiative. They are responsible for any changes happened in the business or in the organization.

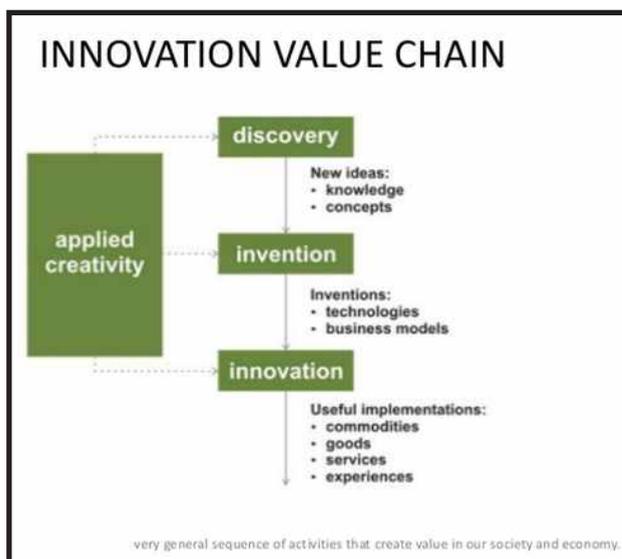
INNOVATION

Innovation means "to renew or change".

Although the term is broadly used, innovation generally refers to the creation of better or more effective products, processes, technologies, or ideas that are accepted by markets, governments, and society. Innovation differs from invention or renovation in that innovation generally signifies a substantial positive change as compared to incremental changes.

The following diagram is referred to as an Innovation Value Chain because it represents the very general sequence of activities that create value in our society and economy. Simply put:

discoveries result in new ideas in the form of knowledge and concepts, inventions result in new technologies and business models, and innovation exploits inventions to allow for the creation of value through commodities, goods, services and experiences.



Source: http://resources.talcie.org/topicsandactivities/creativity-innovationandentrepreneurship-topic-notes/creativity_discovery_invention_innovation.png?altdirects=0

Innovation is the specific tool of entrepreneurs, the means

by which they exploit change as an opportunity for a different business or a different service. It is capable of being learned, capable of being practiced. Entrepreneurs need to search purposefully for the sources of innovation, the change and their symptoms that indicate opportunities for a successful innovation. And they need to know and to apply the principles of successful innovation. Of these factors: natural raw materials, physical and mental labor and capital. An innovation is a new combination of these three things. Entrepreneurs, as innovators, are people who create new combinations of these factors and then present to the market for assessment by consumers. This is a technical conceptualization of what is innovation is about. it does not give the practicing entrepreneur much of a guide to what innovation to make, or how to make it, but it should warn that innovation is a much broader concept then just inventing new products. It also involves bringing them to market.

IMPORTANCE OF INNOVATION IN ENTREPRENEURSHIP

Any business is integral to the economy. Without it, our economy would not survive. But a business must also sustain itself, be able to constantly evolve to fulfil the demands of the community and the people. In every business, it is imperative to be industrious, innovative and resourceful.

Entrepreneurship produces financial gain and keeps the economy afloat, which gives rise to the importance of innovation in entrepreneurship. Entrepreneurs are innovators of the economy. It is not just the scientist who invents and come up with the solutions.

The importance of innovation in entrepreneurship is shown by coming up with new way to produce a product or a solution. A service industry can expand with another type of service to

Fulfil the ever changing needs of their clients. Producers can come up with another product from the raw materials and by-products.

The importance of innovation in entrepreneurship is another key value for the longevity of a business. Entrepreneurs and businesses began with a need. They saw the need within the community and among themselves that they have come up with a solution. They seize the opportunity to innovate to make the lives more comfortable. And these solutions kept evolving to make it better, easier and more useful. Entrepreneurs must keep themselves abreast with the current trends and demands. Manufacturers are constantly innovating to produce more without sacrificing the quality. Companies and enterprises keep innovation as part of their organization. Innovations contribute to the success of the

company. Entrepreneur, as innovators, see not just one solution to a need.

They keep coming up with ideas and do not settle until they come up with multiple solutions.

Innovation is extremely important that companies often see their employees' creativity as a solution. They come up with seminars and trainings to keep their employees stimulated to create something useful for others and in turn, financial gain for the company.

Other factors that raises the importance of innovation in entrepreneurship is competition. It stimulates any entrepreneur to come up with something much better than their competition in a lower price, and still be cost-effective and qualitative.

Small businesses see the importance of innovation in entrepreneurship. They were able to compete with large industry and see their value in the economy. Small businesses are important as they are directly involved in the community and therefore, contribute to their financial and economic gain. These small businesses know exactly what community needs and fulfill them. All things start small. Innovation is important not just in entrepreneurship. As individuals, we are innovators by adapting well to our needs and create our own solutions. Entrepreneurs are the same. The innovation in entrepreneurship helped the country by changing with the times and producing new products and service from ones that already exists. And, being innovative has helped us become successful in all our endeavors.

In business and economics, innovation is the catalyst to growth. With rapid advancements in transportation and communications over the past few decades, the old world concepts of factor endowments and comparative advantage which focused on an area's unique inputs are outmoded for today's global economy. Now, competitive advantage, or the productive use of any inputs, which requires continual innovation is paramount for any specialized firm to succeed.

Economist Joseph Schumpeter, who contributed greatly to the study of innovation, argued that industries must incessantly revolutionize the economic structure from within, that is innovate with better or more effective processes and products, such as the shift from the craft shop to factory. He famously asserted that "creative destruction is the essential fact about capitalism." In addition, entrepreneurs continuously look for better ways to satisfy their consumer base with improved quality, durability, service, and price which come to fruition in innovation with advanced technologies and organizational strategies.

CONCLUSION

With rising population of the world, the world's need and necessities pattern had also evolved through the years. To sustain the ever increasing demand and supply of products, right entrepreneurship skills and innovation are much more needed. Without new business ideas and technology to support it, no consumer demand will be fulfilled completely. Thus, innovation and entrepreneurship is the need of hour and needs to be adopted by one and all business enterprises. Innovation and Entrepreneurship is a good resource for categorizing and identifying sources of innovation. Entrepreneur does an excellent job of organizing the key elements involved in innovation and there is a fair amount of real world examples that help others understand the concepts. Innovation and Entrepreneurship is more about creating a framework for innovation that can be used to compartmentalize current practices and shed light on their origins. To accurately point out, the least likely sources of innovation are from new knowledge and bright ideas. The insight into this alone, makes the concept well worth understanding.

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SYSTEMATIC CHAOS: CORPORATE GOVERNANCE AND COUNTRY GOVERNANCE IN INDIA

“Profit motive is not the only goal; it is the inevitable consequence of proper management.
Capital alone will not result in good governance.” --- Peter Drucker

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Abstract

Governance is a multi-dimensional concept and, more and more dimensions are appearing with the advent of time. Critical questions are being raised on the governance issues with the sudden resignation of Vishal Sikka along with a good number of directors from the IT giant Infosys in August, 2017. Simultaneously, appeal for declaring bankrupt by JP Infratech, Amrapali Infratech and a lot of such other companies have literally shaken the concept of corporate governance in India. Transparency was needed in order to that government could have faith in corporate bodies and consequently, it had reduced corporate tax rates from 30% today as against 97% during the late 1970s. Ineffectiveness of RERA, arbitrary verdict of NCLT, countermending NCLT's decision by the Supreme Court in the first week of September has not only created an atmosphere of fear and uncertainty but also, it has strengthened the feeling among the hard working people that they are bound to suffer irreparable losses from dubious activities of the corporate under sinister designs of corporate patronized by crony capitalism. The country's governance has become largely questionable, too. For the last fifty years, Indian politics and policies have developed a sound 'System of Distrust' in every sphere of life. When a senior economist and a former Union minister Jairam Ramesh lambast the present government for its “dismal” performance on economic front in the last three years and says that the “dreams of the dream merchant” have turned into a nightmare for the people”; the citizen of India remains perplexed as to who to be 'trusted'; the earlier regime which was largely tainted with corrupt practices or the present leadership which is ruling by the phrase, Adhiktam Prachar, Nyuntam Vichar (maximum promotion, minimum thinking)”. From 'India Shining' to 'Achhey Din'; India's twenty two years' journey has only brought fear, uncertainty, unemployment, digital divide, constantly falling real income and all other miseries to the common people who were constantly promised to have been provided with good governance. People of India has developed a strong feeling that the 'politico-economic system' is working for only five crore people's welfare and the rest 120 crore people are destined to struggle for existence for the ages to come. Governance is essentially an arrangement of policies, processes, conventions, laws and institutions by which a corporate or a government is controlled as well as ensure serving the best of interests of its stakeholders. In case of Corporate, the stakeholders are its shareholders and in case of a country; all the citizens are the real stakeholders who pay a substantial part of their income in the form of direct and indirect taxes in hope of constant value addition in their lives promised by the respective public representatives, repeatedly. This concept paper endeavors to delineate the inbuilt reverse mechanism in the system of policies, processes and conventions adopted by the corporate and the public representatives that have far reaching consequences on the economic and social life of the stakeholders.

Keywords: *Governance, RERA, Crony capitalism, India Shining, Achhey Din, conventions.*

INTRODUCTION

Long back, in the 1970s, the author of this paper had gone through a remarkable Hindi poem, the part of which read—“...Nul hai magar paani nahi aata, telegram bheja; der se pahuncha, parhney gaye; bigar gaye, reservation karaya; jagah nahi mili, daakkhaney gaye; ticket nahi mila, bank gaye; rupay nahi miley....(Tap is there but there is no

water flow, a telegram sent, it reached the destination very late, children sent to school for making but their life got spoilt, got confirmed reservation but didn't get a seat in the bogey, went to post office but there was no stamps, went to the bank but there was no money for withdrawal...) and so on. The spirit of the poem is that the 'system/institution' which is purposely constituted for delivering certain

services; fails to deliver the same for which it is created. And, for the last fifty years not only the situation is existing but also it is worsening. This phenomenon propels the concept of 'Systematic Chaos' as such. Throughout the paper, the word 'chaos' has been interchangeably used for 'anarchy' or 'complete mess'. 'Systematic Chaos' defined: Man-made systems are made to satisfy some identified and stated need with purposes that are achieved by the delivery of wanted results. Such systems must be "designed to work as a coherent entity" ensuring proper and timely deliverance. Whereas chaos/ anarchy falls short of being a true civil state because the law becomes an "empty recommendation" if force is not included to make this law efficacious for there to be such a state, force must be included while law and freedom are maintained, a state which Kant calls a republic. The great German philosopher Immanuel Kant, in his Anthropology from a Pragmatic Point of View described anarchy as consisting of "Law and Freedom without Force". And, wherever this law of freedom appears without force; chaos pervades and deliverance of a system is ensured through "Jugaad" or mass manipulation.

Therefore, 'systematic chaos' denotes where a prima-facie system exists there to deliver goods and services to the citizens and yet, they are forced to scramble for meeting their needs and expectations by manipulating the system on every count, to the extent, and most of the times, at the cost of fellow citizens' legitimate share in the country's wealth.

CHAOS IN THE CORPORATE WORLD :

RANBAXY, AN UGLY MIRROR TO CORPORATE INDIA

In the recent years, India witnessed debacles in those corporate houses which were long held place as the world's best ones. The story started with the steep downslide of many of the "excellent" companies like Peters and Waterman that suddenly showed up that their books were not performing as per projections and some had even ceased to exist. Unfortunately, this was not a rare occurrence, many of them had found place in the world's bestseller, 'In Search of Excellence' following their management acumen and roaring book values.

Indian pharmaceutical companies attained prestigious position globally for their prowess in producing generic drugs. And, Ranbaxy was one of such companies that pioneered to build this reputation. Global giant Eli Lilly and Ranbaxy formed joint venture and created revolutionary simple process to produce a complex new drugs molecules. Their venture drew swift attention of other global giants. Under the leadership of Parvinder Singh, Ranbaxy was the first Indian company to embrace TRIPS agreement.

Singh had convinced its shareholders that this strategic move would create blockbuster drugs for Ranbaxy and the value of the equities would soon skyrocket. But sudden free fall of Ranbaxy traumatized everyone. While Rajat Gupta and Phaneesh Murty got into trouble of their personal wrong doings, Ranbaxy's fall points out to 'systematic failures' that remained uncorrected by the Indian Management. The whistleblowers reports compelled the company to pay penalty to the tune of \$500 million pointing to large-scale fudging of data and over sighting corrective mechanisms. The reports revealed that the then senior management of the company executives failed to take corrective action, even when the evidence of such ill practices surfaced.

REEBOK INDIA SUFFERED A MAJOR BOUT

After Satyam catastrophe, this was probably the biggest corporate scam. In March 2013, Adidas, the parent company, announced a 153 million Euros loss on account of the Reebok India and alleged a Rs.870 crore fraud by its former managing director (MD) Subhinder Singh Prem and former Chief Operating Officer (COO) Vishnu Bhagat, in a criminal complaint filed at the Economic Offence Wing Gurgaon police's in May, 2012. Reebok had carried out an internal investigation after certain fraudulent activities were noticed and it had pointed out to the importance of internal checks for malpractices and corruption. It was surprising that the two were accused of criminal conspiracy and fraudulent practices including stealing products by setting up "secret warehouses". The duo have been siphoning off funds by creating ghost distributors across the country and generating forged bills over the last five years. It was a grave failure of corporate governance as well, since the company has also alleged that the former officials fudged accounts and indulged in fictitious sales causing a multi-crore dent to the company.

However, "it was interesting to note that accounting officials of the firm and the auditors were not held liable for their "deliberate" or "mistaken oversight" in the account books that led to the alleged financial irregularities"¹

VODAFONE EXTORTS \$2.2-BILLION FROM THE GOVERNMENT

Vodafone, the world's largest mobile operator by revenue, had claimed that Indian tax authorities had no right to tax the transaction which had taken place between two foreign entities and it had no sufficient connection with India for attracting capital gains tax. The government had argued that the foreign entities are merely shell companies without any assets or operations except for the Indian company. The transaction between foreign entities was nothing but a clandestine deal to avoid taxes. The tax demand was over Vodafone's \$11 billion deal to buy Hutchison's Indian

mobile business in 2007. After losing the case in the Bombay High Court in 2010, the UK-based company had appealed to the Supreme Court and won the case. The verdict pushed Vodafone shares up as much as 2.5 percent in London.

The company had argued that even if the tax was due, it was the seller's liability and not of the buyer's. The government's efforts to introduce a retrospective law to tax all transactions such as Vodafone's from the past after the judgment was issued however, it was scrapped in the face of severe criticism. Ultimately, the government decided to stoop down before the Vodafone Company and gave a lame logic that facilitating the multinationals would pave the way for higher FDI. VODAFONE's win over government of India shows typical strategy to collude for accounting jugglery and manipulating with Indian taxation laws. But for Vodafone authorities it would certainly prove to be Waterloo in the long run.

EMKAY GLOBAL'S DEFECTIVE ORDERS STALLED NSE FOR AWHILE

Emkay Global Financial Services compelled the NSE's index Nifty tumbling, raising serious concerns about the stability of trading systems after a series of technically erroneous orders placed by them. Trading on the National Stock Exchange (NSE) was briefly stopped after the 59 trades worth more than \$125 million were placed, triggering a sudden drop of more than 900 points on the Nifty index. The orders, for an institutional client, were sent from a single dealer terminal at Emkay Global. Alike Wall Street flash-crash of May 2010, Emkay's misdeeds marked another incident in a glitch-filled year for India's share markets, raising the ghost of a sudden collapse.

SOCIAL MEDIA GAMES AND ONLINE RUMORS WIPE OFF THOUSANDS OF CRORES

M/s Ablaze Info solutions of Ghaziabad floated a business of making people rich by just clicking a 'Like' on some news item per day. It was almost a foolproof trap for the members for earning endlessly. But the business model busted when the speed of the earning for its director Anubhav Mittal (a 27 year old man) went crazy and he faced the same fate as Ramalingam Raju of Satyam, who confessed after his arrest (on 02, February, 2017) that he knew how to ride a running tiger but was unaware of process to stop it and get down. Anubhav Mittal landed himself in Tihar Jail very soon but by that time he had plundered more than Rs.4000 crores from the common people. After his arrest, the vigilance agencies unearthed corporate frauds valuing around Rs.80000 crores through online trades in the country. Similarly a shocking event proved the strength of informal media such as blogs and its real life impact. Stock prices of

many companies under the Adani Group took a plunge after a blogger posted rumors about Gautam Adani's arrest. The blog mentioned "Believe it or not: Our Ahmedabad Bookie says: Mr. GAUTAM ADANI has been arrested. What will happen to ADANI STOCKS? Let's see..." And, the stock dipped 8.4% and closed at Rs.195 for the day.

SAHARA MADE SMALL INVESTORS 'BESAHARA'

Sahara, one of the India's biggest business groups was ordered by the Supreme Court of India to refund Rs.174 billion rupees raised by "dubious" means from 22 million small investors. The Sahara was also asked to pay 15% to the investors of the fund which has been illegally raised from the public from the year 2008 to 2011. "The Supreme Court, whose order reaffirmed an earlier ruling that the fundraising did not meet the rules, ordered two unlisted Sahara group firms to refund money they had raised with the interest within three months. The judgment closed a much exploited loophole of the corporate fundraising laws in India and underscored an increasing assertiveness by India's judiciary and regulators as businesses and financial markets expand at a fast pace in Asia's third-largest economy."2

KINGFISHER AIRLINES LOST ITS 'KINGSHIP' DUE TO MIS-GOVERNANCE

The debt-ridden carrier Kingfisher Airlines lost its flying permit and grounded since October 2012 after repeated strikes by workers over unpaid wages. The Directorate General of Civil Aviation (DGCA) had suspended Kingfisher Airlines' operational license till further orders as the airline failed to deliver a viable financial and organizational revival plan. Kingfisher owed \$1.4bn (£870m) to various public sector banks and had been frantically trying to raise funds after lending institutions refused to give fresh loans. It is interesting to know that when the Company was going nose-dive and Vijay Mallya was showing his inability to repay the banks' loans; the personal riches of Mallya rose by Rs.27000 crores. The airline now owes a lot of money to staff, airports, tax authorities and its lenders and its aircrafts and other fixed assets are under hammer of the auctioning. Mr. Mallya's Kingfisher is in the process of liquidation and he is declared 'absconded' by the various courts of law. Corporate history is littered with examples of companies whose dubious ethical standards eventually led to their liquidation. However, every 'chaos' was created in a very 'systematic' way to reap rich dividends. Some of the remarkable frauds, which are by-products of ill-governance, are listed below:

Source: Wikipedia, Corporate frauds in India

It is naiveté to expect companies would follow all the rules of the book voluntarily. Since 1970s, numerous Indian companies exploited loopholes in the law of land. The

economy is riddled with companies in every industry segment and flouting the norms of ethical behavior. Submission of fudged data to the regulators is normal

practice and they are used to getting away with lax governance and ethics standards. No Indian company is lily-white because it is selling in a chaotic market. The answer

Scam	Year	Amount (in crores)	Place	Scammers	Notes
Manoj C Mullan	2017	60,000	Kerala	along with Vaikkan, Poosai	Notable are his flimsy arguments, contradictory statements and preposterous views
Saradha Group financial scandal	2013	40,000	West Bengal	Kunal Ghosh, Sudipto Sen, Madan Mitra and many more	Financial scam caused by the collapse of a Ponzi scheme run by Saradha Group, a consortium of over 200 private companies that was believed to be running collective investment schemes popularly but incorrectly referred to as chit funds. As a result of this scam (Odisha and W.B), Rajya Sabha MP Kunal Ghosh (All India Trinamool Congress) is in jail since Nov, 2013 for interrogations. Odisha MP Ramchandra Hansda (Biju Janata Dal) MLA Pravat Tripathy (Biju Janata Dal) and former Odisha MLAs Subarna Naik (Biju Janata Dal) and Hitesh Kumar Bagarti (Bharatiya Janata Party) have also been arrested for ponzi scam. Rajya Sabha MP from West Bengal Srinjay Bose (All India Trinamool Congress) has also been arrested. West Bengal transport minister and All India Trinamool Congress MLA Madan Mitra were also arrested.
Abhishek Verma arms deals scandal	2012	80,000	Defense sector	Abhishek Verma, Anca Verma	Defense scandal caused by an American attorney who turned whistleblower after hacking into emails and documents retained on the US based servers of arms dealer Abhishek Verma who is globally known as 'Lord of War' and his wife former Miss Universe Romania Anca Verma's global weapons companies SIG SAUER and GANTON. Leaked documents were sent to Indian politicians Arvind Kejriwal & Prashant Bhushan who released these to the press as a result CBI and Enforcement Directorate arrested Abhishek and his wife Anca in multiple cases of defense sector purchases related corruption & money laundering aggregating to US\$12 billion (₹80,000 crores). Presently, Abhishek and his wife Anca are incarcerated in Tihar Jail Delhi awaiting trial.

Common Wealth Games Scam	2010	70,000	New Delhi	Suresh Kalamadi, Sheila Dikshit - the then Chief Minister of the State.	It is estimated that out of ₹70000 crores spent on the Games, only half of the said amount was spent on Indian sportspersons. The Central Vigilance Commission, involved in probing the alleged corruption in various Commonwealth Games-related projects, has found discrepancies in tenders – like payment to non-existent parties, willful delays in execution of contracts, over-inflated price and bungling in purchase of equipment through tendering – and misappropriation of funds.
Indian coal allocation scam ^[21]	2012	185,591	National	Comptroller and Auditor General of India, the coal ministry, many electricity boards and private companies	Coal blocks allotted, not auctioned, leading to estimated losses as per the Comptroller and Auditor General of India. Supreme Court cancels all 214 coal blocks allocations since 1993. Government to e-auction the coal blocks now.
Uttar Pradesh NRHM scam	2012	10,000	Uttar Pradesh	Mayawati, Babu Singh Kushwaha	Babu Singh Kushwaha and IAS Pradeep Shukla behind the bars for their involvement in NRHM scam.
2G scam	2008	176,000	National	Nira Radia, A. Raja, M. K. Kanimozhi, many telecommunications companies	Communication bandwidth auctioned for lower than market value. A. Raja and M. K. Kanimozhi have been in Tihar Jail for 15 months and 5 months respectively. They have been charge framed.
Navy War Room Leak scandal	2006	18,000	Defense sector	Abhishek Verma, Ravi Shankaran assisted by other defence personnel	Arms Dealers Abhishek Verma and Ravi Shankaran compromised senior defense officials working in the Navy War Room located inside Prime Minister's Secretariat in India & obtained sensitive data pertaining to military purchases & ongoing defence acquisitions for securing lucrative multibillion-dollar contracts relating to Scorpene Submarines deal of the Indian Navy worth US\$6 billion. Ravi Shankaran fled to United Kingdom in 2006. Red corner Interpol notice was issued for him. Even after 8 years of arduous legal battle in UK Courts, Indian Govt failed in his extradition. Abhishek Verma was granted bail in this case in 2008 by Delhi High Court.
Uttar Pradesh food grain scam	2003	30	Uttar Pradesh	Mulayam Singh Yadav, Mayawati	Food which the government purchased to give to the poor was instead sold on the open market

to the fraudulent unethical practices resorted to by the Corporate is nicely analyzed by Saul Gellerman³, in his classic piece 'Why Good Managers make Bad Ethical Choices' (Harvard Business Review, July-August 1986) who pointed out four rationalizations that managers make which ultimately lead to bad decisions. However, all four are common in all the cases (1) a belief that the action is not really unethical or immoral ("everyone does it"), (2) a belief that the action is in the best interests of the company (growth, profits, maximization of shareholders value and so on), (3) a belief that the action is unlikely to be detected (perhaps worst assumption); and (4) a belief that because the action helps the company, the organization will condone and even defend such action (plenty of evidence of such incidents are there in the reports).

COUNTRY GOVERNANCE

Former President KR Narayanan, on the eve of India's fiftieth republic day, had lamented "fifty years into our life in the republic we find that justice – social, economic and political – remains an unrealized dream for millions of our fellow citizens... not even a single nation-building task that the ruling class took upon themselves has been completed and, a number of social problems have worsened, courtesy to mis-governance." The words hold infinite importance when the president of India utters- "*in stark contrast to the lavish celebrations marking 50 years of independence, the ruling elite in India is not that enthusiastic to rave about the anniversary of the formation of the Republic on 26 January 1950.*"

INDIA, A TRAUMA CENTER FOR THE COMMON PEOPLE

Although, foreign media loudly refers to India as "the biggest democracy", India is literally a prison house for the general citizens. The political snake charmers have created a mystique around the people. Their tall talks, misdeeds and continuous misrules has led India as a nation where every third person marks in the world without safe and adequate water supply. Where every fourth child on the globe dies of diarrhea, every third person in the world suffers from leprosy and every fourth being on the planet dying of waterborne diseases in spite of that the leaders boasts of ever expanding National Rural Health Mission. Out of over 16 million tuberculosis cases, worldwide, 12.7 million are registered in India. Indian metropolitan cities have air pollution levels stupendously higher than the specified standard set by the WHO (World Health Organization). The rise in the cases of asthma, emphysema, lung cancer and many other related ailments threaten the life of millions of people while Indian governance boasts of creating SMART CITIES while almost 35% of the people in Mumbai, Delhi

and Calcutta are having the same risk as someone who smokes 40 cigarettes a day. While the supreme leader declares his dream for transforming Kashi (Varanasi- being his own constituency) into Kyoto (one of the most developed cities of Japan), any visitor may find it to be the synonym of 'hell'. Not even a single lane, road, pavement, market, Ghat or government institution is not having heap of filth, odors and garbage. Due to overcrowding and height of mismanagement, the city resembles Harappan ruins adding endlessly to the woes of the dwellers, visitors and the tourists while Varanasi appeared as one of the major tourist spots in the international tourists map. The irony is that, the city has long been covered in the list of Smart Cities and people are dreaming of having Metro Rail facility in the near future. The paradoxical maxim of 'minimum government and maximum governance' is being advocated at the time, when 40% of children is suffering from malnutrition and almost one out of four Indians goes to bed hungry, eating less than 2,000 calories a day. The greatest threat to India's ecological balance comes from a rapid decline in fresh drinking water. Almost 400 million people are destined to drink contaminated water and have insufficient quantity of water. Indian cities, with 270 million urban dwellers, are on the verge of collapse. Almost around 108 million live in the most obnoxious slums. As the cities are continuously growing and expanding, projections indicate that almost 60% of the urban people will be forced to live in the jhuggies (clusters of slums) by 2020. Mr. Kapil Sibbal, spokesman and former central minister of UPA II, has recently published a report on the three years of governance of the BJP rule claiming that "...the gap between rich and poor has nastily increased as well as the NPA of the banks has skyrocketed in the last three years. While only 42% of the national income was held by the 1% of rich people till 2013-14, it has drastically gone up and 1% of rich people are holding 58% of national wealth, thereby marking a rise of 16% in the gap within this three years of misrule...as if justifying that the glaring gap in their 62 years of misrule was creditworthy for not attaining such height as BJP government could do!

'Democracy' and 'Republic' have lost its meaning to the present environment and it is only at the gunpoint, under the garb of parliamentary democracy, the so-called nation is held together. In a country, where more than 55 million are officially unemployed and 94% employed ones are destined to find livelihoods in the unorganized sector, the ruling class glorify the job creation potential in the IT sector, which can be counted in thousands and not in millions. Despite all its problems of poverty, hunger, disease, stark inequalities, digital divide and acute shortage of essential goods; the common Indians are surviving surrounded by the

glitter and glitz of so-called economic liberalization and globalization. Alone, the national capital is having more than 2 crores of private cars and other automobiles that emit huge carbon-dioxide and uncounted air-conditioners and other heating-cooling gadgets that upload huge carbon-monoxide and CFC gases in the air every minute through the operations but the slum dwellers are held responsible for environmental pollution.

INDIA CAUGHT BETWEEN POLITICAL CROSSFIRE

Politicians create policies and the policies, being the roadmap of success, do not only ensure systematic deliverance for the continuous betterment of public life, but also generate a social environment that augments mutual trust, respect and tolerance that ultimately establish an ideology of 'peaceful co-existence'. However, things have gone just the reverse in the past five decades. The ideological bankruptcy and grabbing of political power has been predominant characteristics of the so-called policy makers. The manipulative politicians have strategically shoved off the intellectuals and the common people out of political activities to that extent that they cannot even dream of participating in the electoral and democratic functioning. Caste-system, the strongest social corruption is utilized by the politicians in such a shameless manner in manipulating the peoples' sentiment that all the basic principles and the spirit of Constitution is thrown into the air and just after winning the election, they take oath for serving the people and the nation "without any bias and favor to anyone". The glaring contradiction is that while the Constitution reiterates the spirit of 'freedom, equality and fraternity'; the Census and selection procedure of prospective candidates are made on the basis of caste categorization and their fan-following. Even an iota of intellectuality and political ideology can be observed among the peoples' representatives. Ask any youth whether he wants to pursue a career as a politician, he would make faces and would blatantly respond that they hate 'treachery' and 'dirtiness' and that is why they hate 'politics' as such. That simply means that 'politics' and 'politicians' have become "necessary evil".

Once, Bertrand Russell had said, "I would never die for my beliefs because I could be wrong". But in the name of 'nationalism' and 'Hinduism' the present governance is stoically propagating 'Raj Dharma' that hates liberalism, intellectualism and open-mindedness in all aspects of life. Journalist Jay Day, M.M. Kalburgi, Govind Pansarey, lawyer-turned journalist Ram Chandra Chatrapati and the latest, Gauri Lankesh were brutally murdered for their exemplary courage for undertaking postmortem of the system and the custodians of the system. Ram Chandra

Chatrapati who had unearthed the facts of rapes, misappropriations, fraud and money laundering by Gurmeet Ram Raheem in his thinly circulated paper 'Pura Sach' on 23rd October, 2002, was shot on the very next day and succumbed to his fatal injuries after 28 days in a hospital⁶.

Since then, for the last 15 years, who else than local and national politicians was patronizing and protecting Gurmeet Ram Raheem, who is now fully exposed and tried for 20 years of rigorous imprisonment.

When Captain G R Gopinath (founder of AirDeccan) narrates in clear terms, "The Gauri Lankesh murder has shaken the entire nation to its roots because not only legions of anonymous social media trolls—and many identity—celebrated it, even some members of political parties justified it. With rumors, innuendo and fake news gripping the nation, the general public is getting swayed by social media and buffeted by the political dog fight between the ruling party at the Center and the ruling party in the state, and between the Right and Left." He further said, "But it's the tragedy of our times that while the state intelligence and police are seen to be beholden to state government, the central investigating agencies are suspected of being handmaidens of the ruling party and both are reluctant to trust each other. Restoring faith in institutional credibility, which was taken a beating of late, is the only answer."⁴ (The Times of India, 19/9/2017, GR Gopinath in his writes up 'A killing most foul: Can 'pseudo-secularists' be murdered because you dislike and disagree with them?'), The killers were unaware that they too, could be killed by the same logic that Butran Russel elaborated!

A noted historian of present times, Mr. Ram Chandra Guha has been recently served with a stringent legal notice for his comment that he did not want to live in a 'Hindu Pakistan' as Hindu fanaticism is being established in the same way as the thought of 'Muslim Pakistan' was popularized by Jinnah and the resultant was widespread carnage and genocide. Not surprising that the other day Mr. Guha may face the charge of treason or his voice might be silenced like Gauri Lankesh.

Mis-governance by legal provisions: The Public Distribution System (PDS) evolved as a system of management of scarcity and for distribution of food grains at affordable prices since 1950. Over the years, PDS became an important part of Government's policy for management of food economy in the country. PDS is essentially supplemental in nature and was not intended to meet the entire requirement of a household or a section of the society.

The PDS is operated under the joint responsibility of the Central and the State Governments. The Central

Government, through Food Corporation of India (FCI), has assumed the responsibility for procurement, storage, transportation and bulk allocation of food grains to the State Governments. The operational responsibility including allocation within State, identification of eligible families, issue of Ration Cards and supervision of the functioning of Fair Price Shops (FPSs) etc., rest with the state governments. Under the PDS, presently the commodities namely wheat, rice, sugar and kerosene are being allocated to the States/UTs for distribution. A few states and UTs also distribute additional items of mass consumption through the PDS outlets such as pulses, edible oils, iodized salt, spices, etc.

National Food Security Act was passed to ensure that none of the citizens could go to the bed hungry but in actuality, the system worsened following mis governance and corruption.

Government that does not govern: While many of us may get awestruck on the statistics, unfortunately, these have not moved our law makers. Unfortunately, while the parliament and media were more than engaged on the question of Rs.288,000 crore spent on Food Security bill, they did not show even an iota of seriousness towards yearly loss of Rs.3300000 crore due to food wastage. Stopping the food wastage could be the preamble of the food security of the country.

However, the problem of food wastage is not new for India. Food Corporation of India already admitted of wastage of 79 million tonnes of food grains between 2009 and 2013. India produces approximately 260 million tonnes of food grain every year including wheat, rice, pulses and cereals. Rice, being the major share (105 million tonnes), in it, followed by wheat (95 million tonnes), cereals (42 million tonnes) and pulses of (18 million tonnes). Government procures and stores 30 per cent through different schemes for public distribution. While the storage by farmers suffers wastage of 6 per cent due to rodents, insects and fungi, the wastage is about 30 per cent when the food grain is stored by FCI and state warehouses. It is more surprising that the highest wastage occurs in the so-called developed states of Gujarat, West Bengal, Punjab, Maharashtra and Uttarakhand.

FCI and State Warehousing Corporations together hold a storage capacity of only 70 million tonnes, whereas food grains procured every year exceed 80 million tonnes, creating a shortfall of about 10 million tonnes. An addition of emergency stock requirement of 10 per cent widens this gap to 20 million tonnes. While the average capacity of a facility is 20,000 tonnes, many of the FCI storage facilities are set up in open sky, making it easy for the grain to rot!⁵

The FCI allowed 46,658 tonnes of foodgrains to rot in its 1,889 warehouses across the country within three years, while another 143.74 tonnes were reported stolen. Together, this could have fed nearly 8 lakh people from marginalized families under the National Food Security Act for an year. In other words, it could have fed 10 per cent of Bengaluru's population or 6 per cent of Mumbai's citizens if each person received 5kg of foodgrains per month. The problem has been plaguing FCI for decades now with tonnes of foodgrains having gone stale over the years, and it has been trying to reduce its buffer storage.

An official spokesman of FCI had pointed out that the corporation had 15.65 million tonnes (mt) of foodgrains in excess of the prescribed buffer norms as of April 1, 2016. According to the norms, which were reviewed in January 2015 after a decade, the FCI should have stocked only 21.04 mt of foodgrains as on April 1, but had 36.65 mt, meaning that problems of storing additional grains will plague the FCI this year too.

Sources in the FCI further pointed out that the corporation had been consciously trying to reduce buffer stock year-on-year, and had managed to do that well. The 39.65 mt of grain as on April 1, 2016, was the least it had held in six years, with the highest in 2013 when it had 59.75 mt of stock, more than double the buffer norms.

"We have enough food for the next 12-14 months, as I see it. This is now the wheat procurement period, and we need to have 75 lakh tonne of wheat as of April 1, but we have 145 lakh tonne. Besides this, an additional 190 lakh tonne has been procured, which is more than the annual demand for PDS, which is 240 lakh tonne," the General Manager of FCI revealed during an interview.⁷ While there was an uproar in the Parliament in the last winter session of UPA 2 over the issue that the excess stock be freely distributed among the the poor and hungry ones in India; the Harvardian P.M. Mr. Manmohan Singh clearly said "...there is no such system that excess and rotting food grains could be distributed in such manner, and even if, it is done, it may have long term economic and political implications." It is such a shameful issue that the country is having a foolproof **system** of siphoning huge wealth of nation to the tax heavens yet it cannot afford to develop a system that could ensure two square meals for the hungry, voiceless citizens.

The US-based think tank Global Financial Integrity (GFI), in its latest report, reported that \$165 billion exited the country during 2005-2014, while **\$770 bn black money entered India in the same period. The illicit financial inflow of \$770 billion was 14 per cent of India's total trade of \$5,500,744 million, the report said.** During 2014 alone, the inflow of black money was about \$101 billion

while the outflow was \$23 billion, it said. The report further said, "The findings assume significance as India has no official assessment on the quantum of black money in the country and abroad."

"One dominant channel for illicit financial flow (IFF) moving in and out of the developing world is trade mis-invoicing, it said, adding that trade mis-invoicing accounted for at least 66 per cent of measurable IFF outflows and 97 per cent of measurable inflows in 2014. Trade mis-invoicing is a form of trade-based money laundering made possible by the fact that trading partners write their own trade documents or arrange to have the documents prepared in a third country (typically a tax haven), a method known as re-invoicing." "Fraudulent manipulation of the price, quantity, or quality of a good or service on an invoice allows criminals, corrupt government officials, and commercial tax evaders to shift vast amounts of money across international borders quickly and easily."

Suggesting steps to check black money, the financial watchdog said that the governments should establish public registries of verified beneficial ownership information on all legal entities to check black money. "All banks should know the true beneficial owner(s) of any account in their financial institution. Policymakers should require multinational companies to publicly disclose their revenues, profits, losses, sales, taxes paid, subsidiaries, and staff levels on a country-by-country basis."⁸ But why should the political governing class take pain in assessing inflow and outflow of black money and keep official record? When there is a sound system of minting money to support the system of constitutional power grabbing, why should the political leaders and policy members kill the hen that perennially laid golden eggs? The vicious circle is 'minting money for gaining power and gaining power for making money'.

PLANNED CHAOS IN THE BANKING SYSTEM

In support of the above mentioned vicious circle, a tiny instance out of innumerable siphoning cases is elaborated here.

The Central Bureau of Investigation has recently registered a case against 19 companies which allegedly sent over Rs.424 crores in foreign remittances through more than 700 transactions that are suspected to be money laundering with the help shell companies. Investigation reports reveal that during 2015, officials of Punjab National Bank of Mint Street branch in Chennai entered into criminal conspiracy with these 19 companies which had accounts with the bank. The charge-sheet filed on 08/09/2017(Friday) points out ".....in furtherance of the conspiracy, the above said

companies were sending foreign exchange to Hong Kong without any genuine transactions." "The modus operandi was that the customers got remittances from various other banks to their accounts by way of RTGS. The customers presented their request with a quotation issued by foreign suppliers for 100% advance remittances" the FIR said. The customer made request for remittance to foreign supplier based on the quotation. "The remittance amount was kept in such a way that it would not exceed the threshold limit of US\$ 1 lakh for each remittance in order to circumvent the regulatory requirements and applicability of the RBI." The CBI revealed there were 700 advance remittances made for imports through various current accounts opened during the period January 2015 to May 2015 totaling to Rs.424.58 crore. "All the advance remittances were routed through NOSTRO account maintained with HSBC, New York" it said. PNB found that none of the units were functioning at the available address and the RTGS transactions had emanated mostly from some credit cooperative societies, Mumbai and other places. Such RTGS transactions were made by the remitter through fictitious persons in whose names the accounts were opened in the Cooperative Societies, Mumbai.⁹ Continuous fudging and falsification of data in the banking system (especially in the public sector banks) is a common practice and this has led the most sensitive sector to touch a record high of NPA level to Rs.13 lakh crores, on date. It is interesting to note that the government is going to infuse Rs.2 lakh crores in recapitalizing the public sector banks as well as restructuring and consolidating it as a face saving in response to the requirements of Basel-III norms. Crony Capitalism in the garb of much hyped 'New India' is creating nastily rich people at a blitzkrieg mode. A single example is that just 476 rich families own and control corporations that dominate the Indian economy. India's **info-tech Czar** Azim Premji, whose 75% share of Wipro Corporation is estimated to be worth Rs.78624crores. However, this does not take account of any of his extensive property assets.¹⁰

The New India is also upgrading and procuring new weapons for the military at enormous cost while over 300 million Indians live on incomes of \$1 a day or less.

POVERTY LINE VS. AFFLUENCE LINE

A valid question arises here that when the New India and its 'Governance' thinks so much about 'poverty line' and 'Antyodaya'; should it not fix a limit for earning and accumulating naked wealth by defining a limit as 'Affluence Line'. Is it justified in any way to propagandize VDIS schemes from time to time thereby providing endless options to launder money smoothly? Is it not government sponsored 'money laundering scheme' running at the tax

payers' cost? Will our so called 'leadership' will ever deliberate over the issue seriously? Probably, never! Corporate and political integrity is all about culture and it is shameful that such culture where unethical behavior is not only condoned but also rewarded. Responsibility for this problem is equally shared among the congregation of executives, owners and regulators. The bitter truth is that Indians have been too elastic in condoning and co-opting corruption all around. "Not all the regulation in the world will stop fraud. In the end, policing cannot win at the expense of self-policing; to act to avoid prosecution cannot win at the expense of acting ethically; pragmatism cannot win at the expense of responsibility. Finally, it is about building an "ethisphere", which can come about by accountability to the citizenry and, in turn, having an honest citizenry. It again means going back to the drawing board and not tossing off ethics as an addendum taught in isolation but braiding it into actual and current decision-making."¹

CONCLUSION AND SUGGESTIONS

The German poet Goethe had told that big money hides bigger sins. The theme aptly fits in reference to New India. In the nasty and naked race of wealth creation, most of the capable people flout all the norms, rules and regulations and the most pathetic part is that, even after their conviction, most of them neither repent nor have shame. India wants to become a great nation without having a transparent policy designed with intended consequences and implementation issues and without considering the cost or benefits. Politicians are not the 'masters' and hence, the archaic decision like 'demonetization' never again be implemented without adequate deliberations, cost-benefit analysis and evaluation of the results. The country is defaced with Transparency International's rating about Indian governance as the 'most corrupt' in the Asia-Pacific region. India needs huge FDI and FII for its flourishing economy but the government's focus on and persuasion of useless agendas like, Gau, Ganga, Gayatri, Gita, Hindutva, Ram-mandir issues are showing devastating effect on the country's economic environment and its socio-economic texture leading it to rank close to the bottom on ease of doing business at the world level

Politics and policy making is serious diplomatic business in the backdrop of globalization. India needs immediate and complete change in the 'governing' system. The system of running government through 'tenure- based super-centralized IAS type' services should be scrapped immediately and best of the talents be hired from Indian Institute of Managements as contractual bureaucrats to

govern everything. The principle of 'hire and fire' is followed and their services be terminated if they fail to deliver. India craves for 'professionalism' in every sphere of activities

The need for overhauling of the system becomes imminent when Mr. Sanjeev Sabhlok, a retired IAS officer confesses "as far as corruption is concerned, my stint in the IAS since 1982 showed me that India's politicians were hopelessly corrupt and that corruption always started from the top. I was getting sick of serving under these despicable "leaders". In 1998, I decided to look for a political solution. Joining mainstream parties was not an option because of their involvement in corruption. What I was looking for was a liberal party that would fight for a small but strong government, for free markets and for equality of opportunity (not equal outcomes). It would form a government that undertakes a limited role – of defense, security and justice. Such a government would have very little discretion in regulating people's social preferences or economic affairs except to the extent they physically harm others. Such a government would never be allowed to use taxpayers' money to operate businesses such as Air India or Ashok hotel."¹²

Mis-governance and corruption issues have become 'last straw on India's back' and the deafening propaganda of 'New India' and 'Achhey Din' will not work for long because the youth of India knows when to and how to claim and snatch their rights.

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THE WORK AND WORKFORCE - AN EMPIRICAL ANALYSIS WITH SPECIAL REFERENCE TO INDIA

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Abstract

India, being one of the fastest growing economies, has abundance in both of natural and human resources. The credit of this high ranged growth experienced by the country goes to the optimum utilization of resources especially the labour force. India, mainly the human resource rich country enjoying the phase of demographic dividend from the recent past. According to the Indian Census (2011) India had a population of 121 crore people and is projected to reach about 170 crore people in 2047. From the last few decades India is experiencing the reduced population growth rate but still the provisional data reflecting the indication of massive unemployment crisis mainly because of the fact that a huge population has already been born and that is slowly entering into the workforce in the next two decades. Therefore here is a strong need to take a pause and a reassessment is required of the current position, whether this continued trend of divergence between the work and workforce of India will lead a safe tomorrow. Despite higher economic growth India has not been able to generate sufficient number of employment and somewhere is facing the paradox of high economic growth rate and unavailability of work. On the basis of empirical data this paper tries to analyze the gap that is occurring between the availability of employment and the working age population of the country (working age population means the population of 15-59 age brackets).

Keywords: *Employment, Working age population, demographic dividend, Economic Growth.*

INTRODUCTION

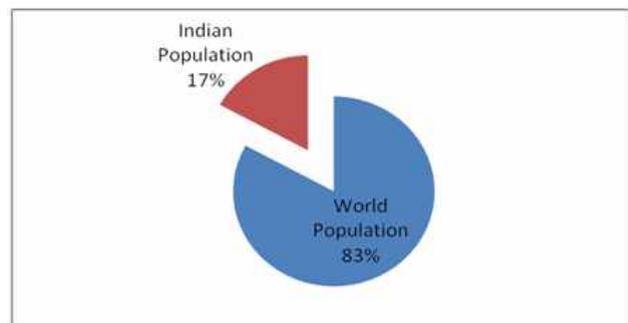
India, the vibrant country, presents unique example of diverse cultural unification. It is very rich in its natural as well as human resources. Its present stage of economic development, size, and demographic profile reflects the potential of the country. The growth potential of any country is reflected in the wise use of available natural resources and its enriched human capital in terms of literacy, employment, health, equality of income etc. The size and quality of human capital has very important role to play in the economic development of any country, and it is equally true in case of India. India supports one of the highest populations ie. 17% (approx.) of the world population in its 2.4% of the total land area of world.(1) With a view to analyse the employment scenario of any country, it will be very logical to divide the whole population into the dependent population and the working age population category, as it is the working age population that needs the productive employment or the livelihood. Decades ago India was very pessimistic about its population growth as it was proving as a barrier to the economic growth but in the present scenario this big population has become the strength of the country. As, India is taking series of initiatives to turn the ever increasing population into the human assets.

According to the Demographic Transition theory decline in infant and child mortality leads to decline in overall fertility

levels [1]. Which results into Temporary Baby- Boom and later when this particular population enters into working age that is within a period of 15-25 years, the state of Demographic Dividend arrives. At this point of demographic dividend the country has comparatively higher share of workers as compared to the dependent population. India is also passing through a phase of these unique demographic changes, wherein the proportion of the working age population (15-59 years) is likely to rise from around 58 per cent in 2001 to over 64 per cent by 2021 (according to the Economic Survey 11-12) The working age population is defined as those aged between 15 to 64.

Figure-1

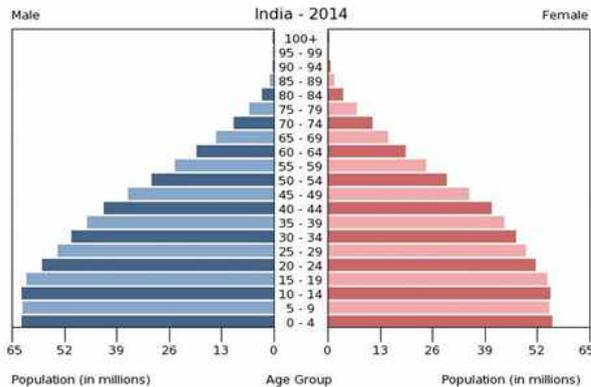
The proportion of India's population in the world.



India's population as a proportion to world population

The Regional Human Development Report of the United Nations Development Programme, (2016) suggests that from 0.86 b people aged between 15 and 64 years, India's working age population will grow to over a billion by the year 2050. China and India comprised 62% of the region's share in 2015, with 1 billion and 0.86 billion workers respectively.

Figure-2

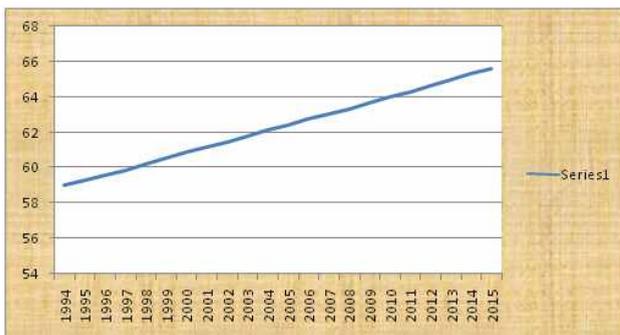


Source: CIA World Fact book

A population pyramid above exhibits the age and sex structure of an India's population. The population in millions is shown on the horizontal axis, the male population is on the left side whereas the female population on the right. The shape of pyramid clearly reveals the India's strength. The Indian Pyramid got a strong base, with more youngsters. It is well balanced and smooth one. In the years coming India would have a uniform age distribution & a smooth and symmetric pyramid. The higher share in the world's working age population gives with this demographic structure India has a distinct advantage in the world market as it has become a large pool of educated workforce to provide the support to the global economy.

Figure-3

India's Population Ages 15-64 (% of Total)



Source: World Bank Data

The Chart above shows the working age population of India. There is increasing Trend line, covering data from 1994 to 2015 in the working age population of India.

I. THE EMPLOYMENT SCENARIO

Employment has been an important agenda in the development process of India. In the recent past, there is a type of stagnation is felt in the growth of employment in India in spite of its accelerated economic growth. The fact that, a high rate of economic growth should accelerate upward trend in the employment sector too. But it does not seem a reality in the case of India. Though Indian Economy is growing very fast but is tagged as a jobless growth.

Table-1 Sectoral Distribution of Employment In India

Years	Agriculture	Industry	Service
1994	60.5	15.7	22
2000	59.9	16	24
2005	55.8	19	25.2
2010	51.1	22.5	26.6
2012	47.1	21.5	28.1

Source- World Bank Data

In India, a large proportion of workforce is still dependent on the agricultural sector (47.1 per cent employment share in 2012). At the same time, its share in gross value added has fallen rapidly, from 18.4 per cent in 2011-12 to 15.4 per cent in 2015-16. (India Labor Market Update) The Table above shows the sector wise breakup of employment in India for the period covering 1994 to 2012. It is visible that the agriculture sector dominates most, though its share in the total employment is decreasing. The shares of industry as well as that of services are on increase.

Table-2

NUMBER OF PERSONS EMPLOYED IN INDIA



The Table above shows the number of persons employed in India for the years 2006 to 2012. The continuous rise in the number of employed persons is seen during the period.

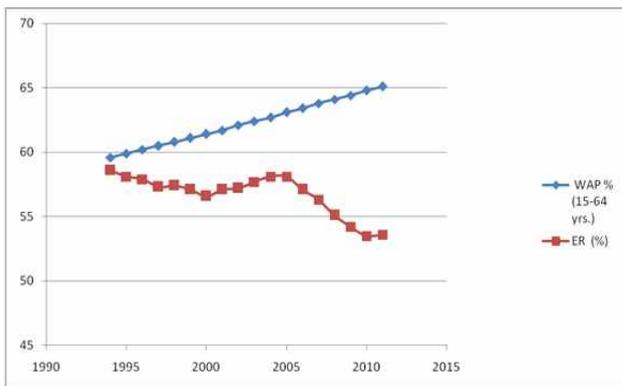
THE ANALYSIS AND CONCLUSION

India stands among the most important emerging economies of the world but employment scenario in the

country still very poor. Even today the largest proportion of workers engaged in primary sector ie. Agriculture but its contribution is a mere 14 per cent to the GDP of India. In contrast, the service sector which contributes 58 per cent of the GDP but responsible for only 27 per cent of the employment, and the share of manufacturing or industry in both employment (13 per cent) and GDP (16 per cent) . This shows the unbalanced pattern of growth which is not sustainable. The situation seems even critical when the employment situation is analysed in terms of working age population of India. India is now tagged as one of the inhabitants of the youngest population in the world. These persons are in working age, ready to work hard and taking the economy at the next higher stage of development. But the reality is somewhat harsh and alarming shown in the graph below.

Figure-4

INDIA'S WORKING AGE POPULATION & EMPLOYMENT



Source: Graph based on World Bank Data

The graph above shows the two important variables, the working age population of India and its employment scenario together from the year 1995 -2012. The working age population line is increasing continuously, whereas the employment Trend line is sometimes stagnant or decreasing, it may be because of economic pressures felt by the country created by internal or external factors. The graph exhibits that these two trend lines are diverging with each other and a marked gap is occurring, it clearly means that during the above said period the persons though falls in the working age bracket, unable to get the employment. Thinking about the ideal situation these two lines should at least very near to each other if not able to match by coinciding. Only then the youth of India will able to participate in the development process of India in real manner. Government has already notified the situation and is trying to solve it by pushing labour-intensive sectors along with bolstering skill development programmes.

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THE FDI AND GROWTH SUSTAINABILITY IN INDIA: AN EMPIRICAL ANALYSIS

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Abstract

The global economic meltdown that took place in 2007-08 has laid a widespread impact on the world economy in general and Indian economy in particular. All most all the macroeconomic indicators as well as business sustainability were affected drastically. Though Indian economy was least affected in terms of economic growth, due to its robust market, yet there was a large spread liquidity crisis due to volatile stock market and cash crunch banking sectors. This is all because investors lost faith on both money and capital market. As a result, gross domestic investment fell down and so also the Gross Domestic Product. However, in order to stabilize the growth rate, government of India made a positive move by attracting FDI through some reform measures. Significantly, the ease of doing business index has moved to 130 in 2016 from 134 in 2015 because of the reforms in getting easy electricity, credit and protecting minority investors. As a result, the FDI is accepted as one of the sustainable investment source and India was the largest recipient in Asia overtaking China with the growth rate of 40 percent.

In this research paper the research objective is to give thrust on the role of FDI as constant and sustainable source of investment and to analyze the impact of investment on the economic growth in India. It will also examine the spillover effect of FDI on different macro economic variables.

KEYWORDS: *FDI, Global Economic Meltdown, Liquidity Crisis, Business Sustainability, Ease of Doing Business Index & Spillover Effect.*

INTRODUCTION

FDI flows comprise capital provided by foreign investors, directly or indirectly to enterprises in another economy with an expectation of obtaining profits derived from the capital participation in the management of the enterprise in which they invest. The foreign investors acquire ownership of assets in the host country firms in proportion to their equity holdings. India has received the maximum FDI inflows from Singapore in 2015-16 followed by Mauritius, the US, the Netherlands and Japan. India attracted \$13.69 billion foreign direct investment from Singapore in 2015-16 financial years. The report published by PHDCCI states that on an average, between 2000 and 2016, about 40% of FDI inflows has gone into services, telecom, construction and computer software and hardware sectors in India.

Tadesse and Ryan in 2001 pointed out the importance of the relationship between inward FDI and exports are essential for development and planning strategies of the countries. He viewed if FDI (Foreign Direct Investments) dislodges export trade of local firms of the host country, then it will be detrimental for the domestic industry of the investing

country. On the contrary, if trade and FDI go together then it might direct to greater competitiveness of the foreign market and this is beneficial to exports from host country and therefore to its industries.

FDI is for more than three decades is considered as a vital element of the globalization efforts of the world economy the relevance of it can be seen from the examples of countries like china, brazil, India, Indonesia etc.. The growth and expansion of production internationally is driven by economic and technological forces. It is also driven by the ongoing process of liberalization through Foreign Direct Investment (FDI) and trade policies. One stupendous feature of the present-day world has been the circulation of flow of private capital in the form of foreign direct investment (FDI) in Asian developing countries, like china since 1980s and India especially since 1990s. Since the 1980s, multinational corporations (MNCs) have come out as key players in the globalization environment. Governments around the world in both highly developed and developing countries have been attracting MNCs to come to the respective countries with their capital in the form of FDI. This experience may be related to the broader

context of liberalization in which most developing and transition countries have moved to market-oriented strategies. In this context, globalization offers an unparalleled opportunity for developing countries like India to attain faster economic growth through trade and investment.

REVIEW OF THE LITERATURE

Peter Nunnenkamp and Rudi Stracke (2008) tried to demonstrate the relationship between FDI and regional development in India in the post reform period. They found that concentration of FDI in few advanced states was the cause of unequal growth and prevented FDI effects from spreading across the Indian economy. They also found the positive co-relation between FDI and per capita income growth across Indian states in general and developed states in particular. Saiyed S.A. (2012) examines the effect of FDI on economic growth in India from 1990-91 to 2011-12 by using statistical regression model of two variable equations. The regression result revealed that FDI is positively correlated to the economic growth. The causality test shows the unidirectional causation that FDI stock causes output to rise. Gulshan Akhtar (2013) studied the role of FDI in the growth and development of Indian economy by taking both pre and post reform period. He found that, during pre-liberalization period, FDI increased at CAGR of 19.05 percent while during post reform period it has grown by 24.08 percent which indicates the positive impact of FDI in India. Svetlana Patel and Dhvanish Mehta (2013) have tried to investigate the cause of low growth of FDI in India. The paper reveals that the flow of FDI was not so encouraging during the years 2000-2006. Shashank Goel, K. Phani kumar and K.Sambasiva Rao, 2012 had undertaken a study on trend, patterns and growth perspectives of FDI in India. They found there was an impressive growth of FDI during 1990s due to introduction of LPG policy in Indian economy and it increased about 1026 times by 2010.

RESEARCH METHODOLOGY

Objectives of the Study

- To analyze the growth trend of FDI in India
- To find out the correlation between FDI and the GDP growth rate in India

Relevant statistical techniques, especially correlation and regression, have been used in the study along with simple ratios and averages. The question about the growth pattern of Indian GDP to FDI is whether of India undergoes a structural change after new economic policy- 1991 and Financial Crisis 2008. To answer this question, the researcher has taken the following regression analysis.

$$z = f(x_1, x_2, x_3 \dots \dots \dots x_n.)$$

$$Z = (a + b_1x_1 + b_2x_2 + b_3x_3 + \dots \dots \dots b_nx_n.)$$

$$\text{Equation: DGDP}(t) = a + b * \text{FDI}(t)$$

DGDP as the difference between the GDP of the current year and next year:

$$\text{DGDP}(t) = \text{GDP}(t+1) - \text{GDP}(t), t = 1991 \dots \dots \dots 2013.$$

Where, Z is independent variable & it stands for FDI and X stands for GDP.

The present study shall make use of secondary sources of data collected mainly from the publications of CMIE, RBI, DIPP and the reference period of this study relates from 1991 to 2013.

Hypothesis of the study

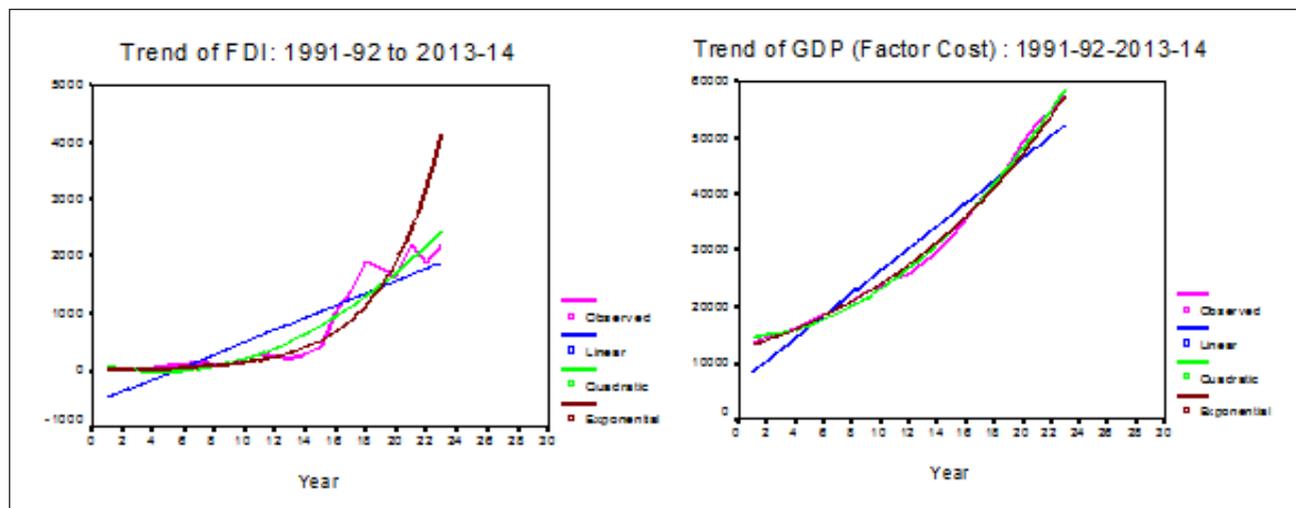
1. Ha: The contribution of FDI to economic growth is significant.
Ho: The contribution of FDI to economic growth is not significant.
2. Ha: The inflow of FDI is adversely affected by the recent financial meltdown- 2008.
Ho: The inflow of FDI is not adversely affected by the recent financial meltdown- 2008.

FOREIGN DIRECT INVESTMENT AND MACRO ECONOMIC VARIABLES

For more than five decades FDI has been considered as one of the prime factor of growth in GDP. But there is no means to find an absolute find the growth of GDP. Thus the researcher for long time brought out many variables of economy and viewed that the growth of these variables In this research an attempt has been made to find out the relationship between FDI and macro an economic variable

that constitutes the GDP. The macroeconomic variable here that has been taken are, Per capita GDP (Rs), GDP at Factor Cost, Gross Domestic Capital Formation (GDCF), Exports, Imports, Exchange Rate \$/Rs., Foreign Exchange Reserve (FER), Net Debt, Whole Sale Price Index WPI (2004-05). It is believed that these above mentioned variables' change will reflect the change in the GDP and this change in GDP is

Rs1030.37 billion. In the very next year i.e. in 2007-08, the whole world economy was suffered from severe financial meltdown. The interesting fact is that due to the robustness of Indian economy, the flow of FDI was not affected by that recession and increased Rs.1914.19 billion. If we look at the figure, we can see that the FDI has grown exponentially from 1991 to 2013-14.



to be tested in relation to the change in the inflow of FDI into the economy of the host country. Here in this research the host country has been taken as India. This research is an attempt to get the information how far the parameters of GDP growth has been impacted by the change in the inflow of FDI into the Indian Economy. To observe this relationship the researcher has in the first hand used the Correlation method and proceeded to use the regression method to analyze the degree of relationship between these variable. The correlation method has been used to test existence of the relationship between FDI with each of the variables that are used as the parameters of growth of GDP, which is a very simple method, and then the multiple correlation tests is to be made to find out whether there is any relationship exists between each of these variables.

GROWTH OF FDI AND GDP IN INDIA

The government of India introduced economic reforms in the form of LPG policy in the year 1991. Since then India received FDI to the extent of Rs.3.16 billion. However, there was a moderate growth of FDI till 2005-06 when it touched to Rs.397.3 billion. But there was a sudden upsurge in the FDI flow in the year 2006-07 to the extent of

Similarly, the gross domestic product has grown consistently after 1991 till 2013 from Rs.1367171 billion to Rs.57417.91 more than four times. The growth of GDP has grown in both quadratic and exponential manner in these periods.

DATA ANALYSIS AND INTERPRETATIONS

The following tables show the descriptive statistics in which the mean value of FDI is 704.4343 and standard deviation value is 820.49925. The mean value of GDP at FC is 30340.8465 standard deviation value is 13925.83919. The following tables deal with the correlation between FDI and GDP at FC. The data shows there is a positive correlation exists between FDI and GDP at FC. As the Pearson correlation value is .955. The concept of correlation says the value of correlation should lie between -1 and +1. The significance value or the p value tells whether we should argue there is a relationship or not. If the calculated P value is higher than the observed P value then in that case there is no significant relationship exists between variables. But in this case the calculated P value is less than the observed P value i.e. our calculated P value is .0000 which is less than 0.05 (.0000 < .05). Therefore it can be concluded that there is

significant relationship exists between FDI and GDP at FC.

Table: 1

Descriptive Statistics			
	Mean	Std. Deviation	N
FDI	704.4343	820.49925	23
GDP_at_FC	30340.8465	13925.83919	23

Table: 2

Correlations			
		FDI	GDP_at_FC
FDI	Pearson Correlation	1	.955**
	Sig. (2-tailed)		.000
	N	23	23
GDP_at_FC	Pearson Correlation	.955**	1
	Sig. (2-tailed)	.000	
	N	23	23

** . Correlation is significant at the 0.01 level (2-tailed).

Table-3 (Correlation between FDI and GDP at Factor cost)

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.955 ^a	0.912	0.908	4217.299	0.762

a. Predictors: (Constant), FDI
b. Dependent Variable: GDP_at_FC

Table-4

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.89E+09	1	3.89E+09	218.881	.000 ^a
	Residual	3.74E+08	21	17785607.78		
	Total	4.27E+09	22			

a. Predictors: (Constant), FDI
b. Dependent Variable: GDP_at_FC

Table-5

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18920.22	1170.121		16.169	0
	FDI	16.212	1.096	0.955	14.795	0

a. Dependent Variable: GDP_at_FC

Table-6

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	18971.45	54587.67	30340.85	13302.32	23
Residual	-8367.22	7169.292	0	4120.336	23
Std. Predicted Value	-0.855	1.823	0	1	23
Std. Residual	-1.984	1.7	0	0.977	23

a. Dependent Variable: GDP_at_FC

In the above tables the researcher has taken GDP at FC as dependent variable and the FDI as independent variable. R² is known as the coefficients of the determinants. In table-3 a value of R is .955 and because there is only one predictor, this value represents the simple correlation between FDI and GDP at FC (this already has been confirmed this by running a correlation). The value of R² is .912, which tells that FDI can account for 91.2% of the variation in GDP at FC. In other words, if attempt has been made to explain why some records sell more than others, it can be looked at the variation in GDP at FC of different records. There might be many factors that can explain this variation, but the derived model in this case is

$$\alpha_i = \beta_0 + \beta_1 x + \epsilon_i \dots \dots \dots \text{(EQ.-1)}$$

$$\Rightarrow \text{GDP at FC} = \beta_0 + \beta_1 \text{FDI} + \epsilon_i$$

Here, α_i denotes to dependent variable GDP at FC, which includes FDI, can explain approximately 91.2% of it. This means that around 8% of the variation in FDI cannot be

explained by GDP at FC. Therefore, there must be other variables that have an influence also.

The next part of the output (SPSS Output) reports an analysis of variance (ANOVA). The summary table shows the various sums of squares described in table-4 and the degrees of freedom associated with each. From these two values, the average sums of squares (the mean squares) can be calculated by dividing the sums of squares by the associated degrees of freedom. The most important part of the table is the F-ratio, which is calculated using equation (1), and the associated significance value of that F-ratio. For these data, F is 218.81 which is significant at $p < .001$ (because the value in the column labeled Sig. is less than .001). This result tells that there is less than a 0.1% chance that an F-ratio this large would happen if the null hypothesis were true. Therefore, it can be concluded that the regression model results is significantly better prediction of GDP at FC than if the mean value is used of GDP at FC. In short, the regression model overall predicts GDP at FC significantly well.

The ANOVA in specific highlights whether the model, overall, results in a significantly good degree of prediction of the outcome variable. However, the ANOVA doesn't talk about the individual contribution of variables in the model (although in this simple case there is only one variable in the model and so we can infer that this variable is a good predictor). The table-5 provides details of the model parameters (the beta values) and the significance of these values. The above equation-1 states that β_0 was the Y intercept and this value is the value B (in the SPSS output) for the constant. So, from the table, it can be stated that β_0 is 18920.22, and this can be interpreted as meaning that when no FDI will be allowed (when $X = 0$), the model predicts that 18920.22 will be the level of GDP at FC. β_1 value represents the gradient of the regression line. It is 16.212. Although this value is the slope of the regression line, it is more useful to think of this value as representing the change in the outcome associated with a unit change in the predictor. Therefore, if the predictor variable is increased by one unit (if the FDI is increased by 1) then the devised model predicts that 16.212 will be the level of GDP at FC.

It is observed that, in general, values of the regression coefficient β represent the change in the outcome resulting from a unit change in the predictor and that if a predictor is having a significant impact on our ability to predict the outcome then this β should be different from 0 (and big relative to its standard error). Here it can be found out that the t-test tells us whether the β -value is different from 0. SPSS provides the exact probability that the observed value of t would occur if the value of β in the population were 0. If this observed significance is less than .05, then it can be

agreed that the result reflects a genuine effect. For these two values, the probabilities are .000 (zero to 3 decimal places) and so it can be stated that the probability of these t-values or larger occurring if the values of β in the population were 0 is less than .001. Therefore, the β s are different from 0 and we can conclude that the FDI makes a significant contribution ($p < .001$) to predicting record GDP at FC.

Regression

Table-7

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.934 ^a	0.873	0.867	1998.04656	0.529
a. Predictors: (Constant), FDI					

Table-8

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.77E+08	1	5.77E+08	144.596	.000 ^a
	Residual	83835991	21	3992190		
	Total	6.61E+08	22			
a. Predictors: (Constant), FDI						

CONCLUSION

In this research there are many proxy variables are used to point out the GDP growth rate lie, PDP at FC, GDCF, Exchange rate etc. the correlation and regression methods are used to test the relation between these variable and the degree of relationship. Apart from this the trend analysis was used to test the trend of growth of these variables at different time frame. From the regression analysis the attempt has been made to test the proxy variables of GDP growth dependence on FDI where FDI in all the cases played as the independent variable. The result came out that FDI has a significant effect on the proxy variables of the GDP growth. The trend analysis is done to test the line of growth of the parameters of GDP that suitably highlighted the linear, quadratic and the exponential at different time intervals and different time frame. The Pearson correlation method was used to find the level of relationship where the test is being done to confirm how strong this relationship is? The Pearson correlation method brought out the result that inward FDI has a greater and strong relationship between the proxy variables of the GDP growth i.e. Exports, GDCF, Imports, and Foreign Exchange Reserve etc.

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THE GROWTH OF INDIAN WOMEN ENTREPRENEURS IN E-COMMERCE

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Abstract

The Indian women are often caught between two roles, first her ambitions to serve as successful career woman and second with respect to the conservative role of the society that expects her to take care of the home and health of the family members. However these days the women are seen performing both the roles with great zeal and enthusiasm. With the level of education received by the women these days they do not wish to be confined to the boundaries of their house. In fact it can be said that they are emerging as smart and dynamic business entrepreneurs. They have proved themselves to be at par with their male counterparts. Today with a change in the economy, everybody is moving towards e-commerce. E-commerce basically deals with the buying and selling of products and services or transmitting of funds online over an electronic platform mainly the Internet. The growth of E-commerce has helped the women entrepreneur to generate new ideas and work from home at their own comfort. This has helped the women to grow as successful business entrepreneurs while taking care of their home and family simultaneously. Also it has helped the women to become financially independent by selling the products/services online. This paper aims to study the challenges faced by the women entrepreneurs and how e-commerce has helped to curb them. The present study will also aim towards the problem areas of the women operating in the E-commerce sector.

INTRODUCTION

For centuries women have remained the victim of social prejudice and discrimination. Women are generally presumed to be weak, passive, dependent and people oriented. On the other hand males are considered strong, aggressive, independent and things oriented. As a result, men and women enter the organizations with different skill sets. Women are taught to depend upon others, to limit their ambitions and to avoid exposure and risk. These factors usually inhibited development of the self confidence, innovativeness, achievement motivation and risk taking ability which is major for the development of an entrepreneurial career. However the scenario is different now. With the breakup of Joint family tradition and nuclear families gaining popularity, there arises the need for additional income to maintain the living standards in the face of inflation, thus encouraging more and more women to enter into the competitive world of business. Women entrepreneurship has been recognized as an important, untapped source of economic growth during the last decade. In the initial years women had confined their business to the extension of kitchen activities. They specialized into the making of papad, pickles and masala powders or traditional handicrafts like making of baskets etc. With the spread of education and awareness, Indian women have stepped out from the boundaries of their house. Their focus has now

shifted from the kitchen, handicrafts and traditional cottage industries to non-traditional, higher level of activities. In recent years women have made their mark in different walks of life and are competing successfully with men irrespective of the social, psychological & economic barriers. The reason for this change is introduction of social reforms, legal safeguards and awareness amongst the women. The new industrial policy laid down by the Government emphasizes on the special training facilities being provided for the development of women entrepreneurs in the country. Financial Banks and Institutions have set up several cells to assist the women entrepreneurship in the country.

E-business and entrepreneurship have come a long way which has helped in the encouragement and empowerment of women. Women can overcome their difficulties and achieve success by working online.

MEANING OF E-COMMERCE

E-commerce refers to the buying or selling a product or service over an electronic network. The main reason for its popularity is that it makes the ready availability of any product and service online, ranging from books to music, health and lifestyle, grocery, real estate and financial services as well. In fact it can be said that in today's world no area has been devoid of e-commerce. With the growing nuclear families in our society and due to the busy lifestyle

schedule being followed, people find it comfortable to spend time for online shopping as compared to the traditional style of shopping. E-Commerce has completely changed the shopping experience of customers. It is increasingly attracting customers as it provides them with many benefits like delivery at door step, options of exchange/return, and easy comparison between different products online and easy payment facilities. It can be expected that in near future e-commerce will become so common that 'e' will no longer exist and it will be 'business as usual' being conducted through a whole new medium.

EVOLUTION OF WOMEN AS ENTREPRENEURS

Although women form a very large proportion of the self-employed group, their work is often not recognized as "work". The prevailing 'household strategy' catalyses the devaluation of women's productive activities as secondary and subordinate to men's work. Women's contributions vary according to the structure, needs, customs and attitudes of society. Women entered entrepreneurial activities because of poor economic conditions, high unemployment rates and divorce catapult. In Babylonia, about 200 B.C., women were permitted to engage in business and to work as scribes. By 14th century, in England and France, women were frequently accepted on a par with men as carpenters, saddlers, barbers, tailors and spurriers. Dressmaking and lace making guilds were competed more with men for some jobs, but were concentrated primarily in textile mills and clothing factories. In 1950, women made up nearly 25 per cent of both industrial and service sectors of the developing countries. In 1980, it increased to 28 per cent and 31 per cent respectively. Meanwhile, in 1950, 53 per cent of females and 65 per cent of males of industrialized countries were in non-agricultural sectors. As a result of the economic crisis of the 1980s and the commercialization and modernization of the economy, women lost employment in agriculture and industries. This pushed women in urban areas to find out a suitable solution for generating income, which resulted in the emergence of self-employment, largely in micro-businesses in the informal sector. Women tend to become entrepreneurs due to the push and pull factors. Push Factors refers to those influences that push individuals towards entrepreneurship. Women entering business driven by financial circumstances due to family pressure are said to be influenced by push factors. On the other hand Pull factors refer to an urge in women to undertake ventures with an inclination to start business. Being indulged in some kind of work that helps them gain financial independence apart from handling the household responsibilities, develops a kind of independent decision making in the minds of women with relation to their life and career.

WOMEN ENTREPRENEURS IN THE FIELD OF E-

COMMERCE

Online shopping has proved to be a boon for the women entrepreneurs who have entered the e-commerce male dominated field and started with the sale of cosmetics, artificial jewellery, toys, home furnishing and apparels along with other products. Not only it has helped the women provide financial independence, but with the multifold responsibilities she carries, it has also helped them provide the flexibility to carry on their business at their own convenience sitting at home. Also it is easier to conduct business online as it involves less business related meetings, minimal travelling, fewer overheads like rent, electricity charges, salaries to employees and so on. E-commerce is in fact the most cost effective and convenient tool which provides an efficient method to connect buyers and suppliers from around the world without any need of actually traversing the distance. E-commerce has provided a solution to the problems relating to the women of handling their dual responsibilities. It has provided a platform to the women by empowering them to sit and work at comfort at their own homes and maintaining work life balance as well. Apart from these benefits following are the reasons that motivate women entrepreneurs to enter the field of E-Commerce:

1. **Global Reach:** E commerce has enabled the business woman to expand their business globally as internet does not remain confined to one particular market only. As such it is easy for them to establish new markets for their products.
2. **Less Administrative Work:** Since the work is totally computerized there are fewer documents to be maintained physically and hence the administrative work is completely less.
3. **Convenience:** The biggest benefit for the women entrepreneurs is that the work can be performed at home only. Thus it is a convenient option for them as along with the household responsibilities they can carry on the work at their own comfort.
4. **Removal of middlemen:** One of the biggest problems being faced by the women entrepreneurs was that there were too many middlemen involved in the sale of their products who used to charge a huge chunk of profits. Introduction of e-commerce has led to the elimination of necessary middlemen. Hence the women entrepreneurs are able to enjoy better profits.
5. **Transparency:** Since all the minute details are available on the internet it becomes easy for the women entrepreneurs to have an access to all the information. It becomes very easy for them to find out the necessary information with regard to product,

their prices, terms & conditions of sale etc. This helps them to set competitive prices. Also it is easy for them to respond to customer queries on an immediate basis.

WOMEN ENTREPRENEURS AND ECONOMIC DEVELOPMENT

The role of women entrepreneurship in economic development is inevitable. Entrepreneurship is not male prerogative. It's been evidenced that women entrepreneurship has gained momentum in the last three decades with the increase in the number of women enterprises and their substantive contribution to the economic growth in the country. The foreign Direct Investment Policy, technological innovations and manufactured exports in the Asia Pacific region have brought a wide range of economic and social opportunities for women entrepreneurs. Entrepreneurial development amongst women results in their freedom to take decisions because as an entrepreneur a woman is more powerful than as a mere worker. This helps in uplifting the social status of the women significantly. Through entrepreneurial development women will not only generate income for her family but will also create more employment opportunities for women resulting in a multiplier effect in the generation of income and employment. Although there has been a significant increase in terms of participation in managerial and professional jobs but the gender gap remains a dark reality. Women entrepreneurs need to be lauded for their increased utilization of modern technology, increased investments, finding a niche in the export market, creating a sizeable employment for others, and setting the trend for other women entrepreneurs in the organized sector. Women entrepreneurship movement can gain momentum by providing encouragement, appropriate awareness, training, environment and support. However programmes meant to empower women entrepreneurs can succeed only if there is a change in societal attitudes. These programmes should go beyond subsidies and credit allocation to change in attitudes, group and association formation, training in both managerial and technical skills and other support services. The acceleration of economic growth requires an increased supply of women entrepreneurs. Women entrepreneurs, when successful, act as a change maker in their families and society and inspire others to become self reliant and take up entrepreneurship. Thus women entrepreneurs play a very productive role in the Indian economy.

PROBLEMS FACED BY WOMEN ENTREPRENEURS IN E-COMMERCE INDUSTRY

With the gaining popularity of E-Commerce in the country,

women entrepreneurs have come a long way. Transacting over internet is really a good concept and is considered to be really innovative. It has been able to grab the attention of many as it has made the lives of many people easy. But with the growing benefits of internet marketing to the customers, it has also posed great challenges for the entrepreneurs indulged in this business. The major problems faced by the women entrepreneurs in this context are:

1. **Problem in finding Niche:** Although internet buying and selling has gained pace throughout the world, yet there are people who still prefer to go for traditional marketing practices. It is important for the entrepreneur to find out those selected people who resort to internet buying in order to cater to their needs. Looking out for this niche is often a problem for the entrepreneurs.
2. **Problem in Retaining Customers:** With a number of options available and easy comparisons made possible through internet buying, it has become increasingly tough to retain the customers. With the increasing awareness of the customers with respect to the products being sold one needs to put in a lot of effort to maintain the customer base. As such attractive offers need to be provided to the customers without compromising on the quality.
3. **Lack of trust:** People in India still prefer traditional buying as compared to online buying. The main reason for this is that in the case of traditional buying they are able to see, touch and feel the product. This somehow acts as a deterrent in the purchase of online products. Also the supply chain and logistics in case of e-commerce should be very effective one. In case the products do not reach the customer on time, it may give a negative impression to the customer.
4. **Problem of Sufficient Funds:** In order to sell the products to the customers, it is necessary for the entrepreneur to maintain the stock of the same so that faster delivery can be done. Also necessary payments need to be made to the logistics and supply chain people. As such it is necessary for the women entrepreneurs to have sufficient balance in their account.
5. **Good and effective customer service:** No business can be considered to be a success in the market if it is not good at dealing with customers in an effective way. This includes not only providing the customers with their requirements but giving them services even after the products are delivered to them. Thus the women entrepreneurs need to strengthen this aspect also.

FAMOUS WOMEN ENTREPRENEURS IN THE E-COMMERCE SECTOR

For women entrepreneurs to be successful, a lot of determination is needed. They can only turn out to be successful if they are able to cross all the hurdles and barriers that come in their way whether personal or professional. Undoubtedly the emergence of e-commerce has led to the solution of many problems being faced by the women in traditional market practices; still they have to overcome a lot of barriers for establishing their position in the market. A million of women entrepreneurs no matter in which field are lighting up the way of other women by providing them with employment. This not only helps in raising the standard of living but also helps in raising their self confidence and decision making power. It also encourages more and more women to step out of their comfort zones and enter into the world of business. Also they are able to attain great heights with their unique ideas and innovation. Some of the famous women entrepreneurs are Aditi Avasthi, Aditi Gupta, Ajaita Shah, Anu Sridharan, Arpita Ganesh, Ashwini Asokan, Chitra Gurnani Daga and many more to name. With the advancement in science and technology many new young entrepreneurs are joining hands thus paving the way for economic development.

Some of the famous women entrepreneurs in the e-commerce sector are:

- a) Swati Bhargava: CEO and Co-Founder at Cash karo .She started her first online venture in the year 2011 with her husband. Recognizing its potential in India they started the same in India in 2013 by the name of Cash karo. The biggest challenge faced by them was to educate the customers about the concept of cash back.
- b) Neeru Sharma: Co founder and director of corporate development at Infibeam, an online shopping portal. She has worked with Amazon and later on started her own online business. The biggest challenge faced by her was finding out the correct talent for her venture.
- c) Richa Kar: Co founder and CEO at Zivame.com, an online lingerie shopping portal in India. She realized that Indian women were not really comfortable talking about Lingerie and hence provided them with a platform that enabled them to make their choices.
- d) Suchi Mukherjee: Founder and CEO of Limeroad.com, which was founded in 2012.Limeroad gives an option to the users where they can create their own scrapbook of looks and ideas.

- e) Sabina Chopra: EVP Operations at yatra.com. Taking her learning and experience from her time at ebookers, in 2006, she co-founded Yatra.com and shaped it into one of India's most popular travel portals.

While e-commerce is still a new concept in India, it has seen a number of startups evolving into big companies over a short period of time. Although no single person or a company has emerged as a single leader, a number of individuals together have become the face of this sector in this country.

CONCLUSION

B.R. Ambedkar once said, "I measure the progress of a community by the degree of progress which women have achieved." This statement holds true in the real sense. The acceleration of economic growth requires an increased supply of women entrepreneurs. Women entrepreneurs, when successful, act as a change maker in their families and society and inspire others to become self reliant and take up entrepreneurship.

E-commerce is a potential gold mine for women in developing countries, but to seize those opportunities women will first have to overcome obstacles of education, infrastructure and finance. And while they are already tapping into the growing demand for outsourcing in services, they tend to be clustered at the low end of the skills and salary spectrum and risk being left behind by new technologies if they, and their governments, do not prepare now.

Self-employed women in the developing world are the micro entrepreneurs or women working from home are increasingly turning to e-commerce and the Internet as a way to earn income and save time and costs while also meeting their family responsibilities.

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CORPORATE GOVERNANCE

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Abstract

The concept of corporate entity was recognized since the beginning, but corporate governance in various manifestations has been in existence. Governance is concerned with the intrinsic nature, purpose, integrity and identity of an organization with primary focus on the entity's relevance continuity and fiduciary aspects. The evidences of corporate governance have been seen from the kautilya's arthashastra in which it maintains all administrators in good governance including the king all were considered as servants of the people. But in today's developing economy corporate governance is needed to create a corporate culture of transparency, accountability and disclosure. It refers to the compliance with all the moral and ethical values, legal framework and voluntary adopted practices which enhances customer satisfaction, shareholder value and wealth. With emergence of global competition, corporate India in general has realized that in order to grow, prosper and compete in international markets, they have to consolidate their strengths and run them most effectively in an efficient and transparent manner by adopting the best practices. Corporate governance standards and initiatives are managed by the SEBI through clause 49 of the listing agreement of the stock exchanges. Through corporate governance the Indian companies whether private or public have to develop a relationship among them in determining the direction and performance of a corporation. Corporate governance is an integral part of an organisation and management and business practices.

INTRODUCTION

The governance norms had predominantly been followed in ancient India to govern day to day life and also to govern the relationships between two states, two individuals and/or also between the individual and the state. In India there is a great deal of similarity in the governance structures of the ancient Indian kingdoms and modern corporations which is evident from the ancient text and scriptures like Vedas, Manu Smriti, Soma deva neeti stuti, Baharspatya Neeti stuti, Kautilya's Arthashastra etc. which focuses on governance. Arthashastra talks self discipline for a king and the six enemies which a king should overcome. All Upanishads, Vedas, and the Epic Kavyas like Mahabharata, Ramayana and Bhagwad Gita emphasize the essence of ethics being followed from within, be it Individual or be it the King or be it the whole kingdom. Governance Practices followed in ancient period gains lot of relevance in today's world. The Mauryan period was considered as one of the best administrative period over the entire world. It was Kautilya's Arthashastra, written during the period of Chandra Gupta Maurya which made Mauryan Empire stronger in terms of administration. The delegation of authority and span of control discussed in Mauryan and Gupta period is what is propounded and practiced in today's modern world. Today's Management Principles focuses

mainly on delegation of authority, responsibility and span of control as the main principles for better performance of duties. In today's competitive world the question of survival depends on effective governance. Adherence to ancient practices can help and guide us in better governance.

Corporate Governance is basically "The conduct of business in accordance with shareholders desires, which generally is to make as much money as possible, while conforming to the basic rules of the society embodies in law and local customs". The primary participants in a corporation are the tripod of shareholders, management led by the CEO and the Board of Directors. There are other participants as well as the employees, customers, suppliers, creditors and the community. Keeping in view the interests of various stakeholders in a company Corporate Governance is concerned with effective management of relationships. It requires the formulation of the value framework, the ethical framework and the moral framework which will guide the decision making process as it addresses the issues facing Board of Directors, such as the interaction with top management and relationships with the owners and others interested in the affairs of the company. During 1990s when the period of liberalization was started corporate governance was introduced by the industry association Confederation of Indian Industry(CII) which is

to be adopted by Indian companies voluntarily but when the Clause 49 of Listing agreement came into existence in the early 2000s it made compulsory for all the companies listed on stock exchange to comply with the norms of Corporate Governance. The main concept of corporate governance in India is to discipline the shareholder, who is the principal holder of the company. A committee was appointed by the SEBI in the year 1999 for promoting and raising the standard of Corporate Governance and the committee was named as Kumara Mangalam Birla Committee which focused on the Shareholders, Board of Directors and the Management. Different committees were formed from time to time and have given recommendations for the growth of Corporate Governance in India. In India a single regulatory body cannot regulate the corporate but there exists coordination between various regulatory bodies to regulate the corporate. The success of regulation rests on the intention and integrity of the regulator and regulated. The Securities and Exchange Board of India (SEBI) is the prime regulatory authority which regulates all aspects of securities market enforces the Securities Contracts (Regulation) Act including the stock exchanges. Companies listed on the stock exchange are required to comply with the Listing Agreement.

INDIAN CONSTITUTION AND GOVERNANCE

Part IV of the Constitution, 'Directive Principles of State Policy' which are principles that would be fundamental for "good governance" of this country. The Directive Principles are asserted to be "fundamental in the governance of the country," the Directive Principles have been used as fundamental principles of governance strengthened by the Fundamental Rights. From time to time, adjustments have been made in the Fundamental Rights - through legislative measures, executive action or judicial pronouncements so as to further the object sought to be achieved by the Directive Principles. After all, the purpose of the Fundamental Rights on the one hand and the Directive Principles on the other is common; viz., to provide for an environment that can ensure dignified growth & development of each individual as a useful human being. Set of values defining good democratic governance consists of governance characterized by transparency, accountability and responsiveness, as well as the political culture and mechanisms that support the achievement of these characteristics. "Transparency" is open access to information and free flow of information. It is based on openness as a core value. It consists of information and communications. "Accountability" is the clear assignment of responsibility for the management of resources with efficiency, the achievement of results with efficacy, the

production of desired and expected outcome impacts, and the design of policies, programmes and projects that can accomplish the foregoing. Accountability is based on responsibility as a core value. It consists of information and communications, as well analysis and evaluation.

"Responsibility" involves interest articulation and aggregation, and the incorporation of citizen demands in decision-making and resource allocation processes, as well as the evaluation of policies, programmes and projects in the light of citizen interests and needs.

Responsiveness is based on participation as a core value. It too, consists of information and communications, as well as analysis and evaluation. All three above constituents are based on closely related values of openness, responsibility and participation and none of these elements can function properly without ethics and integrity. Good governance encompass:- Full respect of effective stakeholder participation, human rights, the rule of law, and accountable processes, political, transparent institutions, an efficient and effective public sector, legitimacy, access to knowledge, information and education, political empowerment of people, equity, sustainability, and attitudes and values that foster responsibility, solidarity and tolerance. Good governance is to promote, sustain holistic and integrated human development. The central focus is to see how the government enables, simplifies and authorizes its people, regardless of differences of caste, creed, class, political ideology and social origin to think, and take certain decisions which will be in their best interest. Governance is considered necessary to create a corporate culture of consciousness, transparency, confidence among investors and prospective investing public. It refers to a combination of laws, rules, regulations, procedures and voluntary practices to enable companies to maximise shareholders' long-term value. Good corporate governance practices are sine qua non for sustainable business that aims at generating long term value to all its stakeholders. Good Corporate Governance practices are essential to ensure inclusive growth, wherein every section of society enjoys the fruits of the corporate growth. Sound and efficient corporate governance practices are the basis for stimulating the performance of companies, maximizing their operational efficiency, achieving sustained productivity as well as ensuring protection of shareholders' interests. It ensures the health of the economies and their stability. Corporate governance defines the corporate architecture of a nation.

A good Corporate Governance system ultimately leads to National Governance. Good corporate governance is a source of competitive advantage and critical to economic progress. The quintessence of Corporate Governance is

transparency, accountability, investor protection, better compliance with statutory laws and regulations, value creation for stakeholders and societal value. “Corporate Governance is concerned with holding the balance between economic and social goals and between individual and communal goals. The corporate governance framework is there to encourage the efficient use of resources and equally to require accountability for the stewardship of those resources. The aim is to align as nearly as possible the interests of individuals, corporations and society.” - Sir Adrian Cadbury in Corporate Governance and Development, Global Corporate Governance Forum, World Bank, 2003. Corporate governance cannot be looked at in isolation; it is heavily influenced by the overall governance eco-system. Recent scandals in corporate all over the world have raised questions not only about the practices adopted by companies to solicit business but also about the standards of accountability in public administration including within the government machinery and institutions. Since the onset of the financial crisis, the global debate around corporate governance and disclosure has escalated dramatically. Many developed and developing countries have introduced corporate governance codes to restore and sustain investor confidence in the wake of a financial crisis or corporate scandals. Corporate governance codes are formulated to raise standards and drive corporate governance reforms. Corporate governance codes are formulated to raise standards and drive corporate governance reforms. Corporate governance codes are important tools for enhancing governance systems and practices nationally. They serve as benchmarks for monitoring and implementing corporate practices and policies at the company level. Corporate governance codes are sets of nonbinding recommendations aimed at improving and guiding the governance practices of corporations within a country's specific legal environment and business context. These codes are typically based on principles and focus on country-specific issues. They differ in their focus or scope and are more or less detailed. Corporate governance codes are now adopted by many countries as a way to introduce international standards and adapt them to the local environment.

TYPES OF CORPORATE GOVERNANCE CODES

1. Corporate governance codes for generic business activities:

Very few governance codes apply to all categories of business activity. For the economy as a whole, a more generic code should be useful that includes specific recommendations for listed companies.

2. Corporate governance codes for listed companies: Countries with a developed, active capital market typically

have national corporate governance codes targeted at listed companies. The United Kingdom has one of the most sophisticated codes of this kind.

3. Corporate governance code for specific types of companies:

Sector-specific corporate governance codes focus on specific types of companies such as banks, state-owned enterprises (SOEs), or small and medium-size enterprises. These codes are often more operational and cover issues that are not typically dealt with in existing principle-based codes. Sector specific codes can prove especially relevant for low-income countries or countries where few companies are listed. The number of codes of this type could well increase in importance in the coming years with the growing relevance of corporate governance beyond capital markets. Many countries, for example, are currently considering developing codes for their state-owned enterprises using the international benchmark developed by the Organisation for Economic Co-operation and Development (OECD)

4. Corporate governance codes focusing on specific aspects of corporate governance: Some codes of best practice focus upon specific aspects of corporate governance such as board practices or disclosure. The codes of best practice addressing specific aspects of corporate governance are geared toward improving corporate governance by addressing specific issues that are not otherwise dealt with. These codes tend to be more detail oriented and can prove very useful when reviewing and improving more comprehensive codes of best

practice.

EVOLUTION OF CORPORATE GOVERNANCE CODES IN SELECTED COUNTRIES

1. United Kingdom: The development of corporate governance in the UK has its roots in a series of corporate collapses and scandals in the late 1980s and early 1990s. The first version

of the UK Corporate Governance Code (the Code) was produced in 1992 by the Cadbury Committee. It has been instrumental in spreading best boardroom practice throughout the listed sector since it was first issued. It operates on the principle of 'comply or explain'. It sets out good practice covering issues such as board composition and effectiveness, the role of board committees, risk management, remuneration and relations with shareholders.

2. South Africa: The governance of corporations can be on a statutory basis, or as a code of principles and practices, or a combination of the two. South Africa has opted for a code of principles and practices on a 'comply or explain' basis, in

addition to certain governance issues that are legislated. In 1992, former South African Supreme Court Judge, Mr. Mervyn King was asked to chair a private-sector body to draft corporate governance guidelines. The body came to be known as the King Committee, and its first report, issued in 1994, was regarded by many as ahead of its time in adopting an integrated and inclusive approach to the business life of companies, embracing stakeholders other than shareholders.

Three reports were issued in 1994 (King I), 2002 (King II), and 2009 (King III). The release of King III report on 1 September 2009 marked a significant milestone in the evolution of corporate governance in South Africa and brought significant opportunities for organisations that embrace its principles. The King III is on an 'apply or explain' basis. The 'apply or explain' approach requires more consideration – application of the mind - and explanation of what has actually been done to implement the principles and best practice recommendations of governance. The King III Report has also placed great emphasis on an integrated report, which will evaluate the company's impact on the economic life of the community in which it operates, as well as many other matters.

3. India : The initiatives taken by Government in 1991, aimed at economic liberalization and globalisation, led India to initiate reform process in order to suitably respond to the developments taking place world over. On account of the interest generated by Cadbury Committee Report, the Confederation of Indian Industry (CII), the Associated Chambers of Commerce and Industry (ASSOCHAM) and, the Securities and Exchange Board of India (SEBI) constituted Committees to recommend initiatives in Corporate Governance.

The first initiative on Corporate Governance in Indian Industry was taken by CII. The objective was to develop and promote a code for Corporate Governance to be adopted and followed by Indian companies, whether in the Private Sector, the Public Sector, Banks or Financial Institutions, all of which are corporate entities. In April 1998, the Desirable Corporate Governance: A Code was released. The code made 16 recommendations pertaining to Frequency of Board meetings, Board Composition, No. of directorships, Role, Responsibilities, Qualifications of Non-executive Directors, Remuneration of non-executive directors, Disclosure of attendance record for reappointment, Key information to the Board, Audit Committee, Disclosure on shareholder information, Consolidated Accounts, Compliance certificate, Disclosures relating to GDR, Funding, Nominee Director, Disclosure of Ratings, default on fixed deposits by company etc. In the year 2000, SEBI had set up a Committee under the Chairmanship of Kumar

Mangalam Birla to promote and raise standards of corporate governance. The Report of the committee was the first formal and comprehensive attempt to evolve a Code of Corporate Governance, in the context of prevailing conditions of governance in Indian companies, as well as the state of capital markets at that time. The recommendations of the Report, led to inclusion of Clause 49 in the Listing Agreement. These recommendations were divided into mandatory and non mandatory recommendations and were made applicable to all listed companies with the paid-up capital of Rs. 3 crores and above or net worth of Rs. 25 crores or more at any time in the history of the company. In May 2000, MCA, (then Department of Company Affairs) formed a broad-based study group under the chairmanship of Dr. P. L. Sanjeev Reddy, Secretary, DCA. In November 2000, a Task Force on Corporate Excellence set up by the group produced a report containing a range of recommendations for raising governance standards among all companies in India. The Enron debacle of 2001, the scams involving the fall of the corporate giants in the U.S. like the WorldCom, Qwest, Global Crossing, Xerox and the consequent enactment of the stringent Sarbanes Oxley Act in the U.S. led the Indian Government to appoint Naresh Chandra Committee in the year 2002 to examine and recommend amendments to the law involving the auditor-client relationships and the role of independent directors. In the year 2002, SEBI analyzed the statistics of compliance with the clause 49 by listed companies and felt that there was a need to look beyond the mere systems and procedures if corporate governance was to be made effective in protecting the interest of investors. SEBI therefore constituted a Committee under the Chairmanship of Shri N.R. Narayana Murthy, for reviewing implementation of the corporate governance code by listed companies and for issue of revised clause 49 based on its recommendations.

In 2004, the Government constituted a committee under the Chairmanship of Dr. J.J. Irani, Director, with the task of advising the Government on the proposed revisions to the Companies Act, 1956 with the objective to have a simplified compact law. In 2013, the Companies Act, 2013 was enacted envisaging radical changes in the sphere of Corporate Governance in India. It provided for a major overhaul in Corporate Governance norms and would have far-reaching implications on the manner in which corporate operates in India. Introduction of mandatory provisions regarding Whistle Blower Policy, Audit Committee, Nomination and Remuneration Committee, Stakeholders Relationship Committee, and Corporate Social Responsibility Committee, independent directors, woman director, Key Managerial Personnel and Performance Evaluation of the Board etc. are some of the crucial

provisions of the Act, relating to Corporate Governance. SEBI vide its circular dated April 17, 2014 came out with 'Corporate Governance in listed entities - Amendments to Clause 49' of the Equity Listing Agreement which lays down the detailed corporate governance norms for listed companies providing for stricter disclosures and protection of investor rights, including equitable treatment for minority and foreign shareholders. In the year 2015, with a view to consolidate and streamline the provisions of existing listing agreements for different segments of the capital market and to align the provision relating to listed entities with the Companies Act 2013, SEBI has notified the SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 herein after referred as 'Listing Regulations' on September 2, 2015. The new Listing Regulations have been structured to provide ease of reference by consolidating into one single document across various types of securities listed on the Stock exchanges.

CONCLUSION

Governance is such an important aspect, without which none can achieve harmony in the working patterns and further to this it has to evolve day in and day out in accordance with the changing requirements both internally and globally in each and every aspect. Governance encompasses the state, but it transcends the state by

including the private sector and civil society organisations. As observed all the countries are trying to implement good governance

norms in all facets and accordingly there are few international organizations which have already declared various principles to follow the good Corporate Governance norms.

In view Globalisation and Liberalisation, there is a need for emerging internationally acceptable Corporate Governance Code or norms which may resolve various governance issues and thereby the corporate world enjoys the stabilised global economy. Now it is the need of the hour to leap forward to have international congruence for having internationally accepted Corporate Governance norms, which can be established along the length and breadth of the whole world.

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GOVERNMENT SELF EMPLOYMENT PROGRAMS AND THEIR IMPACT ON WOMEN ENTREPRENEURSHIP WITH REFERENCE TO DISTRICT UDHAM SINGH NAGAR OF UTTARAKHAND

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Abstract

Pandit Jawarhar Lal Nehru once said that by merely looking at the condition of women, one can figure out the growth of the nation. Women empowerment is an issue which finds place right from the parliament to the newspaper columns every day. A lot is being planned and implemented by the governments, both central and states. Women have been given special reservations in all fields like education, jobs etc. They have been provided with special categorizations in employment generation funding programs. India currently ranks 70 out of 77 nations on the Female Entrepreneurship Index, but moving up that index might not be as difficult as it seems. Certainly, long-term, structural reforms are needed but in the short term there are a few examples from around the world that indicate how targeted policy measures can deliver specific goals even when the rest of the infrastructure (such as ease of doing business, access to credit facilities and affordable childcare) may not be in place. India's economy has undergone a considerable transformation since the country's independence in 1947 and so the growth of women has also evolved. A section of Indian women—the elite and the upper middle class have gained by the exposure to the global network. Many of the working women, who manage their own expenses, do contribute towards the economic needs of their family as and when required. Unlike the earlier time they often participate in discussions at workplace where their views are also given equal importance before any final decision. After Globalization, women are bagging more and more job opportunities. It has raised hopes of women for a secured and elevated status of women arising out of increased chances to work but, at the same time, it has placed them in a highly contradictory economic liberty. India is the first among countries to give women equal franchise and has a high credible record with regards to the enactment of laws to protect and promote the interest of women. But women continued to be denied economic, social and legal rights and privileges. According to the National Sample Survey Organization, only 14% of business establishments in India are being run by women entrepreneurs. The data also revealed that most of these women-run companies are small-scale and about 79% of them are self-financed. This indicates that despite the innumerable initiatives taken by the government agencies the programs has either not reached the right people or there still is need of modification in these programs.

INTRODUCTION

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privileges. According to the National Sample Survey Organization, only 14% of business establishments in India are being run by women entrepreneurs. The data also revealed that most of these women-run companies are small-scale and about 79% of them are self-financed. This indicates that despite the innumerable initiatives taken by the government agencies the programs has either not reached the right people or there still is need of modification in these programs.

WOMEN ENTREPRENEUR

Women entrepreneur may be defined as a woman or group of women who initiate, organize, and run a business enterprise. In terms of Schumpeterian concept of innovative entrepreneurs, women who innovate, imitate or adopt a business activity are called “women entrepreneurs”. Kamal Singh who is a woman entrepreneur from Rajasthan, has defined woman entrepreneur as “a confident, innovative and creative woman capable of achieving self-economic independence individually or in collaboration, generates employment opportunities for others through initiating, establishing and running the enterprise by keeping pace with her personal, family and social life.” The Government of India has defined women entrepreneurs based on women participation in equity and employment of a business enterprise. Accordingly, the Government of India (GOI2006) has defined women entrepreneur as “an enterprise owned and controlled by a woman having a minimum financial interest of 51 per cent of the capital and giving at least 51 per cent of the employment generated in the enterprise to women.” However, this definition is subject to criticism mainly on the condition of employing more than 50 per cent women workers in the enterprises owned and run by the women. In nutshell, women entrepreneurs are those women who think of a business enterprise, initiate it, organize and combine the factors of production, operate the enterprise and undertake risks and handle economic uncertainty involved in running a business enterprise.

Women Entrepreneurship In India

States	No of Units Registered	No. of Women Entrepreneurs	Percentage
Tamil Nadu	9618	2930	30.36
Uttar Pradesh	7980	3180	39.84
Kerala	5487	2135	38.91
Punjab	4791	1618	33.77
Maharashtra	4339	1394	32.12
Gujrat	3872	1538	39.72
Karnatka	3822	1026	26.84
Madhya Pradesh	2967	842	28.38
Other States & UTS	14576	4185	28.71
Total	57,452	18,848	32.82

Women Work Participation

Country	Percentage
India (1970-1971)	14.2
India (1980-1981)	19.7
India (1990-1991)	22.3
India (2000-2001)	31.6
USA	45
UK	43
Indonesia	40
Sri Lanka	35
Brazil	35

Some examples

Mahila Grih Udyog

– 7 ladies started in 1959: Lizzat Pappad

Lakme

– Simon Tata

Shipping coorporation

– Mrs. Sumati Morarji

Exports

– Ms. Nina Mehrotra

Herbal Heritage

– Ms. Shahnaz Hussain

Balaji films

- Ekta Kapoor

Kiran Mazumdar

- Bio-technology

OBJECTIVE

The objective of this study is to find out the effect and participation of women entrepreneurs in the various subsidized loan schemes floated by the State governments since the last four years. The study will also find out the level of ease or difficulty in acquiring loans and setting up of new enterprises under these programs. The demographical area included in the study is the District of Udham Singh Nagar in Uttarakhand.

DISTRICT UDHAM SINGH NAGAR

The geographical area proposed for the study is specially the UDHAM SINGH NAGAR district of Uttarakhand. It came into existence on 29.09.1995. Before this it was a part of the Nainital district. The total geographical area of the district is 3055 square kilometer. UDHAM SINGH NAGAR district has 7 tehsils, 7 development blocks & these blocks have 27 Nyay Panchayats and 303 village panchayats. Total 669 villages are there in the district. According to the census

2011 the total population of the district is 12, 35,614 out of which 858,906 are male, 789,461 females. 162782 scheduled castes & 10220 scheduled tribes. The literacy rate of the district is % and female literacy rate is 54.16%.

Udham singh nagar is the food bowl of uttarakhand state. Prior to its formation, it was part of district Nainital. It was separated out on the basis of physiographic conditions i.e. Tarai. It is also well known for the industries as the geographic location is conducive. Udham Singh Nagar district is famous for its agriculture and irrigation on synchronized pattern from the past as garner of popularity for its productivity in paddy crops in the whole Uttarakhand state, and it is rightly called “Chawal ki nagari”, thus making it importance in bringing out the district ground water brochure. Udham singh nagar district falls in the Tarai region of Kumaon Division. Geographical area of the district is 3055 km. and in aerially it rank 9 in Uttarakhand state . It is located between latitude 28° 53' N and 29° 23' N and laterally extends between longitudes 78° 45' E and 80° 08' E. The district is bounded by Nainital and Champawat districts of Uttarakhand on the north, Moradabad, Rampur, Bareilly and Philibhit districts of Uttar Pradesh on the south, Bijnor district of Uttar Pradesh on west and Nepal on the east.

THE SCHEMES INCLUDED IN THE STUDY MUKHYMANTRI SWAROJGAAR YOJNA.

This scheme was launched under MSME (Micro Small and Medium Enterprises) in the year 2015. The intention is to provide loans, to all the sections of society, through banks for the purpose of establishing industry/service/business enterprise, to create employment opportunities in rural and urban areas, to ensure the optimum utilization of locally available raw materials and to stop migration of youth.

UTTARAKHAND MAHILA UDYAMI VISHESH PROTSAAHAN YOJNAA.

The objective of this scheme is to develop skill development and development of entrepreneurship among women and to provide loans through the banks and other financial institutions. Subsidy to be provided on the loans provided under this scheme is maximum 25% of the total movable capital, with the maximum limit of Rs.25,00,000. Subsidy on the interest paid on loans under this scheme is 6% with the upper limit of Rs.500,000 Per year per unit.

HIMANI PORTAL.

Himani works under the aegis of Directorate of Industries, Uttarakhand which is the executive wing of the Department of MSME, Govt. of Uttarakhand. The portal brings under one umbrella, all the information regarding

schemes/policies of state MSME department which can be availed by women entrepreneurs and also facilitates access for the same, including bank/finance. The portal provides active information about various marketing platforms and promotional activities made available by the government including fairs-exhibitions, buyer seller meets etc. The portal enables the women entrepreneurs of Uttarakhand, including the women SHGs/ NGOs to display, describe and market their product online. The e-commerce platform enables them to sell their product nationwide. Women entrepreneurs of Uttarakhand may register with the Himani portal for a nominal fee Rs. 200/-, and after a simple verification process, they become part of the online community. Women entrepreneurs are encouraged to discuss various issue related to them via the online chatting/mail service provided by the portal.

PRADHAN MANTRI EMPLOYMENT GENERATION PROGRAM (PMEGP)

To generate employment opportunities in rural as well as urban areas through setting up of self employment ventures. To provide continuous and sustainable employment to a large segment of traditional and prospective artisans and unemployed youth, so as to help arrest migration of rural youth to urban areas. The scheme is applicable to all viable (technically as well as economically) projects in rural as well as urban areas, under Micro enterprises sector. The maximum cost of the project admissible under manufacturing sector is Rs.25 lakhs and business/services sector is RS.10 lakhs. Only one person from family is eligible for obtaining financial assistance under the scheme. Assistance under the Scheme is available only for new projects. The assistance under the scheme will not be available to activities indicated in the negative list under the scheme.

STARTUP INDIA.

Start up means where in Early Stage of life cycle of an enterprise, the entrepreneur moves from the idea stage to securing finance, laying down the basic structure of the business, and initiate operations or trading. Benefits of Start-Up policy shall be given to the entrepreneurs in following fields:-

- i. Agro based industries
- ii. Healthcare
- iii. Bio technology
- iv. Education
- v. E-Commerce
- vi. Travel & Tourism

- vii. vi. Water, waste management and power
- viii. vii. Transportation
- ix. viii. Social enterprises
- x. Manufacturing
- xi. Rural area activities
- xii. Nanotechnology xii.
- xiii. Food Processing xiii.
- xiv. Textiles & Garments xiv
- xv. Fashion Designing
- xvi. Ayurveda
- xvii. Traditional Arts xvii.
- xviii. Hi Tech farming in agriculture xviii
- xix. Dairy production xix.
- xx. Traditional crafts xx.
- xxi. Innovation in designs and products in traditional textiles and apparels xxi. Product modifications/innovation based businesses in traditional sectors like Coir, Bamboo, etc.

It attracts investments into the Incubation and Startup Ecosystem in Uttarakhand . It bring investment in Uttarakhand from well known industries like Infosys, Wipro, Tech Mahindra,Tata etc. to provide firm platform for new entrepreneurs. It Establishes at least 2-3 Technology Business Incubators / Accelerators in different sectors in the State in first year of the policy period with a final object of 10 in whole policy period. It encourage/Facilitate/Incubate technology product of start-ups. It develops 200000 sq. ft. of Incubation Space in state. It facilitate Angel/Venture Capital funding of a minimum of Rs 500 Cr. It integrates the Start-Up entrepreneurs with IAF and Start up India scheme of Central Government. It promotes Women and SC/ST as entrepreneurs. It Identifies budding start-up entrepreneurs at school and college level by means of conducting Boot Camps. It sets up a state level entrepreneurship development council. It establishes Knowledge Training Skill Development and entrepreneurship Park in Kashipur (measuring 50 acre area). In first phase facility of TBI will be established in this industrial estate. It facilitates the growth of Start-ups from Start-up to Coot Camp to Scale-up financial institutions to meet the NPA losses subject to a ceiling of 10% of the total loan disbursed and outstanding. Recognized Incubators which are managing Seed Fund Scheme of Government of India will be given matching seed funds to further increase the amounts available for start-up by 200%. For other Incubators, the State will provide Seed Funds on the same

criteria as the Central Government scheme.

The fiscal and non-fiscal incentives applicable to all categories of MSME Industry would be applicable to the incubators, accelerators and startups in the respective sectors. The existing schemes of the MSME Policy shall be made applicable to the Start-ups in all sectors as per the existing classification. (a) Start-ups would be exempt from inspections under The Factories Act, payment of wages, contract labour act and the Rules framed there under, barring inspections arising out of specific complaints. Start-ups will be permitted to file self-certifications, in the prescribed formats to comply The Factories Act, payment of wages, contract labour act etc. (b) Challenge Grants for Innovation: The government will encourage innovation amongst the entrepreneurs and students through Challenge Hunts. The focus of these hunts will be mostly on innovative products that address societal problems and would be awarded every year. The programme would be executed by SIIDCUL. Monetary Support to Incubators and Startups: The incentives available in the State MSME Policy would also be directly applicable alongwith following additional benefits to the start-ups, Host Institute of Incubators and Accelerators.

1 Reimbursement of VAT/CST: Annual Reimbursement of VAT/CST paid by incubators in Uttarakhand, upto a maximum of Rs 60 Lakhs turnover by incubated startup companies within a period of first four years of being incubated.

2 Financial Assistance as Matching Grants: The State Government would match the funding raised by the Incubator from Government of India on a 1:1 basis as matching grants. Support to Human Capital Development Programmes – To create an innovation pipeline and entrepreneurial talent, Expert Panel will be envisaged under this Policy. These programmes may be executed through the recognized Incubators and 10% of the approved programme cost would be paid as Programme Implementation and Monitoring Fee by the State Government. Corporate Social Responsibility of PSU's - In order to strengthen the start-up ecosystem in the state, It will be mandatory to State PSU's to create corpus funds for incubators in compliance with the New Companies Act 2013. Reimbursement of paid Stamp Duty and Registration Fee – Stamp Duty will be reimbursed for Youth/SC/ST/Women entrepreneurs and Host Institutes on sale/ lease deeds on the first transaction and 50% thereof on the second transaction. Patent Filing Cost: The cost of filing and prosecution of patent application will be reimbursed to the incubated start-up companies subject to a limit of Rs. 2 lakh (0.2 million) per Indian patent awarded. For awarded foreign patents on a single subject matter, upto

Rs. 10 lakh (1 Million) would be reimbursed. The reimbursement will be done in 3 stages, i.e., during filing, prosecution and award. Additional Incentives available for Private/PPP Model Incubators: Incubator Projects that has a capacity to create a minimum of 500 startups in five years will be deemed as nodal incubators and eligible for the following additional benefit. In case of Government-Owned buildings leased to technology incubators, no lease rent or O&M charges will be levied for a period of five years or until the incubator is self-sustainable, whichever is earlier. In case where private premises are taken on lease / rent basis, a rental reimbursement @ Rs. 5 per sq.ft per month or 25% of the actual rent paid, whichever is less, shall be reimbursed for a period of 3 years. This shall be limited to the incubation space only. An investment subsidy of 20% of the value of the Capital Expenditure, other than land and building, shall be provided to Incubator Projects that enter into an MoU with the state within 2 years of notification of the Policy. This subsidy shall be limited to a maximum of Rs. 5 Crores. Subsidies or monetary support given by different government departments, both state and central, under their existing schemes for new units shall be in addition to the above monetary support. Training Assistance: For every employee recruited by a startup within a period of three years of incubation, an amount of Rs 25,000 per employee per year shall be provided for training. Performance- Linked grant for startups: Startups that record a year-on-year growth rate of 15%, as per audited accounts, shall be eligible to get a grant of 5% on Turnover, subject to a limit of Rs.10lacs within a period of three years from the date of incubation.

3. Administration of Financial Incentives & Implementation of Programmes All monetary support for startups and incubators as mentioned in section 5 above shall be administered by Technopark Technology Business Incubator (T-TBI). The supports shall be provided in a time bound and transparent manner. For administering the various schemes and programmes, T-TBI would be assisted by a committee of external experts including representatives from industry, academia, incubators and industry associations.

4. Startup Role Models Programme – Top 50 startups operating out of incubators in Uttarakhand would be identified through a selection process and be given a platform to meet and interact with mentors, funding support, product development, marketing and launch support to accelerate the number of success stories to create role models. This programme would be annual in nature. This Policy is valid for a period of 5 years from the date of its notification or till a new policy is formulated. The policy

shall be implemented under the guidance of State Innovation Council of Uttarakhand.

MATERIAL AND METHOD

The Study covers a detailed study of all the above mentioned schemes launched by the Governments. The study will collect data from the various concerned offices at the District level, for example, KVIC, DIC and District statistical Agency etc. Various financial organisations, Incubators and banks etc. will be contacted for the data of credit and other facilities provided or rejected by them.

THE ANALYSIS OF DATA.

Data was collected from the various concerned offices. The charts given below provide an exhaustive insight into the scenario of women entrepreneurship in the District of Udham Singh Nagar in Uttarakhand. The data under the Chief Minister Self Employment Scheme.

The total projects under this scheme are 34.

There are 10 women entrepreneur projects.

TABLE NO.- 1
RATIO OF WOMEN ENTREPRENEURSHIP UNDER THE SCHEME

S.No.	MALE/FEMALE	NOS.	PERCENTAGE
1	MALE	24	70.6
2	FEMALE	10	29.4

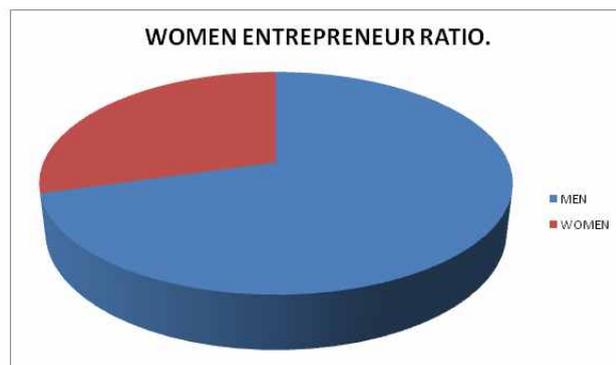


CHART NO. -1

The above table no.1 and chart no. 1 shows that the total projects approved are 34, out of which 10 projects are women entrepreneurship projects and the other 24 are run by males. The percentage of women entrepreneurship is 29.4.

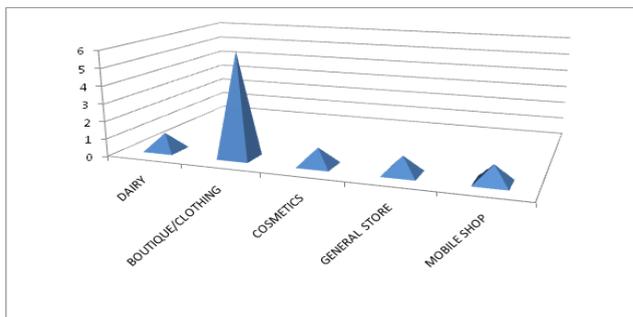
TABLE NO. -2
CLASSIFICATION OF VARIOUS BUSINESS OPTED BY WOMEN ENTREPRENEURS

CHARTNO. - 2

It is clear from the above table no. 2 and chart no. 2 that 60% of women entrepreneurs chose boutique/clothing as a

percentage of women entrepreneurs from Rudrapur, Sitarganj, Khatima, Kashipur, and Kichha are 20%,30%, 10%,30%, 10% respectively.

S.NO.	CATEGORY	NOS.	PERCENTAGE
1.	DAIRY	1	10%
2.	BOUTIQUE/CLOTHING	6	60%
3.	COSMETICS	1	10%
4.	GENERAL STORES	1	10%
5.	MOBILE SHOP	1	10%



RATIO OF WOMEN ENTREPRENEURS UNDER PRIME MINISTER EMPLOYMENT GENERATION PROGRAM (PMEGP)

TABLENO. - 4

S.No.	MALE/FEMALE	NOS.	PERCENTAGE
1	MALE	59	72.8%
2	FEMALE	22	27.2%

S.NO.	AREA	NOS.	PERCENTAGE
1.	RUDRAPUR	2	20%
2.	KHATIMA	3	30%
3.	SITARGANJ	1	10%
4.	KASHIPUR	3	30%
5.	KICHHA	1	10%

business and dairy, cosmetics, general store and mobile shop get a share of 10% each.

TABLE NO. -3

GEOGRAPHICAL REPRESENTATION OF ENTREPRENEURS.

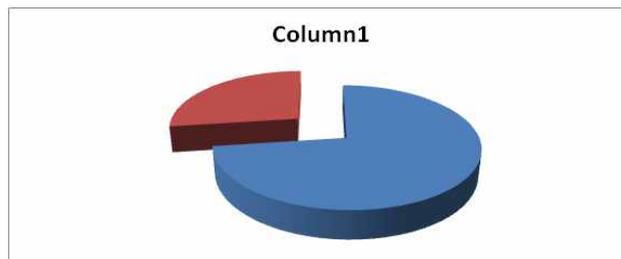
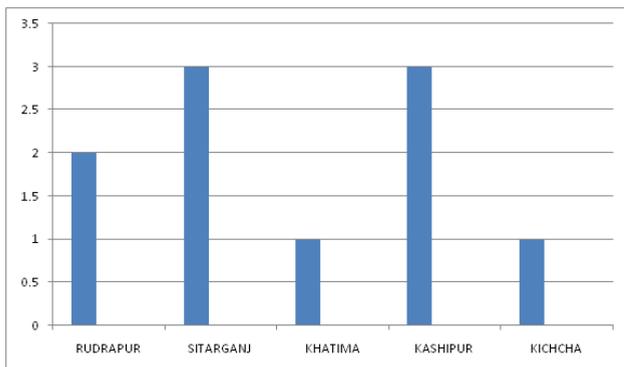


CHART NO. -4

Table no. 4 and chart 4 shows that total 81 projects were sanctioned under this scheme out of which 22 projects were sanctioned to 22 women entrepreneurs and 59 projects were sanctioned to males. The percentage of female entrepreneurs is 27.2 and that of male is 72.8.

CLASSIFICATION OF ENTERPRENERAL CATEGORIES.

TABLE NO.- 5

CHARTNO. -3

It is shown in the table no.3 and chart no. 3 that the women entrepreneurs covered under this scheme belong to 5 specific areas. The

S.NOS.	CATEGORY OF BUSINESS	NOS.	PERCENTAGE
1.	MANUFACTURING	51	63%
2.	TRADING	1	1.2%
3.	SERVICE	29	35.8%

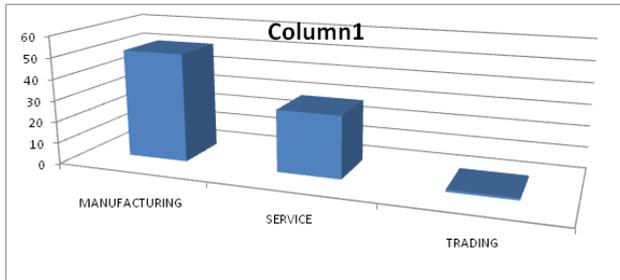


CHART NO.-5

It is clear from the above table no.5 and chart no. 5 that out of 81 approved projects 51 were of the nature of manufacturing, 1 was a trading enterprise and 29 were belonged to the service industry. The percentage of manufacturing, trading and service sector is 63, 1.2 and 35.8 respectively.

MAHILA UDYAMI VISHESH PROTSAAHAN YOJNA.

TABLE -6

S.NO.	PROPREITOR/PARTNERSHIP FIRM	NOS.	percentage
1.	PROPREITORSHIP FIRMS	51	37.8%
2.	PARTNERSHIP FIRMS	84	62.2%
3.	TOTAL	135	

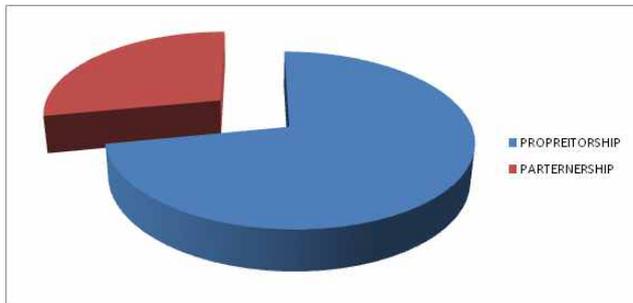


CHART NO. -6

Above table no. 6 and chart no.6 shows that out of 135 firms covered under the scheme 51 firms are proprietorships and 84 firms are partnership firms. The percentage of proprietorship firm is 37.8% and partnership firm is 62.2%.

EMPLOYEMENT GENERATION UNDER THIS SCHEME

TABLE NO. - 7

S.NO.	PROPREITORSHIP/PARTNERSHIP FIRM	EMPLOYEMENT GENERATED	PERCENTAGE
1.	PROPREITORSHIP	590	34.9%
2.	PARTNERSHIP	1101	65.1%
3.	TOTAL	1691	

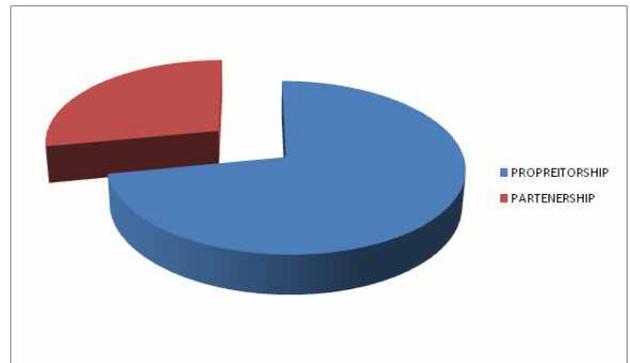


CHART NO. -7

The above table shows that the proprietorship firm employed 590 people where as partnership firms provided employment to 1101 people. The percentage of proprietorship firm is 34.9% and that of partnership firm is 65.1%.

CLASSIFICATION OF ENTERPRENERAL CATEGORIES.

TABLE NO.-8

S.NO.	SECTOR	NOS.	PERCENTAGE
1.	SERVICE	6	4.4%
2.	MANUFACTURING	127	94.1%
3.	BUSINESS	2	1.5%
4.	TOTAL	135	

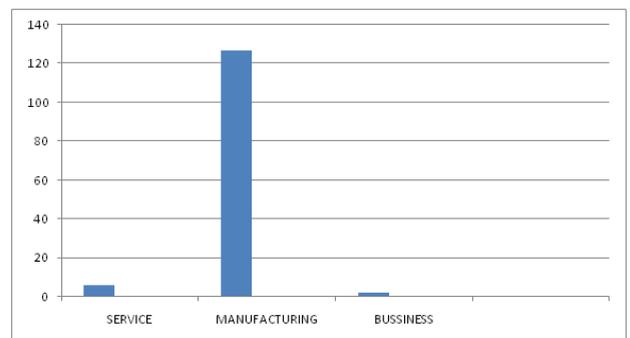


CHART NO. -8

The above table no.8 and chart no. 8 shows that out of total 135 firms 6 are involved in service industry, 127 firms are engaged in manufacturing units and 2 firms are involved in trading business activity. The percentage of service industry is 4.4, manufacturing industry is 94.1 and trading business activity is 1.5.

CONCLUSION AND SUGGESTIONS

After the analysis of gathered facts in this study the scholar has made certain conclusions which are as follows. The solutions to the problems which surfaced during this study can help in the progress and development of women entrepreneurs and help them secure a better future. It can be concluded that the state government has launched schemes which have been able to attract women entrepreneurs to set up their enterprises. It can be concluded that women entrepreneurship in India lags in comparison to its stage in the developed nations. India currently ranks 70 out of 77 nations on the Female Entrepreneurship Index. It can be concluded that the average of women entrepreneurship ratio for the data of nine Indian states taken into consideration rounds up to 33.18%. The women entrepreneurship ratio in Uttarakhand also averages around 30%.

It can be concluded that most of the women entrepreneurs who set up their enterprise under chief minister self employment scheme had opted for more conservative and women friendly businesses like boutiques ,cosmetics and beauty parlours while the women entrepreneurs who set up their enterprises under the Prime minister employment

generation program and 'Mahila udyami vishesh protsahan yojna' showed their interest in the manufacturing sector. It can be concluded that women were more interested in partnership firms rather than sole proprietorship firms. The scholar suggests that to ensure increase the number of women entrepreneurs the governments should advertise their policies in various platforms like television, radio, cinema halls and the internet in such a manner that even a lay man can understand the policies. The government should also initialize programs of entrepreneurial skill development specially for women. The scholar suggests that many of the women entrepreneurs are deviated from their plan due to the abundance of paper work and in practically acquiring loan assistance in initializing their projects. 'Loan melas' with the participation of various banks and other financial institutions can be organized to improve the situation. The scholar suggests that the enterprises run by the partnership firms who have taken loan under the 'Mahila udyami protsahan yojna' should be monitored to check whether they are in fact being run by the active participation of women entrepreneur concerned.

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ROLE OF INNOVATION AND TECHNOLOGY IN SUSTAINABLE HEALTHCARE DELIVERY IN INDIA: A CONCEPTUAL STUDY

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Abstract

India is not just growing fast, it's much more competitive. The country has zoomed higher in a new ranking of global competitiveness and is finding global acceptance and visibility. Technology and innovation has played a great role in driving growth and competitiveness in different industries. They help in developing customer value through solutions that meets customer needs in unique ways. Innovation is often defined as the introduction and application of ideas, products, services, processes or technologies, which are either new or are improvements of the current system, that benefit individuals, a group or the society as a whole. Indian healthcare sector is one of the fastest growing industries. There is a major transformation underway in healthcare systems and delivery in India; investments and innovation in healthcare are also on the rise. Delivering affordable and quality health care to India's billion-plus people presents enormous challenges and opportunities. Innovators from developing nations like India have found ways to deliver care effectively at significantly lower cost while increasing access and quality. The future prosperity of India depends on healthcare because it acts as a catalyst to accelerate the nation's social and economic growth. The present paper provides a conceptual framework on the role of innovation and technology in healthcare delivery in India and also encompasses smart solutions for affordable and approachable healthcare.

Keywords: Innovation, Technology, Healthcare, Sustainability, Competitiveness.

INTRODUCTION

Innovation

Innovation is often also viewed as the application of better solutions that meet new requirements, unarticulated needs, or existing market needs. While a novel device is often described as an innovation, in economics, management science, and other fields of practice and analysis, innovation is generally considered to be the result of a process that brings together various novel ideas in a way that they affect society. In industrial economics, innovations are created and found empirically from services to meet the growing consumer demand. Innovation is: production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome.

Technology

Technology is the collection of techniques, skills, methods, and processes used in the production of goods or services or in the accomplishment of objectives, such as scientific investigation. Technology can be the knowledge of techniques, processes, and the like, or it can be embedded in machines to allow for operation without detailed knowledge of their workings. The word "technology" can also be used

to refer to a collection of techniques. When combined with another term, such as "medical technology" or "space technology," it refers to the state of the respective field's knowledge and tools. "State-of-the-art technology" refers to the high technology available to humanity in any field. Technology can be viewed as an activity that forms or changes culture.

Healthcare

Healthcare is the maintenance or improvement of health via the prevention, diagnosis, and treatment of disease, illness, injury, and other physical and mental impairments in human beings. Healthcare is delivered by health professionals (providers or practitioners) in allied health professions, chiropractic, physicians, physician associates, dentistry, midwifery, nursing, medicine, optometry, audiology, pharmacy, psychology, and other health professions. Access to health care may vary across countries, groups, and individuals, largely influenced by social and economic conditions as well as the health policies in place. While the definitions of the various types of health care vary depending on the different cultural, political, organizational and disciplinary perspectives, there appears to be some consensus that primary care constitutes the first element of a continuing health care process, that may also include the provision of secondary and tertiary levels of care. Healthcare can be defined as either public or private. The

emergency room is often a frontline venue for the delivery of primary medical care.

PRIMARY CARE

Primary care refers to the work of health professionals who act as a first point of consultation for all patients within the health care system. Such a professional would usually be a primary care physician, such as a general practitioner or family physician, a licensed independent practitioner such as a physiotherapist, or a non-physician primary care provider (mid-level provider) such as a physician assistant or nurse practitioner. Depending on the locality, health system organization, and sometimes at the patient's discretion, they may see another health care professional first, such as a pharmacist, a nurse (such as in the United Kingdom), a clinical officer (such as in parts of Africa), or an Ayurvedic or other traditional medicine professional (such as in parts of Asia). Depending on the nature of the health condition, patients may then be referred for secondary or tertiary care.

SECONDARY CARE

Secondary care includes acute care: necessary treatment for a short period of time for a brief but serious illness, injury or other health condition, such as in a hospital emergency department. It also includes skilled attendance during childbirth, intensive care, and medical imaging services.

The term "secondary care" is sometimes used synonymously with "hospital care". However, many secondary care providers do not necessarily work in hospitals, such as psychiatrists, clinical psychologists, occupational therapists, most dental specialties or physiotherapists (physiotherapists are also primary care providers, and a referral is not required to see a physiotherapist), and some primary care services are delivered within hospitals. Depending on the organization and policies of the national health system, patients may be required to see a primary care provider for a referral before they can access secondary care.

TERTIARY CARE

Tertiary care is specialized consultative health care, usually for inpatients and on referral from a primary or secondary health professional, in a facility that has personnel and facilities for advanced medical investigation and treatment, such as a tertiary referral hospital. Examples of tertiary care services are cancer management, neurosurgery, cardiac surgery, plastic surgery, treatment for severe burns, advanced neonatology services, palliative, and other complex medical and surgical interventions.

Quaternary Care

Community rehabilitation services can assist with mobility

and independence after loss of limbs or loss of function. This can include prosthesis, orthotics or wheelchairs.

HEALTHCARE SYSTEM IN INDIA

India's Ministry of Health was established with independence from Britain in 1947. The government has made health a priority in its series of five-year plans, each of which determines state spending priorities for the coming five years. The National Health Policy was endorsed by Parliament in 1983. The policy aimed at universal health care coverage by 2000, and the program was updated in 2002. The health care system in India is primarily administered by the states. India's Constitution tasks each state with providing health care for its people. In order to address lack of medical coverage in rural areas, the national government launched the National Rural Health Mission in 2005. The private healthcare sector is responsible for the majority of healthcare in India. Most healthcare expenses are paid out of pocket by patients and their families, rather than through insurance. Private insurance is available in India, as are various through government-sponsored health insurance schemes.

Penetration of health insurance in India is low by international standards. Also private health insurance schemes, which constitute the bulk of insurance schemes, availed by the population, do not cover costs of consultation or medication. Only hospitalization and associated expenses are covered.

PUBLIC AND PRIVATE HEALTHCARE

The private medical sector remains the primary source of health care for 70% of households in urban areas and 63% of households in rural areas. Reliance on public and private health care sector varies significantly between states. Several reasons are cited for relying on private rather than public sector; the main reason at the national level is poor quality of care in the public sector, with more than 57% of households pointing to this as the reason for a preference for private health care. Most of the public healthcare caters to the rural areas; and the poor quality arises from the reluctance of experienced health care providers to visit the rural areas. Consequently, the majority of the public healthcare system catering to the rural and remote areas relies on inexperienced and unmotivated interns who are mandated to spend time in public healthcare clinics as part of their curricular requirement. Other major reasons are distance of the public sector facility, long wait times, and inconvenient hours of operation.

Following the 2014 election which brought Prime Minister Narendra Modi to office, Modi's government unveiled plans for a nationwide universal health care system known as the National Health Assurance Mission, which would

provide all citizens with free drugs, diagnostic treatments, and insurance for serious ailments. In 2015, implementation of a universal health care system was delayed due to budgetary concerns. Private healthcare providers in India typically offer high quality treatment at highly unreasonable costs as there is no regulatory authority or statutory neutral body to check for medical malpractices.

HEALTHCARE DELIVERY SYSTEM IN INDIA

Healthcare is provided by 5 major sectors in India-

1. Public Health Sector Primary health care- PHC's and sub-centers Secondary and Tertiary health care – CHC's, Rural hospitals, district hospitals, specialty hospitals and teaching hospitals Health insurance schemes providing healthcare – ESI, CGHS Other agencies: defense services, railways
2. Private Sector Private Hospitals, Nursing Homes, Polyclinics etc. General Practitioners
3. Indigenous Systems of Medicine Ayurveda, Unani, Homeopathy etc
4. Voluntary Health Agencies
5. National health programs

Huge Health Gaps between Rural & Urban India

While we need to improve the national health indicators as a whole, we cannot do so without bridging the huge health gaps between rural and urban India.

On every measure of health, rural populations in all states compare poorly with their urban counterparts. This reflects causes that undermine health, deny access to needed health care and disempowered people from protecting their health. From rural poverty to inadequate supply of potable water and poor sanitation, the social determinants of health are adversely conditioned. Essential health care is not readily available, due to poorly accessible or poorly staffed government health facilities and a marked urban concentration of all categories of formally qualified health care providers.

The National Rural Health Mission (NRHM), launched in 2005, somewhat improved rural health care infrastructure, introduced village-level social mobilizers in the form of Accredited Social Health Activists (ASHAs) and placed a strong emphasis on maternal and child health services. While institutional deliveries increased markedly, thanks to schemes like Janani Suraksha Yojana (JSY), there was no demonstrable association with reductions in maternal or neonatal mortality rates. This raises questions on the quality of care available in the institutions which women reach. If the facility does not have trained health care providers who can provide both routine and emergency obstetric care or

revive a newborn in distress, merely shifting delivery from home to an institution will not help. If the health care facility lacks 24-hour supply of running water and electricity, the problem gets compounded.

Furthermore, the mandate of rural health care has expanded beyond maternal and child health and infectious diseases. Heart diseases and stroke, variety of cancers, diabetes, lung and kidney diseases and mental illness are rapidly rising even in rural areas and warrant attention.

This places even greater pressure on the rural health care system which is already constrained for human and financial resources.

OBJECTIVE OF THE STUDY

The objective of this conceptual paper is to,

1. Understand the current state of healthcare system in India.
2. Analyze the role of innovation and technology in healthcare system in India.
3. Understand the current state of rural & urban as well as private & public delivery in India.
4. Encompass smart solutions for affordable and approachable healthcare.

HEALTHCARE INNOVATION IN INDIA

Innovation in healthcare continues to be a driving force in the quest to balance cost containment and health care quality.

To identify promising practices, look closely at some 10 organizations that addressed common weaknesses in the health system and introduced a number of innovations. We propose reviewing practices introduced in these organizations, based on ways they map up the main pillars of primary care (see diagram at full size here). including Swasth India, HMRI, Ehealth Point, GlocalHealthcare and HealthSpring, plus the following organizations:

- Rural Health Care Foundations eight West Bengal clinics provide comprehensive care and subsidized drugs. Doctors are incentivized to practice in rural communities by being given food and lodging; many are either young or retired. The organization's large patient volumes have enabled them to break even and even see a profit.
- SughaVazhvu is a new network of rural clinics in Tamil Nadu staffed by traditional doctors who are trained and legally permitted to give allopathic medicine. The network standardizes care with electronic medical records, strict protocols and simple diagnostic devices.
- Mera Doctor is a subscription model that targets busy

urban people in the middle- to upper-middle classes. Families pay a fixed fee to access unlimited tele-consultations, after which operators refer callers to physicians when necessary.

- Merry Gold is a franchise network covering maternal and child health services including antenatal care, contraceptive counseling and institutional deliveries at the district, sub-district and community level. We looked especially closely at this model since they serve people in rural and urban Uttar Pradesh, a state with poor maternal and child health outcomes.
- Nation Wide is a chain of primary care clinics that bridges the gap between general and super specialist practitioners. They have nine clinics and 14 satellite clinics in Bangalore focusing on the upper-middle class. We're studying the model to understand how they have built this network effect—for instance, how they are providing drugs, what protocols they use and how they retain doctors—to adapt certain practices for a BoP-focused model.
- Karuna Trust has been successful in “adopting” primary health centers in Karnataka.

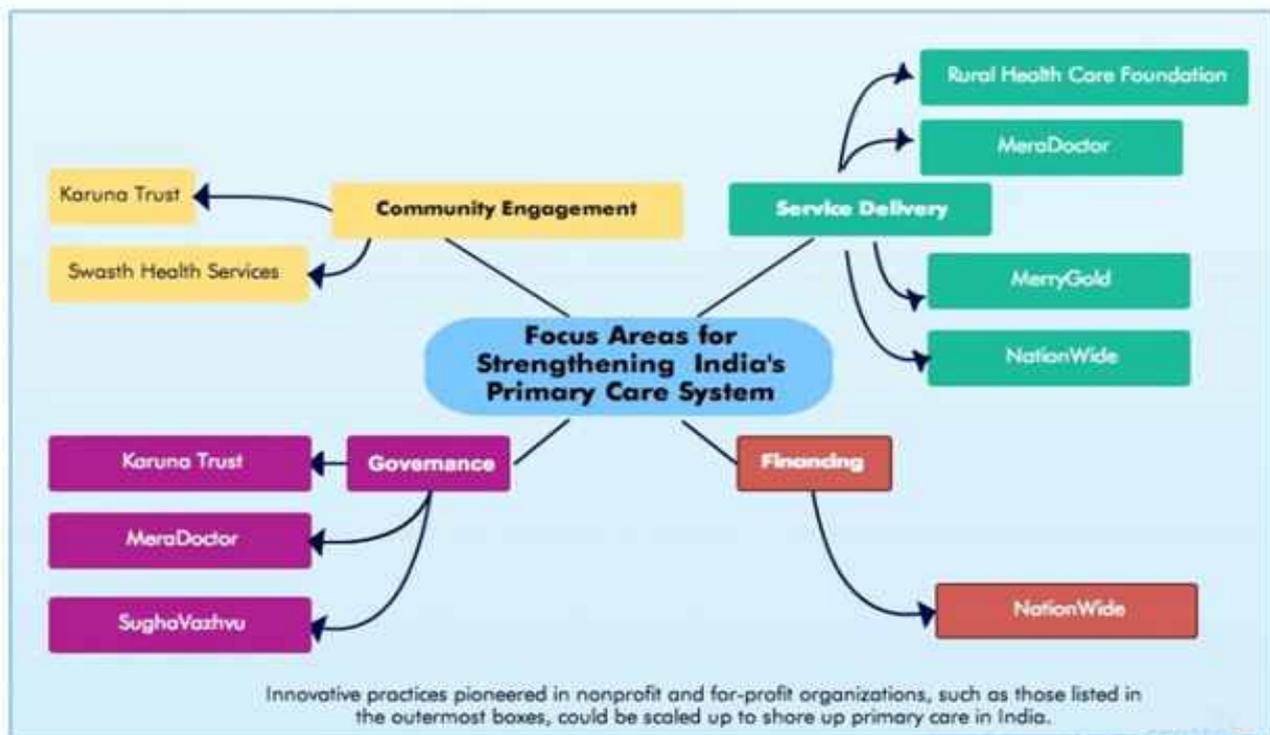
Many models are breaking even in either or both the rural or urban context while delivering good quality care, and thus pose great promise to scale up high-quality, efficient care in India's poorest communities.

HEALTHCARE TECHNOLOGY IN INDIA

Technology partnerships between the government and private sector will help solve challenges in healthcare and education. There is a major transformation underway in healthcare systems and delivery in India; investments and innovation in healthcare are also on the rise. India, as per WHO data, has only one doctor per 1,700 citizens. Advanced medical technologies are now stepping in to act as enablers and bridge the gap with high-technology products and services. At the governmental or the level of medical establishments, the war against disease, poverty and illiteracy is raging. Advanced medical technology today has the power to transform the huge social burden of chronic diseases that account for 67% of total deaths in India.

SOME OF THE KEY TECHNOLOGIES DEFINING THE HEALTHCARE OF THE FUTURE INCLUDE:

Mobility: Smartphone adoption in India is witnessing exponential growth due to various factors like price reductions because of growing



competition; the ease of access of content and language localization; government incentives through 'Make in India', and prevalence of Internet-enabled services on smart phones.

This boom has opened gates for virtual world where doctors and patients can collaborate in real time. For instance, an online portal like iCliniq is helping individuals to take advice online or consult doctors round the-clock over the phone and HD video if they have an urgent health concern that requires immediate consultation. Similarly, the invention of telemedicine has opened new avenues for rural healthcare. Telehealth allows patients to connect with doctors using mobile devices and video chat. For example, Apollo Telemedicine Networking Foundation provides telemedicine through transfer of medical information, medical transcription in all forms of audios, videos, motion pictures, still images, graphics, CDs, emails, Internet, text and other forms of electronic methods between the patients, physicians, other healthcare providers through the use of computer, satellite and networking technology for diagnosis, treatment, consultation, and continuing education.

Digital: Healthcare is witnessing a push to make the move from paper-based to electronic health record systems. By going digital, healthcare is able to move beyond the brick and mortar constraints of traditional medicine by using a new digital infrastructure to ensure more efficient service delivery. Digitization enables centralized database containing all aspects of patients' health, which in turn reduces the risk of medical errors. A major initiative that demonstrates the power of digitization in healthcare is eHealth, which is a part of Digital India program of the government. With concepts like ePharmacy, eDiagnostics, eInsurance, eReferrals, this program would provide a robust ecosystem support to the patients and service providers alike with access to information— anytime, anywhere. The database of health records is further expected to be linked to the Aadhar number of citizens.

With this initiative, getting an OPD appointment, lab reports and blood availability in any government hospital becomes easy. Patients can skip the hassles of registration and other formalities by merely identifying themselves through the Aadhaar number. Further, they can select hospital and department, select date of appointment and get the same through SMS.

Cloud: There is hardly any sector left which is not under the cloud umbrella; healthcare too is soaring high on the cloud wave. Almost 90% doctors are now storing all their patient records in digital format and then moving them to the cloud. With this patients and doctors can access their information anytime, anywhere. This ensures complete picture of a patient's medical history to doctors.

Analytics: Using predictive algorithms, doctors can diagnose their patients more accurately. A perfect example is of start-up Inspirata, which is looking at big data analytics based solutions for more rapid and accurate detection, diagnosis, and treatment of cancer. The company is looking at building a big data repository of cancer data—Cancer Information Data Trust. With this tele-medicine will become possible, enabling patients to get the most rapid and accurate diagnosis from anywhere in the world. This will also allow physicians to continue to mine a new source of data, together with existing sources, to get a complete view of the disease. By analyzing multiple data points related to cancer, cancer specialists can perhaps arrive at a solution to defeat cancer—a task that has been beyond the reach of mankind till today.

IMPORTANCE OF INNOVATION AND TECHNOLOGY IN HEALTH SERVICE DELIVERY

The challenges we face today call for more novel approaches—in other words, innovation! We need innovation in health care service delivery that is on par with innovation in other aspects of the health care system. Although we can benefit from ongoing innovations in

diagnostic technology, pharmaceuticals, surgical procedures, and medical devices, too often these are embedded in health care service delivery processes that do not provide timely, patient-centered, safe, effective, efficient, coordinated, and equitable access to the expected benefits. Consider, for example, a patient experiencing a variety of symptoms pointing to possible cardiac problems: unexplained fatigue, shortness of breath, and dizziness. Innovative, high-tech tools such as echocardiograms and computed tomography scans can help diagnose or rule out the underlying causes of such symptoms. Following diagnosis, an array of pharmaceuticals, medical devices, and surgical procedures—many of which did not exist only a decade ago—also are available. However, what has remained largely unchanged is the patient's often frustrating experience of scheduling appointments, finding their way through medical office buildings and hospitals, and waiting for test results.

We are capable of thinking differently. For example, we know that most patients face barriers to securing timely appointments and moving efficiently through the typical process of care. For years, leaders in health care hired more physicians or asked existing physicians to see more patients, which meant spending less time with each one. These incremental improvements undoubtedly helped. However, it was the innovative thinking behind advanced access (match capacity and demand, work down the backlog, do today's work today, and so on), developed by Mark Murray and Catherine Tantau at Kaiser Permanente in the early 1990s, that has dramatically reduced waits throughout the system and so-called sleepless nights for patients.

Further innovative approaches—“drive-throughs” for flu shots or other simple medical needs, having various specialists available by telephone for “curbside consults” while the patient is still in the primary care physician's office, and having specialists visit patients in the emergency room rather than delaying the care in the hospital or community setting—are but a few

of the many ideas that are being tested in parts of the health care system today.

RECOMMENDATIONS

So how are the crores of Indians, who have no access to a specialist, going to get help in the next 10 years? Providing new means of affordable access is no small task. We see five factors that must be addressed:

- First, services of specialists must not only be accessible, but also affordable to both urban and rural India. Indians have a high willingness to pay for quality health care diagnostics that are reasonably affordable. There is growing health care consumer awareness in India, so demand will continue to grow if care is affordable and accessible.
- Second, services must be from a trustworthy source. Because of all the quacks and healers here, Indians are generally skeptical unless they can find genuine medical credentials. This is even true of “branded” health care services. People want “board certified” or the equivalent along with references.
- Third, convenience is a major factor for consumers. People lead busy lives. If you want to visit a specialist, appointments are hard to get and then you end up waiting in a queue. For many people, this means complicated logistics with family, cost of transport to a specialist facility, and lost income. Getting treated for the simplest of maladies, too, is an expensive investment.
- Fourth, providing consultation needs to be convenient for specialists. Most specialists are busy, so to take on new clients, they need a solution which enables them to get more services done in the same time, and/or to make better use of their time when they are between patients or in transit.
- Fifth, specialists need to earn money. While motivations vary for specialists, it is fair and right that they get paid for additional services delivered based on the time invested. Ensuring fair remuneration also helps ensure

that they pay attention to quality. It must also be reasonably easy for a specialist to reliably receive payment.

- Primary care centers may be ideally decentralized and privately run, but to avoid corruption they must be accountable to semi-governmental autonomous bodies. A model for these autonomous bodies can be found in Andhra Pradesh, where a monitoring body including doctors and biostatisticians with much autonomy governs the statewide, pro-poor health insurance program [Aarogyasri](#).
- There is a greater need today to create more awareness about how advanced medical technologies can help those affected and suffering from non-communicable diseases which are on the rise for reasons known as well as unknown. The critical barriers to accessing healthcare in India include a lack of disease awareness, screening, diagnosis, referrals, trained doctors and funding. From cardiac diseases alone, there are now more than 2.5 million deaths in India. Yet therapy penetration is very low even amongst patients who can afford it. Although there is a new generation of pacemakers, stents, insulin pumps, drug injecting pumps etc. available and affordable, field research indicates there is low awareness about these new medical products and services among physicians in general. As a result, there is lack of patient awareness too.
- Added to this is the non-availability and lack of awareness of advanced diagnostic tools and the low affordability of treatment. It is important that all these barriers be addressed in an integrated manner. The device industry and its private players are helping to address these barriers through investing in the development of local healthcare solutions in their own way, today. These could include developing India specific products and services; partnering with NGOs to promote health seeking behavior through community awareness programmes; strengthening referral networks of specialists and training surgeons in time saving medical technologies; promoting use of therapies that help in faster recovery periods and; pioneering innovative financing mechanisms such as disease specific insurance products and loan schemes to make healthcare affordable.
- The availability of medical home devices is proving to be a game-changer in India. Diabetics, for example, have become adept at using compact electronic gadgets which accurately monitor blood sugar levels. Doctors have affirmed that diabetics, who are vigilant themselves, add greater efficiency to healthcare services.
- Ear infections have been found to be the leading cause of the problem. It is necessary to seek urgent medical advice for any ear infections. These can be easily detected through a simple examination of the ears by a doctor using an otoscope. Advanced medical technologies have made possible the use of the ENT review which is an Android-based oto-endoscope that enables examination of the patient's ear canal, capturing information about the patient's reported symptoms and diagnosis and, then, transmitting it via 3G data to an internet based data management system. An ENT surgeon can access the uploaded patient data from any PC, evaluate and approve the diagnosis.
- The most interesting future models of healthcare will combine these two approaches: lean, low-cost and high-quality medical systems with social networks to support people to manage their health more successfully, often using mobile phone systems as their platform.
- One of the most successful examples has its home in a drab office block in a suburb of Mexico City, where a team of 20 paramedics, dressed in starched white coats, sit in cubicles waiting to answer phones. The medics are fully trained but supported by computer systems loaded with protocols for

diagnosing conditions that have been gathered from some of the best hospitals in the world. This little call centre is the heart of a system, [MedicallHome](#), which provides a bare-bones primary healthcare system for about 1 million Mexican households for just \$5 a month. Almost two thirds of the issues people call with is resolved over the phone, which means that patients do not have to visit a doctor, which would cost at least \$30 and involve missing a day's work. If the telephone doctor recommends the patient visit a doctor in person, have a blood test or take a treatment, then MedicallHome connects them to one of its network of 6,000 accredited doctors and 3,000 healthcare providers, in 233 cities. As MedicallHome refers patients in large numbers, it negotiates discount for them ranging from 5% to 50%. With 70% of its people living in villages, often far from health care providers, it's clear that there's a lot of room for affordable health services to grow in India.

- Aiming to bridge the poor health infrastructure gap in rural areas and tap into the \$125 billion health care market, Sameer Sawarkar and Rajeev Kumar, founders of health technology company Neurosynaptic Communications, have built a cloud-based, point of care diagnostic equipment and telemedicine solution that enables remote health care delivery. Called ReMeDi (Remote Medical Diagnostics), it's a comprehensive low-cost digital health solution, which empowers its over 8,000 health technicians — with little or no college education — to act as a proxy for doctors in rural areas. Apart from India, ReMeDi technology is used in eight other developing countries, including Bangladesh, Senegal, Kenya and Ghana.

CONCLUSION

The social development and economic growth of a country is difficult to achieve without an

accessible, affordable and efficient health care system. The health sector continues to consume an escalating share of income of the people, making it imperative to implement effective healthcare services and integrate cost-cutting new technologies. Innovation can play an important role in expanding access to healthcare in India.

Innovations can help in finding ways to deliver care effectively at significantly lower costs while improving access and increasing quality. Innovative service delivery options such as telemedicine, retail clinics, and symptom checkers have had a positive impact on healthcare access, quality, and affordability in the United States. These innovations can be applied in the Indian context as a means of fixing healthcare delivery. However, unlike innovations in consumer products sectors, innovations in healthcare are more complex due to the inherent nature of the industry itself. The healthcare sector is quite complex with the medical delivery ecosystem under increasing pressures related to rising costs and patient expectations.

However, there are certain challenges associated with such disruptive innovations in healthcare delivery. There must be an appropriate infrastructure in place for diagnostics which is able to translate the information to the patient. Not all care can be provided via a smart phone, there are certain illnesses which require person-to-person evaluation in order to determine the appropriate method of treatment. Computer based diagnostics have their limitations as they may not be as accurate when compared to a doctor actually seeing the patient.

There needs to be a more targeted approach to offering people options such as symptom checkers and telemedicine in order to ensure high quality access. Low-cost delivery innovations can transform the way healthcare is provided, however, it is still unclear on whether they truly have an impact on total healthcare spending and whether they are as effective in reaching the population.

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HUMAN RESOURCE ACCOUNTING PRACTICES: AN EMPIRICAL STUDY OF 25 NIFTY BASED COMPANIES

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Abstract

The management of human resources for any organization has become very significant as well as critical in today's knowledge driven economy. There is a very famous adage that says "what gets measured gets managed". Human Resource Accounting (HRA) is the art and science of measuring human resources in monetary terms and reporting it to all stakeholders. The increasing importance of the human resources necessitates an objective and critical evaluation of the existing HRA practices in Indian companies.

Annual reports of last three financial years (that is, 2013–2014, 2012–2013 and 2011–2012) of all NIFTY based Twenty-five companies listed on the NSE, have been studied to achieve the objectives. Keeping in view the utility of HRA, those days are not far off when organizations will be able to value and report its human resources with clinical objectivity.

The present paper focuses attention towards examining the concept of HRA, analyze its various measurement approaches/models and explore the extent of disclosures being made available in annual reports of the Indian companies under study about HRA.

Key Words: *Human Resource Accounting, Annual report, NIFTY, Balance Sheet, Intangible Assets.*

INTRODUCTION

Human Resource Accounting (HRA) has been variously defined. American Accounting Association (1973) has defined HRA as "The process of identifying and measuring data about human resources and communicating this information to interested parties." Flamholtz (1971) has defined it as "the measurement and reporting of the cost and value of people in organizational resources." (Emphasis mine)

Human Resource Accounting is the art and science of measuring human resources in monetary terms and disclosing this information to all stakeholders. It involves valuation of all the investments associated with recruitment, training, development, and maintenance of the employees in the firm.

The concept of HRA is not new to India. It was pioneered by public sector companies like Bharat Heavy Electricals Ltd. (BHEL) and Steel Authority of India Ltd. (SAIL) way back in the 1970s. However, it did not gain much popularity and acceptance in India. The researcher, during literature survey found that the existing latest studies on HRA in Indian context are far from satisfactory. The latest available studies are mainly based on secondary data and are more theoretical in nature. Moreover, there is hardly any comprehensive company-wise study covering the whole gamut of HRA practices, which analyses the major issues involved in the

subject and suggest practical solutions to the problems. The present study is a humble attempt to filling this gap in knowledge regarding HRA.

While emphasizing the importance of HRA, Likert R. (1971) says, HRA serves the following purposes in an organization:

- i. It furnishes cost/value information for making management decisions about acquiring, allocating, developing and maintaining human resources in order to attain cost effectiveness;
- ii. It allows management personnel to monitor the use of human resources effectively;
- iii. It provides a sound and effective basis for human asset control, that is, whether the asset is appreciated or conserved.
- iv. It helps in the development of management principles by classifying the financial consequences of various practices.

On the basis of above mentioned some of the most popular definitions of HRA, we can say that it not only involves valuation of all the investments associated with recruitment, training, development, and maintenance of the employees in the firm, but also reporting it properly and reliably to all

the stakeholders of the organization.

Many scholars and experts have, since 1960 onwards attempted to value the human assets in their own way. After a thorough study of the available literature on the subject, various approaches to Human Resource Accounting may be broadly classified as follows:

(A) Cost Based Approaches:

- i. Historical cost
- ii. Replacement cost
- iii. Opportunity cost

(B) Monetary value Based Approaches:

- i. The lev and Schwartz model
- ii. The Eric Flamholtz Model
- iii. The Myers and Flowers model
- iv. The Jaggi and Lau model

(C) Non- Monetary value Based Approaches:

- i. The Likert model
- ii. The Flamholtz model

In spite of the prevalence of so many approaches and models of Human Resource Accounting, there is so far hardly any unanimously accepted accounting practice for finding out the value of human resources of an organization. Similarly there is even today a debate about the form and manner in which the value of human resources should be included in the financial statements. The critics of Human Resource Accounting practices reject the concept completely and justify their claim mainly on the following two grounds:

As human resources are not capable of being owned, retained and utilized, like the physical assets, not only is it irrational but also unethical to value them and report it in the financial statements.

- i. The period of existence of human resources is uncertain and hence valuing them under uncertainty is unrealistic.

In spite of their claim, the hard fact remains that in the present day knowledge driven economy, the key strength of an organization is reflected in its human assets which is nothing but a sum total of skills, knowledge, experiences, attitudes and behavior of the workforce. Accounting and valuation of human assets will definitely add value to the operation of strategic human resource management.

Since the late eighties, and especially after revolution in Information Technology, one can see a gradual shift in organization structure of companies from production centric to knowledge centric. Zuboffs (1988) has described

it as an information revolution and has opined that this would transform the human society as dramatically as industrial revolution did. Undoubtedly, he has been proved correct.

Now a days, we find that a number of conglomerates depend entirely on knowledge to generate their revenues. The total assets of a company can be broadly classified under two heads i.e. tangible and intangible assets. The market value of these companies often exceeds their tangible assets (also called physical assets) viz. land and building, plant and machineries, inventories, cash and bank balances etc as shown in the Balance Sheet. Why is it so? Because, Balance Sheet does not reflect the value of intangible assets. Human assets are a major component of intangible assets like Brand, Goodwill and intellectual capital.

The increasing importance of the human resources necessitates an objective and critical evaluation of the existing methods of accounting and valuation.

II. OBJECTIVES OF THE STUDY

- To find out whether Indian companies have a system of Human Resource Accounting practices?
- To find out whether Indian companies carry out the valuation of their human resources.
- To identify the methods / models, being used for the valuation of human resources by companies under study.
- To capture the hurdles faced by various Indian companies in valuing human resources.
- To explore the extent of voluntary disclosures being made available in corporate annual reports about human resources.
- To visualize the expected future of Human Resource Accounting Practices in India.

REVIEW OF LITERATURE

Dawson (1994) studied the distinction between prescriptive and descriptive approaches with regard to human resource accounting. It was found that both approaches have a useful contribution to make but prescriptive approach should not be confused with low quality descriptive approaches and that while the latter are to be deplored the former have a valuable place in management research. 6th.

Batra (1996) calculated the HRA and auditing practices in selected public enterprises like BHEL, SAIL & CCI up to the period 1991-92. Primary and secondary data were collected for the purpose of study. This study suggested a model for measuring the value of human assets of these enterprises and found that HR valuation and audit activity could be helpful in improving the efficiency of human

resources in the changing business scenario. 7th.

Bates and Steve (2002) "Hard to define and even harder to measure, intangible assets are becoming increasingly essential to the success of many organizations in the 21st century. Every company has employees. But not every company understands their contribution to the bottom line or knows how to manage them to drive even better financial results, even though account for as much as 80 percent of the worth of a corporation."

Flamholtz et. al. (2002) explored the term HRA and implications of measuring human capital for financial capital and managerial use. It was also studied about the Swedish based HRA applications with respect to measuring human assets and intellectual capital including the Skandia Navigator illustrates the intellectual history and developments in business schools. It was revealed that HRA suggests a vehicle for improvement of management as well as measurement of HR. If HRA can demonstrate that improvement in HR management enhances profits, then managers will integrate human capital implications in their decision making to an enhanced degree.

Tracy (2008) directed at analyzing the types and adoption of HR policies, practices and programs in the hospitality industry of Kenya that may be linked to a firm's overall business strategy & helps to drive performance in the hospitality industry of Kenya. It was proclaimed that there is a need to develop a clear and strong alignment between the overall business plan and the HR function.

Pandey (2012) analyzed HRA practices of fifty selected companies on the Nifty based of three years of annual reports. Content analysis was used for the study. It was found that out of 50 leading companies of India only one (ONGC) company follows the HRA practices. Due to increasing importance of intangibles especially human resources, how to what extent these are reported is of utmost interest to a large number of stakeholders.

Sharma and Kumar (2014) compared the disclosers and practices adopted by selected public and private sector banks and revealed that public sector banks were disclosed more information related to the human resource practices than the private sector banks. Public sector banks were found disclosing some quality information of human capital related information.

PRIMARY DATA COLLECTION

After study of the available literature on the subject and identifying information gap, a Questionnaire was developed the required information/data is collected through various means like, questionnaire, letters, personal interviews and discussions etc. We took the sample of twenty-five companies on the basis of turnover and due care

was taken to see that they are the real representative of various industries.

SECONDARY DATA SOURCES

The data/information available from the secondary sources like Annual Reports, balance sheets, Profit and Loss Accounts will be collected and analyzed. Conclusions are drawn on the basis of objective analysis of the data. The findings there upon would be taken as a basis for suggestions.

RESEARCH METHODOLOGY

To achieve the above objectives, the research methodology adopted is a combination of various methods like, collection of primary data through questionnaire, collection of secondary data/information from various sources, content analysis and discussions/interviews with some of the officials of the companies. All the Twenty Five companies which comprises NIFTY (Index of National Stock Exchange of India) are the universe of the present study. A sample of twenty-five companies on the basis of turnover has been selected. Both, close-ended and open-ended questions were used in the survey. Respondents were asked to consider various questions or statements and indicate their view point on a five-point scale. To have the view point of HR and Finance managers, questionnaires were handed over to 5 HR and 5 Finance managers of all 25 nifty based companies which comprise the sample. Thus in total, 250 questionnaires were distributed; 125 to human resource professionals and 125 to finance professionals. All the 250 questionnaires distributed were received back and found in order. To find out the significance of differences of responses amongst HR and Finance managers Mann – Whitney U Test has been used. Similarly the same test has been used to find out the differences of responses amongst the manufacturing and service sector's HR and Finance managers.

Value of human resources increasing or decreasing?

It has already been mentioned above that out of Twenty-five companies based on NIFTY only ONGC is valuing its human resources and disclosing it's every year in the Annual report. The following table, therefore, reflects the data related to ONGC only

FINDINGS

1. After a detailed analysis of the annual reports of last three financial years (i.e. 2010-2011, 2009-2010 & 2008-2009) for all the Twenty-five companies (Please refer TABLE - 2) it has been noticed that only ONGC is valuing its human resources every year and disclosing it accordingly in its annual report .
2. Only 40 per cent companies value their human

resources like InfoSys. The conclusion that can easily be drawn is that though most (92 %) of companies, follow HRA practices, but they do not value their human resources.

3. But our results are giving very optimistic results so far future of HRA is concerned as a large number of respondents (53.3%) have narrated that their companies are planning to start valuation of human resources within next three years.
4. The disclosure practices related to human resources regarding monetary themes viz. employee recruitment costs, cost of training, amount spent towards health & safety of employees and employee separation costs are the least reported in the annual report.
5. Lev and Schwartz model is the most commonly used model of valuation of human resources in India followed by Replacement cost method and then the Historical cost method respectively.
6. The main hurdles company facing in valuation of its HR is Absence of uniformly accepted suitable method / model for valuing human resources and Valuation of human resources is costly (both in terms of time and resources) compared to its benefits.

DISCUSSION

This study has re-established the importance of HRA practices. Most (92%) of the respondents stated that the practices of human resource accounting are important or very important for their organization. It is interesting to note that the three statements relating to the criticism of Human Resource Accounting have received little overall support (19% to 29 %) from respondents, viz. valuing human resources would cause complexity (inferiority / superiority) amongst employees (28.8%), valuing human resources amounts to treat humans as commodities and leads to adoption of unethical practices in an organization (28%) and valuing human resources is illogical as it changes value of the organization according to its working environment and management policies (19.6%). Our findings by and large contradict the critics of Human Resource Accounting practices who reject the concept completely and justify their claim mainly on the ground that as human resources are not capable of being owned, retained and utilized, like the physical assets, not only is it irrational but also unethical to value them and report it in the financial statements.

Regarding disclosure practices of value of human resources, the findings of this study clearly indicate that 62.8 per cent of respondents have supported the view that the value of human resources should be included in the published Annual Reports of an organization and disclosure of value of human resources will enhance the image of the organization in the eyes of various stakeholders. Similarly, 58.8 per cent of respondents are of the opinion that investors make a difference in their valuation between companies who voluntarily disclose more information about their human resources compared to those companies who do not do so. In all the above three cases more support from HR professionals have been observed than Finance professionals. These results perhaps indicate that in order to maintain credibility, human resource professionals feel the need to measure their activities in financial terms and disclose it accordingly.

The future of human resource accounting practices in India, if not very bright, is not very gloomy also. It is heartening to note that 38.8 per cent of the respondents opined that there would be significant progress in HRA during the next five years.

CONCLUSION AND RECOMMENDATIONS

1. In conclusion it can be said that as the role of people is becoming important day by day there is a dire need of advancement in the concepts of accounting related to valuation of intangible assets like human resources.
2. Until and unless uniformly accepted model/method for valuation of human resources are developed the opportunity to make the case for the strategic importance of human resources valuation cannot be credibly made
3. Disclosure practices related to human resources in annual reports of Indian companies need to be strengthened a lot. Despite the frequent saying that “employees are our most valuable asset” one hardly gets the necessary details related to human resources in companies' annual reports.
4. Contemporary financial reporting practices should be amended accordingly keeping in view the employees as an important stakeholders.

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PHYSICO-CHEMICAL AND BIOLOGICAL CHARACTERISTICS OF RIVER RAMGANGA AT BAREILLY

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Abstract

Water is a precious resource of life and forms the base of survival. All the studied research papers or articles indicate that the water pollution has to increasing day by day due to domestic and industrial sources. There are many water pollution causes and effects but it is necessary to analyse the causes and effects to save our planet from destruction. Being an important resource, we humans must work towards conserving water.

Keywords: *pollution, River Ramganga, sources, planet.*

INTRODUCTION

Water is a transparent and nearly colorless chemical substance that is the main constituent of Earth's streams, lakes, and oceans, and the fluids of most living organisms. Its chemical formula is H₂O, meaning that its molecule contains one oxygen and two hydrogen atoms, that are connected by covalent bonds. Water strictly refers to the liquid state of that substance, that prevails at standard ambient temperature and pressure; but it often refers also to its solid state (ice) or its gaseous state (steam or water vapor). It also occurs in nature as snow, glaciers, ice packs and icebergs, clouds, fog, dew, aquifers, and atmospheric humidity. Water covers 71% of the Earth's surface. It is vital for all known forms of life. On Earth, 96.5% of the planet's crust water is found in seas and oceans, 1.7% in groundwater, 1.7% in glaciers and the ice caps of Antarctica and Greenland, a small fraction in other large water bodies, and 0.001% in the air as vapor, clouds (formed of ice and liquid water suspended in air), and precipitation. Only 2.5% of this water is freshwater, and 98.8% of that water is in ice (excepting ice in clouds) and groundwater. Less than 0.3% of all freshwater is in rivers, lakes, and the atmosphere, and an even smaller amount of the Earth's freshwater (0.003%) is contained within biological bodies and manufactured products. A greater quantity of water is found in the earth's interior.

Water on Earth moves continually through the water cycle of evaporation and transpiration (evapotranspiration), condensation, precipitation, and runoff, usually reaching the sea. Evaporation and transpiration contribute to the precipitation over land. Large amounts of water are also chemically combined or adsorbed in hydrated minerals. Safe drinking water is essential to humans and other life forms even though it provides no

calories or organic nutrients. Access to safe drinking water has improved over the last decades in almost every part of the world, but approximately one billion people still lack access to safe water and over 2.5 billion lack access to adequate sanitation. There is a clear correlation between access to safe water and gross domestic product per capital. However, some observers have estimated that by 2025 more than half of the world population will be facing water-based vulnerability. A report, issued in November 2009, suggests that by 2030, in some developing regions of the world, water demand will exceed supply by 50%. Water plays an important role in the world economy. Approximately 70% of the freshwater used by humans goes to agriculture. Fishing in salt and fresh water bodies is a major source of food for many parts of the world. Much of long-distance trade of commodities (such as oil and natural gas) and manufactured products is transported by boats through seas, rivers, lakes, and canals. Large quantities of water, ice, and steam are used for cooling and heating, in industry and homes. Water is an excellent solvent for a wide variety of chemical substances; as such it is widely used in industrial processes and in cooking and washing. Water is also central to many sports and other forms of entertainment, such as swimming, pleasure boating, boat racing, surfing, sport fishing and diving.

The rivers of India play an important role in the lives of the Indians. They provide potable water, cheap transportation, electricity, and the livelihood for a large number of people all over the country. This easily explains why nearly all the major cities of India are located by the banks of rivers. The rivers also have an important role in Hindu Dharma and are considered holy by all Hindus in the country. Seven major rivers along with their numerous tributaries make up the river system of India. The largest

basin system of the rivers pour their waters into the Bay of Bengal; however, some of the rivers whose courses take them through the western part of the country and towards the east of the state of Himachal Pradesh empty into the Arabian Sea. Parts of Ladakh, northern parts of the Aravalli range and the arid parts of the Thar Desert have inland drainage. All major rivers of India originate from one of the following main watersheds: Aravalli range, Himalaya and Karakoram ranges, Sahyadri or Western Ghats in western India, Vindhya and Satpura ranges and Chotanagpur plateau in central India. Himalayan glaciers in the Indian subcontinent are broadly divided into the three river basins, namely the Indus, Ganga and Brahmaputra. The Indus basin has the largest number of glaciers (3500), whereas the Ganga and Brahmaputra basins contain about 1000 and 660 glaciers, respectively.

Ramganga West River originates from Doodhatoli ranges in the district of Pauri Garhwal, Uttarakhand state of India. The Ramganga River flows to south west from Kumaun Himalaya. It is a tributary of the river Ganges, originates from the high altitude zone of 800m-900m. Ramganga flows by the Corbett National Park near Ramnagar of Nainital district from where it descends upon the plains. Moradabad, Bareilly, Badaun, Shahjahanpur and Hardoi cities of Uttar Pradesh is situated on its banks. The Ramganga Dam crosses the river at Kalagarh for irrigation and hydroelectric generation. An annual festival of Ganga Dassahra is organised on its banks annually during the months of September and October at Chaubari village near Bareilly. It has a drainage basin of 30,641 km². (11,831 sq.mi). Another Ramganga called Ramganga East originates from the Namik Glacier in Pithoragarh district of Uttarakhand and flows towards South-East. The river is fed by numerous small and big rivers and finally joins river Sarju at Rameshwar near Ghat of Pithoragarh. The Sarju in turn confluences with the Kali (Sharda).

Pollution is the introduction of contaminants into the natural environment that cause adverse change. Pollution can take the form of chemical substances or energy, such as noise, heat or light. Pollutants, the components of pollution, can be either foreign substances/energies or naturally occurring contaminants. Pollution is often classed as point source or nonpoint source pollution. Pollution of the Ganges (or Ganga), the largest river in India, poses significant threats to human health and the larger environment. Severely polluted with human waste and industrial contaminants, the river provides water to about 40% of India's population across 11 states, serving an estimated population of 500 million people or more, more than any other river in the world. Today, Ganges is considered to be the fifth most polluted river in the world. Raghubir Singh has noted that no one in India spoke of the Ganges as polluted until the late 1970s. However, pollution

has been an old and continuous process in the river as by the time people were finally speaking of the Ganges as polluted, stretches of over six hundred kilometers were essentially ecologically dead zones. A number of initiatives have been undertaken to clean the river but failed to deliver desired results. After getting elected, India's Prime minister Narendra Modi affirmed to work in cleaning the river and controlling pollution. Subsequently, the Namami Ganga project was announced by the government in the July 2014 budget. An estimated Rs 2,958 Crores have been spent till July 2016 in various efforts in cleaning up of the river.

Major tributaries of the Ramganga in the Moradabad-Bareilly stretch have dried over the past few years, according to a survey by faculty at MJP Rohilkhand University. Siddha, Dojora and Bahgul (west) have dried, while water levels of Deoraniya, Nakatia and Sankha have plummeted, resulting in an overall decline in Ramganga's water level between Moradabad and Bareilly. The study blames climate change and pollution for the drastic fall. The study is conducted by Neelima Gupta, professor at the department of animal science and has been sanctioned by Uttar Pradesh Council for Agriculture Research. Gupta said, "As per the government records, six tributaries of Ramganga, which are Siddha, Dojora, Bahgul (west), Sankha, Deoraniya and Nakatia flows in the terai region. These rivers run through the Bareilly district in southern and south east direction to join Ramganga, which is tributary of Ganga. However, Siddha, Dojora and Bahgul (west) rivers have dried up in Bareilly." Even the condition of remaining tributaries is poor in the district. As per the research, Nakatia, which had flowing water till a decade back, has now dried up at few places. Though water in Nakatia river can be spotted at Khajuria Ghat, the river is highly polluted when it reaches Tula Sherpur. "The Nakatia river has drastically gone down at Pilibhit Bypass as water can be seen only in few patches while the river has completely dried at Mudiya Ahmadnagar," she said, quoting the study. In the similar way, a small river known as Dabbar rivulet merges with Deoraniya river near a factory on Delhi road. However, Dabbar is entirely dried now which has caused decline in Deoraniya's water level. Likewise, the water level of Sankha river has decreased at several places. "It has affected the water level of Ramganga. Even Ramganga's water level has extremely reduced from the stretch Kathghar (Moradabad) to Bareilly," said Gupta. The climate change is one of the major factors behind water scarcity in rivers. "Due to global warming, the maximum temperature is rising and this time, we had poor winter because temperature did not decrease. The rise in temperature causes evaporation which results in loss of water. Rising temperature affects tolerance level of aquatic plants and animals," she said. Another reason is pollution, which is affecting the survival of rivers in the region. "Dumping of municipal solid waste, biomedical and industrial waste into the rivers is the main

cause of pollution in river," said Gupta. "As there are many water resources across the country, there should be no scarcity of water in India. However, there is an immediate need for conducting awareness programmes on minimizing the wastage of water," she added.

In a shocking revelation, Uttar Pradesh Pollution Control Board (UPPCB) officials have claimed that the major source of pollution in Ramganga is city's domestic waste. More than 80% of the waste in the river is domestic, instead of industrial waste. According to the UPPCB, the city's sewer lines and drains discharge tons of household waste into the river causing pollution. "Domestic waste is released into tributaries of Ramganga - Nakatia and Deoraniya rivers through drains. The waste, which is accumulated in the household, is released into drains, which pass it to Ramganga. Of the total domestic waste, a majority is discharged into Deoraniya (Quila) river which is nearly 80% whereas Nakatia river receives about 20% of the total waste," said UPPCB regional officer R. K. Tyagi. Several small drains which are interconnected with each other open in Quila river and pollute Ramganga in Bareilly. The domestic waste includes human excreta, organic and non-organic waste. The authorities at UPPCB said there are nearly 15 units of industries in Bareilly and around 10 of them are some of the prominent industries of the district. However, all these 15 industries have installed treatment plant and hence, they do not release waste into Ramganga. "Unlike other cities, the major cause of concern in Bareilly district is the domestic waste being regularly released into the river. Though we have written to municipal authorities a number of times, nothing has been done till now." When contacted, municipal commissioner Sheeldhar Yadav said, "We are aware that domestic waste through a few drains is causing river pollution. Through a central scheme, under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), we are planning to construct four sewage treatment plants to re-use the water or waste discharged from the sewer lines or drains. It will stop the pollution of river." The sewage treatment plants will come up in four zones of the city. The municipal authorities are looking out for land for the project and the plant will be constructed in Nakatia, CB Ganj, Saray Talfi while the fourth spot is yet to be decided. The municipal authorities said that the central government will allocate the budget for construction of sewage treatment plants within a year. Under this project, new sewer lines would be laid in the city as more than more than 60% of the city does not have sewer lines. Over the years, the city has expanded but no project to lay sewer lines in new areas has been introduced by the successive state or union governments. Though many new colonies have mushroomed in the past, there are no sewer lines in these localities.

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Throughout the globe voluminous research on variation of physico-chemical parameters on natural water bodies, both fresh water & waste water has been carried out & a lot of literature is found on this subject. In view of the objective of the present research, a critical review of literature was carried out together with information on various relevant aspects such as physico-chemical features, heavy metals concentrations. Hydrobiology of river water has been studied by a number of Researchers. A few of them has been given.

Sinha et.al. (2006) studied that the river if was found to be alkaline at almost all the river water sites with high values of pH and alkalinity. The conductivity of river water was in the moderate range although it was higher than the desirable limit prescribed by W.H.O. and turbidity was well within the prescribed limits and also the amount of D.O. was increased to a large extend after the onset of monsoon at almost all the sites of River Ramganga at Moradabad. Sinha and Kumar (2006) studied that the water of river Gagan at Moradabad was found enriched with zinc, lead, iron, copper and micronutrients which indicated a marked decrease for trace metal in river water quality and also suffered from toxicity of trace metals.

Koliyar and Rokade (2008) studied the water quality in Powai Lake of Mumbai and analyzed that different parameters accessed during in summer and rainy seasons but inflation during rainy season, water parameters became diluted which affected the aquatic environment. Prasad and Patil (2008) studied the physico-chemical parameters of Krishna river water in particularly in western Maharashtra within the permissible limit of WHO and ICMR and river water was suitable for drinking purpose and also for aquatic animals in studied period. Yogendra and Puttaiah (2008) studied the water quality index and suitability of an urban water body, Gopishettykere in Shimoga town, Karnataka in order to ascertain the quality of water for public consumption, recreation and other purposes and WQI was determined on the basis of various physico-chemical parameters like pH, EC, TDS, TA, TH, TSS, calcium, magnesium, chloride, nitrate, sulphate, DO and BOD.

Hasan et.al. (2009) studied the water of Buriganga river, beside Dhaka and of a rural river Panguchi for pollution by determination various water quality parameters for one year. The pH range was 6.69 to 8.14 for the river Buriganga and 6.90 to 8.80 for the river Panguchi. The organic pollution in the river Buriganga was much more severe as indicated by DO (4.22 to 6.84) and BOD (0.97 to 3.12) than river Panguchi as the values were 7.16 to 8.66 and 5.43 to 5.73. Kumar and Bahadur (2009) studied the water of River Kosi at Rampur for pollution by determining various water quality parameters for all three seasons that

pH range was 7.3-7.9 and DO, BOD and COD were in high value. Joshi et.al. (2009) studied the statistical analysis of physico-chemical parameters of Ganga river water in Haridwar for two consecutive years 2007 and 2008 during three seasons (winter, summer and rainy) and an appreciable significant positive correlation was found for free CO₂ with Cl⁻, TDS, TSSD; turbidity with Cl⁻, Ec, TSSD; Cl⁻ with Ec, free CO₂, TSSD; Ec with Cl⁻, TDS, TSSD and a significant negative correlation was found for DO with free CO₂, COD, TDS, TSSD, Ec, Cl⁻ and turbidity. Ramakrishnaiah et.al. (2009) studied the WQI for the ground water of Tumkur taluk, Karnataka and the high value of WQI had been found to be mainly from higher values of iron, nitrate, TSS, hardness, fluorides, bicarbonate and manganese in the ground water. the results of analysis had been used to suggest models for predicting water quality. Senwal and Jangwan (2009) studied major ion chemistry of river Bhagirathi and river Kosi in the Uttarakhand, Himalaya and concluded the observations that natural sources governed the elemental mobility in both the Himalaya rivers and anthropogenic inputs are insignificant. Singh et.al. (2009) studied the ground water quality in Bareilly which performed at ten different sites during the year 2005-2006 and obtained quality parameters were treated using principal component analysis and cluster analysis. The study shows usefulness of multivariate statistical techniques for evaluation and interpretation of ground water quality data sets. Verma (2009) studied the water quality in Betwa river at Bundelkhand and debated that river water was polluting due to organic and inorganic pollutants of agricultural and household activities.

B. R. Kiran (2010) studied to evaluate the physico-chemical characteristics of the water in the fish ponds of Bhadra project at Karnataka during December 2006 to May 2007 and observed that the high phosphate and nitrate concentrations were attributed to water leached surface soil runoff, as well as the addition of organic manure to the ponds. Chandra et.al. (2010) studied the impact of effluents discharge through industrial wastes and sewage in Ramganga river at Bareilly and observed the change in the quality of water that there DO was abatement and free CO₂ was accretion. Kumar et.al. (2010) studied that the effect of mixed effluents of paper and sugar industries in river Bhegul passing through Bareilly district of Uttar Pradesh was studied physico-chemical properties of water with three sites. Site first village Bairam Nagar had non polluted water while site second village Basai was highly polluted and site third village Thanpur had mixed polluted water. Parmar and Parmar (2010) studied WQI for drinking purpose of River Subernarekha in Singhbhum and surveyed that river water was excellent to average quality so that main cause of deterioration of river water was industrial effluents,

untreated sewage and unprotected river sites. Sonawane and Shrivastava (2010) studied the ground water quality assessment nearer to the dye industry and crammed the drinking water of different sites were not suitable for drinking purpose. Varunprasath and Daniel (2010) studied on some physico-chemical characteristics of river Bhavani at Tamil Nadu and at its sources for the period of one year (July 2007 to June 2008). Increase in temperature, turbidity, pH, electrical conductivity, total solids, suspended solids, dissolved solids, BOD values were higher in Sirumugai station, whereas the increase in total hardness, bicarbonate values were higher in Mettupalayam and also DO values were higher in Pillur dam.

Agarwal and Saxena (2011) studied carry out in river Gagan at Moradabad to assess the extent of pollution by different industrial and domestic activities and regression equation also established between alkalinity, BOD and COD to predict the level of pollution of river Gagan. Chandra et.al. (2011) studied the magnitudes of pollution because it was observed that the sewage disposal and large number of industries of river Ramganga at Bareilly and there was a marked difference when the value were compared at station I and II. The maximum difference of 32.7% was observed in the summer season at station I and II. Chandra et.al. (2011) studied carry out to assess the water quality of Devaha river at district Pilibhit from May 2009 to April 2010 within three season (summer, rainy and winter). The study revealed that the river upstream was of better quality whereas the downstream and stretch was polluted as indicated by very low DO, high T.S., TDS., EC., BOD., COD., Hardness and nutrients. Chaurasia and Tiwari (2011) studied that the effect of industrial effluents and wastes on physico-chemical parameters of river Rapti in Gorakhpur area and from the result it revealed that the water quality of Faren Nallah is more worst that carries effluent to river Rapti from sugar factory and distillery. Gupta et.al. (2011) studied physico-chemical assessment of water quality of river Chambal in Kota city area of Rajasthan state and analyzed data clearly revealed that at some places river water was highly polluted but overall river water along Kota city area was moderately polluted by organic as well as inorganic substances. Jadhav et.al. (2011) studied that the environmental factors and season were responsible for the variation of physico-chemical parameters of Sina Kolegoan Dam at Osmanabad district, Maharashtra from June 2009 to May 2010 and concluded that the maximum temperature, alkalinity was more in summer season while dissolved oxygen was less, while CO₂ was more in monsoon season. Khare et.al. (2011) studied all the physico-chemical parameters of water of Ganga river at Kanpur for pre-monsoon, monsoon and post-monsoon seasons within the highest desirable or maximum permissible limit set by

WHO except turbidity which was high while NO₃⁻, Cl⁻ and F⁻ were less than the values prescribed by WHO. Patil and Puttiah (2011) studied of the water quality using physico-chemical parameters Hosahalli tank in Shimoga district, Karnataka for a periods of one year from 1st January 2007 to 31st December 2007 within the permissible limits and the results indicated that the tank was non-polluted and can be used for domestic, irrigation and fisheries. Shankar et.al. (2011) studied the ground water quality in Paravanar River sub-basin, Cuddalore district, Tamil Nadu and the physical and chemical parameters of the river basins result showed that all the samples were under recommended limit for industrial purposes. Tabassum et.al. (2011) studied of Denwa river in Pachmarhi Biosphere reserve area and observed that the integrated, longitudinal and lateral influences of stream profile can be clearly seen on stream water quality. Yadav and Srivastava (2011) studied the physico-chemical properties of the water of river Ganga at Ghazipur during the September 2005 to August 2007. Depletion in the DO and increase in temperature, total solids, EC, pH, BOD, COD, chloride, acidity, total alkalinity, total hardness, calcium, phosphate, nitrate, sodium and potassium.

Bhalme and Nagarnaik (2012) studied of the drinking water parameters in an educational institute situated in Hingna MIDC area, Nagpur and paper of different authors were summarized on water analysis and their treatment processes in different region which was helpful to know the different treatment processes and parameters used in the study. Deshmukh (2012) studied the hydrobiology of river Pravara in Ahmednagar district, Maharashtra. Total 298 algal taxa belonging to 108 genera representing 34 families and 21 orders were recorded and maximum number of algae was observed from December to April and to some extent in May. During and after rainy season benthic and filamentous algae were seen and the seasonal percentage of algae was found more in winter. Gangwar et.al. (2012) studied the water of river Ramganga at Bareilly includes physico-chemical parameters and crammed that temperature was 20.4oC to 35.9oC, pH (8.1-8.8), TS were ranged from 330 mg/l to 396 mg/l, turbidity ranging between 22 to 72 NTU, hardness was 192 to 219 mg/l, alkalinity was 96 mg/l to 202 mg/l, organic pollution was mild as indicated by DO ranged from 5.8 mg/l to 6.3 mg/l, BOD was 5.0 mg/l to 5.8 mg/l and COD was 33.5 mg/l to 41 mg/l. Imnatoshi and Ahmed (2012) studied geomorphology and seasonal variation of Doyang river, Nagaland during pre-monsoon, monsoon and post-monsoon and the range for physico-chemical parameters were: air temperature 10-29oC, water temperature 9-26oC, TDS 58.3-186.7 mg/l, DO 8-13 mg/l, TH 47.9-60.6 mg/l, chloride 7.7-13.3 mg/l, phosphate 0.01-0.09 mg/l, ammonia 0.01-0.06 mg/l, pH 6.4-7.8, free CO₂

4.1-5.9 mg/l. Jena et.al. (2012) studied the comparative study of ground water by physico-chemical parameters and water quality index during Jan.-Dec 2011 in the three big cities of Chhattisgarh and analyzed that Bhilai water had low hardness comparatively than Raipur area water and Bhilai city groundwater was not suitable for drinking purpose as compared to other two nearby cities. Kalra et.al. (2012) studied the WQI in five blocks that lay in southern parts of district Bhojpur of Bihar using physico-chemical parameters and compared with ICMR standards of water quality and also in researched paper classification of water samples of five blocks was investigation on the basis of TDS and TH. Katyal et.al. (2012) studied the water quality assessment of Yamuna river in Delhi region using index mapping from Wazirabad barrage to ITO barrage and were analyzed for physico-chemical parameters. Based on the results of the analysis, spatial distribution map of selected water quality parameters were prepared using Arc Info software. Pathak et.al. (2012) studied on the physico-chemical status of two water bodies at Sagar city under anthropogenic influences during pre-monsoon, monsoon and post-monsoon in the year 2007-2010 and the results indicated the satisfactory water quality of the Rajghat reservoir water and Lakha-banzara ponds were found to be polluted condition. Thirupathaiiah et.al. (2012) studied of water quality using physico-chemical parameters in Lower Manair Reservoir at Karimnagar to see monthly changes in various physico-chemical parameters for a period of one year from September 2009 to August 2010. the results indicated that parameters of water were within the permissible limits and can be used for domestic, irrigation and pisciculture. Thorvat et.al. (2012) studied on the physico-chemical characteristics of four different stations of Panchaganga river in Kolhapur during October 2009 to March 2010 on weekly basis and observed that station-I was moderately polluted whereas other three stations were found to be excessively polluted. Verma et.al. (2012) studied the physico-chemical characteristics of four canals of Allahabad region and its suitability purpose for irrigation during January to April 2011 and crammed that the correlation between COD and BOD were found highly significant.

Agarwal and Agarwal (2013) studied the linear regression and correlation analysis of water quality parameters of river Kosi at district Rampur and researched that some good correlations and regression equation between parameters were established and RPD indicated that there was a very small difference between measured and estimated values of parameters. Dubey (2013) studied physico-chemical parameters of waste water disposed off in the river and outlet of ponds of entire Ujjain city and study clearly pointed out that water was highly polluted as the

contained high levels of nitrates, phosphates, chlorides and sulphates, further, the study of DO, BOD, COD and TDS values were not within the permissible limits given by EPA. Gaikwad and Kamble (2013) studied the physico-chemical parameters which clearly indicated that some monitoring sites from river Panchganga during March 2011 to February 2013 were least polluted but remarked as continuously polluting zone due to numbers of drainage outlets, untreated effluents discharge, agricultural runoff, domestic activities etc. Gangwar et.al. (2013) studied in three seasons to assessment of WQI of river Ramganga at Bareilly included physico-chemical parameters viz. pH, BOD, DO, Total alkalinity, total hardness, TDS, TSS and chloride that indicated the extent of pollution. Gupta et.al. (2013) studied the physico-chemical parameters of Bansagar Dam water during February 2012 to January 2013 in three seasons and revealed that there was a significant seasonal variations in some physico-chemical parameters and most of the parameters were in the normal range and indicated better quality of Dam water and area. Ishaq and Khan (2013) studied a comparative study of physico-chemical parameters and plankton diversity between river Tons and Asan in Dehradun for a period of one year from April 2011 to March 2012 and the status of plankton diversity of river Asan was so low indicating that the river was highly polluted and the water chemistry have direct effect on plankton diversity. Jena et.al. (2013) studied the physico-chemical parameters of water samples of Kharoon river water at different sites of Raipur during 2010-2011 and observed values were compared with standards values recommended by WHO which were scarce. Khatoun et.al. (2013) studied the correlation for the assessment of water quality and its parameters of Ganga river, Kanpur from March 2011 to February 2011 and observed that the mean value of all the measured physico-chemical parameters were within the highest desirable limit set by WHO except BOD. Kugali and Yadawe (2013) studied the various physico-chemical analysis of bore wells, drinking water had been carried out from twenty sampling stations of Bagalkot territory area during March 2013 and August 2013 in order to assess water quality index. Patil and David (2013) studied to the oxidative stress in fresh water edible fish and observed that time and concentration-dependent induction/reduction of the parameters by lethal and sub-lethal concentrations of malathion was observed in the tissues of *Labeo rohita*. Thus the results clearly infer oxidative damage and decline in antioxidant defense due to malathion-induced oxidative stress. Praveen et.al. (2013) studied an extensive investigation of physico-chemical parameters of water samples of Ganga River at Kanpur and found that significant positive correlation holds for TA with Cl⁻, Mg⁺², Ca⁺², TH, TDS, fluoride and OC. A significant

negative correlation was found between SS with chloride, Mg⁺², TDS, fluoride and OC. All the physico - chemical parameters for pre monsoon, monsoon and post monsoon seasons are within the highest desirable or maximum permissible limit set by WHO except turbidity which was high while NO₃⁻, Cl⁻ and F⁻ are less than the values prescribed by WHO. Santosh Vishwakarma (2013) studied the monthly interval variation of limno-chemical characteristics of river Betwa at Madhya Pradesh during October 2011 to August 2012 from five station and studies revealed high values of hardness, BOD and COD at station I and II and low values of DO and pH at the station where station I and IV and V low values of hardness, BOD and COD. Shrivastava et.al. (2013) studied the physico-chemical characteristics of sewage waste water joining into Machna river at Betul and the values of these parameters were found in excessive amounts as prescribed by WHO which indicated towards the deterioration of water quality of water body after the joining of inlets into the river. Singh and Choudhary (2013) studied the physico-chemical parameters of river water of Ganga in middle plains due to untreated sewage and industrial effluents at three sampling locations for two consecutive years on monthly basis and parameters indicated that the quality of river water had substantially declined.

Ashfaq and Ahmed (2014) studied the drinking water quality and analyzed that most of the parameters were within the acceptable limits as prescribed by WHO and other agencies and the pH value lie between 6.1-8.5, TDS range from 920-1970mg/l, turbidity range from 5-9 NTU, total alkalinity range from 295-640mg/l, total hardness from 300-600mg/l and chloride range from 280-950mh/l. Chandra et.al. (2014) studied the water quality in river Bhuri Ganga indistinct Etah due to excessive agricultural chemicals, sewage and industrial effluents which affect the aquatic flora and fauna and water quality also. Deshmukh and Sathe (2014) studied physico-chemical characteristics of Pravara River, Maharashtra, India and noted that pH of water at all sites varied within the same range (6.49 - 7.87), shows slightly alkaline nature of river water. Gradual increase in total alkalinity and hardness towards the downstream was, due to addition of effluents in river basin. The maximum concentration of TDS was recorded during summer, which decreases during rainy season. DO show significant inverse relationship with temperature. Gradual increase in BOD values toward the downstream is due to additional load of organic matter. Wide range of fluctuations, in CO₂ concentration, may relate with water release periodically, from Wilson dam. Increase in nitrate, phosphate and chloride concentration towards down-stream was due to increase in sewage contamination in river basin.

Slight decrease in average calcium concentration towards the downstream was found. The minimum nitrate was observed during summer, probably due to heavy growth of phytoplankton. Dohare et.al. (2014) studied the water quality index for ground water of Indore city and its industrial area for a physico-chemical analysis and suggested that the evaluation of water quality parameters as well as water quality management practices should be carried out periodically to protect the water resources. Kumar et.al. (2014) studied the water quality of Chambal river M.P. through seven parameters of water and revealed that the pollution level of river has not changed from 2010 to 2013 and river water of Chambal comes under the categories of good quality. Preety Singh (2014) studied the change in the normal range of a majority of observations, which have been recorded at the different sites of river Gomti during 2012-2013 and parameters showed that the quality was not in safe limit and not good for flora and fauna. Saxena and Saxena (2014) studied the fish diversity in relation to physico-chemical parameters of Devaha river, Pilibhit from June 2010 to December 2012 and the water quality was also affected by pollutants which act on elements existing in water such as DO, phosphate, nitrates etc and therefore affect the fish fauna indirectly. Verma and Kumar (2014) studied by collecting twelve groundwater samples from public places of Amroha and subjected the samples to different physico-chemical analysis. It may be concluded that underground water at Amroha is highly alkaline, very hard, highly polluted with organic and also highly polluted with reference to all physico-chemical parameters studied.

Ashok Kumar (2015) studied the monthly and seasonally variations in primary productivity of glacial fed mountainous Goriganga river in Kumaun Himalayan, Uttarakhand and subjected that the productivity of river was less and oligotrophic in nature, as the photosynthesis rates always found below the oligotrophic range. The results also indicated that phytoplankton were confirmed the oligotrophic nature of Goriganga river. Barman et.al. (2015) studied the seasonal diversity and habitat characteristics of algae of wetlands in West Garo Hill, Meghalaya, India in three seasons in the year 2013. The wetlands were found to be highly fluctuates with season and water showed slightly alkalinity. DO was found normal as prescribed by WHO. COD and TSS were found beyond the permissible limit while BOD was slightly higher than permissible limit. About 36 algae species belonging to Chlorophyceae, Cyanophyceae, Bacillariophyceae, Desmidiaceae, Euglenophyceae species have been identified. Bhutiani et.al. (2015) studied the inlet and outlet

effluent sample of sugar industry situated at Haridwar during 2010 for their physico-chemical examination and debated that high contents of COD, BOD, TS, TSS and TDS were found in inlet while DO was found nil in inlet. In comparison to this low contents of COD, BOD, TS, TSS and TDS were found in outlet while DO was found as 4.10+1.25 mg/l in outlet. Chaubey and Patil (2015) studied water quality assessment on the basis of physico-chemical analysis at Nagpur city, India and observed to be a useful mean for rapid monitoring of water quality with the help of systematic calculations of correlation coefficient between water parameters and regression analysis. Nagamani et.al. (2015) studied the water quality with various physico-chemical parameters in five blocks of Bangalore and observed that the pH of all water samples were found almost neutral and the TDS, conductance, hardness increased towards the urban water as compared to rural water. Panigraphy et.al. (2015) studied the seasonal variations of the ground water with respect to heavy metals contaminated in Jharia coalfield region, India and analyzed that the concentration of the Fe and Mn exceeding the desirable limits in many ground water samples in both the seasons. The HPI of groundwater was found 9.94 in pre-monsoon season and 5.24 in post-monsoon season. Shrivastava et.al. (2015) studied to the water quality management plan for Patalganga river for drinking purpose and human health safety in Mumbai and observation was aim to determined the pollution sources responsible for the poor water quality of the Patalganga river and to suggested a scientifically sound water quality management plan to improve.

Bhutiani et.al. (2016) studied the physico-chemical analysis of sewage water treatment plant at Jagjeetpur, Haridwar and indicated that all major waste water quality parameters were reduced to much extent after the treatment in both the treatment plant (18MLD and 27MLD) and in the comparison of both treatment plant on the basis of results obtained during the study period, it was found that 18MLD plant was working more efficiently than 27MLD treatment plant. Bora and Goswami (2016) studied the water quality assessment in terms of water quality index of the Kolong river, Assam and reviewed that the water quality was found to be most deteriorated during monsoon season with an average WQI value of 122.47 as compared to pre-monsoon and post-monsoon season having average WQI value of 85.73 and 80.75. Khan et.al. (2016) studied on the temporal and spatial variation of water discharge and sediment flux of the Ramganga River, India and results of this study showed that a significant amount of water flow and sediment flux (>75 %) were attributed to the monsoon months. However, in 2009, the results were not similar to other years, probably

because of low rainfall due to the occurrence of an El Niño. N. R. Dahegaonkar (2016) studied the water quality and diversity of zooplankton of Lohara nullah in Chandrapur. The seasonal variation in physicochemical parameters like Water Temperature, pH, Alkalinity, Hardness, DO, Free CO₂, BOD, COD etc. were studied as well as qualitative and quantitative study of zooplankton was carried out for a period of two years i.e. from June -2005 to May -2007. Glimpse of observations on physico-chemical parameters and diversity of zooplankton indicate that the nullah at the sampling site is polluted. Raghiv et.al. (2016) studied to the hydrobiology of river Ramganga at Moradabad and analyzed that pre-monsoon period, pH range was accessed which affects the other physico-chemical parameters like BOD, DO etc. and also the biomass. Srivastava et.al. (2016) studied the physico-chemical and biological parameters of river Ganga from source to plain of Allahabad and revealed that exceed the permissible limits render the water of the holy river to be unfit for drinking purpose and it was also unhealthy for the aquatic life. Tripathi and Isaac (2016) studied the rainfall pattern and groundwater fluctuation in Ramganga River Basin at Bareilly District, Uttar Pradesh, India and observed that the average rainfall over the study area was 949.76 mm and monsoon rainfall contributed to a large extent of about 93.17%. The annual minimum rainfall of 216.27 mm was received at Aonla rain gauge station and maximum rainfall of 1734.21 mm at Baheri rain gauge station. It was also evident that the rainfall was maximum on the northern side of the study area with a decreasing trend from north to south reaching minimum at Aonla. Varsani and Manoj (2016) studied the water quality evaluation of industrial creeks found around Surat city with respect to physico-chemical properties, Gujarat during the month of October 2012 to March 2013. Pearson correlation was applied to express relation between various parameters and revealed that water may be contaminated due to the industrial effluent, sewage waste water and other organic pollutants.

Bhagat and Barat (2017) studied the physico-chemical properties of the raceway pond for the farming of rainbow trout in Kathmandu, Nepal and observed all the properties were found to be positively correlated however pH, EC, DO, TA and TH were negatively correlated with rest and there was strongest correlation ($P > 0.01$) in between air temperature, water temperature, turbidity, pH, EC, DO, free CO₂, TA, TH and phosphate. More and Chaubal (2017) studied the evaluation of water quality through studies on the physico-chemical characteristics of Mithi river, Mumbai over a period of one year and obtained that different parameters studied were pH (6.12-7.84), sodium

(2.4mg/l-68mg/l), potassium (8.72mg/l-746mg/l), magnesium (135mg/l-2808mg/l), total phosphorous (0.039mg/l-2.10mg/l), total kjeldahl nitrogen (0.8mg/l-3.35mg/l) and chloride (1.26mg/l-3.9mg/l). Each of which less or greater in quality, contributes to the ecosystem significantly. Vaishnav et.al. (2017) studied the water quality of Shivnath River in Durg district (Chhattisgarh) which has become heavily polluted due to the disposal of Industrial effluents and several developmental activities. Samples from Durg District were analyzed for various parameters indicative of pollution level. Parameters like Physico-chemical properties like Temperature, Turbidity, colour, and Chemical property like BOD, COD, DO, Total Hardness, PH, Total solids (TDS, TSS) were analyzed. Biological analysis was performed by (MFM). Suman Bera (2017) studied the rainfall changes in Ganga Basin, India and observed that half of the districts showed a decreasing trend in annual rainfall in which 39 districts were statistically significant. During pre-monsoon (Jan.-May), 78% of the total districts showed the decreasing trend with the significance of 54 districts. A majority of the districts under the Kosi, Gandak and Sone sub-basins showed the significant negative trend in annual, pre-monsoon and post-monsoon season.

ANALYSIS OF PHYSICO-CHEMICAL AND BIOLOGICAL PARAMETERS

In order to ascertain find the quality of raw water indicators are being utilized which termed as water quality parameters. These may be further classified into:

Physical parameters:

Turbidity: Turbidity is a measure of the degree to which the water loses its transparency due to the presence of suspended particles. It is measured in NTU: Nephelometric Turbidity Units.

Transparency: Water transparency depends on the amount of particles in the water. Particles can be inorganic (e.g. sediment from erosion) or organic (such as algae, phytoplankton). Water transparency is measured with a Secchi disk.

Temperature: Temperature is a physical quantity that expresses the subjective perceptions of hot and cold. Temperature is measured with a thermometer.

Chemical parameters:

pH: pH may be measured accurately using a pH meter. pH (potential of hydrogen) is defined as the intensity of the acidic or basic character of a solution at a given temperature.

Electrical Conductivity: Electrical conductivity is the

measure of the amount of electrical current a material can carry or its ability to carry a current. Electrical conductivity is denoted by the symbol σ and has SI units of Siemens per meter (S/m).

Total Solids: A measure of the amount of material that is either dissolved or suspended in a water sample and it is measured by Gravimetric method.

Total Dissolved Solids: TDS gives the measure of ions dissolved in the water that is expressed in mg/L. It is measure by Gravimetric method after filtration.

Calcium: Calcium is an important determinant of water harness and it also functions as a pH stabilizer, because of its buffering qualities. Calcium also gives water a better taste. It is measure by EDTA Titrimetric method.

Nitrate: Nitrate is an inorganic compound composed of one atom of nitrogen (N) and three atoms of oxygen (O); the chemical symbol for nitrate is NO₃. Nitrate is not normally dangerous for the health unless it is reduced to nitrite (NO₂). It is measure by UV Spectrophotometer.

Dissolved Oxygen: DO is the most important indicator of the health of a water body and its capacity to support a balanced aquatic ecosystem of plants and animals. DO has to measured by Winkler's method.

Biological oxygen demand: BOD is the amount of oxygen consumed by microbial decomposition of organic waste and is measured by the change in DO in a sealed water sample over a five days incubation period.

Chemical oxygen demand: COD is the standard method for indirect measurement of the amount of pollution. It is measured by the Dichromate titration method.

Alkalinity: Alkalinity is a measure of the capacity of water to neutralize acids. It's one of the best measures of the sensitivity of the stream to acid inputs. It is measured by Titrimetric method.

Total Biomass: The total amount of living material in a given habitat, population, or sample. Specific measures of biomass are generally expressed in dry weight (after removal of all water from the sample) per unit area of land or unit volume of water.

RESULT AND DISCUSSION

Waste water can cause a great deal of harm to the environment when it is released as domestic, municipal or industrial waste. Taking that into consideration, it becomes all the more important to treat the same before it is disposed off. The ground water quality in Bareilly treated using

principal component analysis and cluster analysis. The study was shows usefulness of multivariate statistical techniques for evaluation and interpretation of ground water quality data sets (Singh et.al.,2009). The impact of effluents discharge through industrial wastes and sewage in Ramganga river at Bareilly observed the change in the quality of water that there DO was abatement and free CO₂ was accretion (Chandra et.al.,2010). Assessment of WQI of river Ramganga at Bareilly included physico-chemical parameters viz. pH, BOD, DO, Total alkalinity, total hardness, TDS, TSS and chloride that indicated the extent of pollution Gangwar et.al. (2013).

CONCLUSION

Holy River Ramganga is the major source of water for many purposes like drinking, bathing, irrigation, cooking and industrial needs. Now a days, untreated effluents are allegedly being discharged into the river Ramganga through local drains, posing a risk to public health and environment. On the seasonal basis, some physico-chemical and biological parameters like temperature, transparency, turbidity, pH, alkalinity, electrical conductivity, BOD, COD, DO, calcium, nitrate, TDS, TS etc. studied to be seen literature's reviews.

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REVIEW OF METAMATERIAL PROPERTIES- GAIN ENHANCEMENT AND POLARIZATION CONTROL THROUGH A METAMATERIAL ABSORBER

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Abstract

Met materials are one of the most remarkable theme for the Electromagnetic Field Theory. A great interest in its research has been observed during the last ten years. Metamaterials are artificial materials engineered to have properties that have not yet been found in nature. It possesses negative permittivity and/ or negative permeability which causes negative refraction. This paper discusses the brief history and fundamental properties of metamaterial. It also presents a recent research on the performance of a 2.4GHz microstrip patch antenna using various metamaterial surfaces AMC (Artificial Magnetic Conductor). Their performance is compared in terms of gain. It is seen that antenna backed by AMC surface gives the peak gain of 9.01dBi. It also presents a control of both polarization and frequency using a metamaterial absorber. The unit cell of the proposed metamaterial absorber consists of an outer circular ring and an inner Jerusalem cross with two pin diodes. Tuning the diodes OFF, a dual band absorption response is achieved with polarization independent characteristics. Although biasing to ON state, same dual band peak is achieved at polarization angle 0° while a single band peak is exhibited as the polarization is tuned to 90° which shows polarization dependent characteristics. The results demonstrate the proposed controllable absorption performances. Simulations are performed in the HFSS (High Frequency Structure Simulator) software.

Keywords: *Metamaterials, permittivity, permeability, FSS (Frequency Selective Surface), EBG (Electromagnetic Band Gap), AMC (Artificial Magnetic Conductor), metamaterial absorber.*

INTRODUCTION

In Greek, the word 'Meta' means 'beyond' or 'superior', it means metamaterials have some superior properties than the natural occurring material. Metamaterials are artificial materials engineered to provide properties which may not be available in nature. These materials gain their properties from the structure rather than composition [1]. The terms electric permittivity (ϵ) and magnetic permeability (μ) these two basic parameters can describe the electromagnetic (EM) properties and induced polarization of any material. In 1968 V. G. Veselago said that materials with both negative permittivity and negative permeability are theoretically possible [4]. Negative permittivity and negative permeability causes negative index of refraction. This paper summarizes brief history of metamaterial, its classification, types, gain enhancement by using three different metamaterial based surfaces and polarization control through a metamaterial absorber.

BRIEF HISTORY

The story started from Veselago's intuition and continued to thirty years later with the works of Pendry and co-workers.

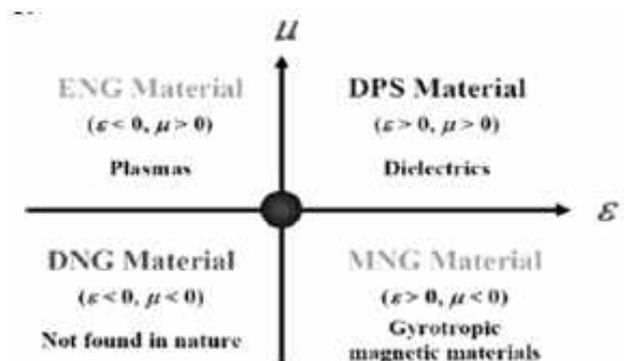
In 1967 V.G. Veselago, a physicist from the Lebedev Physical Institute in Moscow speculated in his paper [5] that the materials having negative ϵ and μ are Double Negative

metamaterials (DNG). As a consequence, the set of vectors k , E , H will be left handed. The emitted radiation from the metamaterial propagates in backward direction not in forward direction.

In 1996, J.B. Pendry, from the Imperial College London and his co-authors published a paper [6] about the artificial metallic construction which exhibit negative permittivity. This concept starts from the nature of the dielectric constant of metals.

METAMATERIAL CLASSIFICATION

Metamaterials are classified on the basis of macroscopic parameters such as electric permittivity ϵ and magnetic



permeability μ [3].

Fig.1. Classification of Metamaterial

A. Double Positive (DPS) Metamaterial

The materials which have both permittivity & permeability greater than zero ($\epsilon > 0, \mu > 0$) are called as double positive (DPS) materials.

B. Epsilon Negative (ENG)Metamaterial

Materials which have permittivity less than zero and permeability greater than zero ($\epsilon < 0, \mu > 0$) it is called as epsilon negative (ENG) material.

C. Mu Negative (MNG) Metamaterial

If a material has permittivity greater than zero & permeability less than zero ($\epsilon > 0, \mu < 0$) it is called as mu negative (MNG) material.

D. Double Negative (DNG) Metamaterial

Material which has permittivity & permeability less than zero ($\epsilon < 0, \mu < 0$) it is termed as double negative (DNG) material. This class of materials can only be produced artificially.

GAIN ENHANCEMENT USING THREE DIFFERENT SURFACES

In wireless communication a low profile, low cost and a light weight antenna is required [7]. FSS is used for better performance of micro strip patch antenna. The reason for selecting inset feed rectangular Micro-strip patch antenna is because of its simple design and variety of shapes. AMC Metamaterial surface is used for better performance of conventional micro strip patch antenna.

Inset feed rectangular micro strip patch antenna operating at 2.4GHz is designed using the Substrate Rogers RT/Duroid 5880 having relative permittivity 2.2. Width, Length and resonant frequency of the microstrip patch antenna is given by the formula [7]:

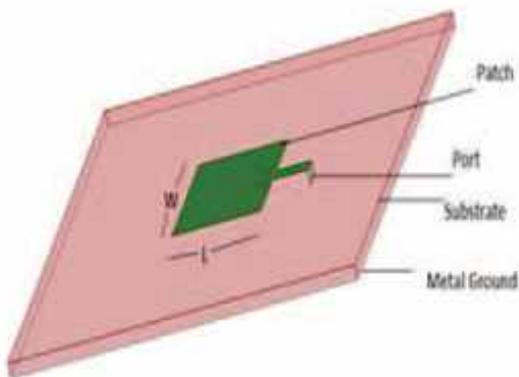


Fig.1. Conventional microstrip patch antenna

The simulated and measured reflection coefficient for the designed antenna at 2.4GHz frequency is shown in Fig.2.

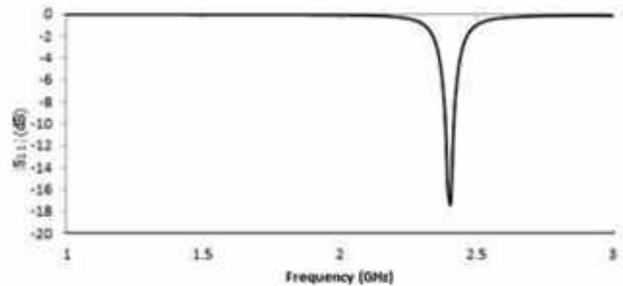


Fig.2. Reflection Coefficient for Microstrip Patch Antenna

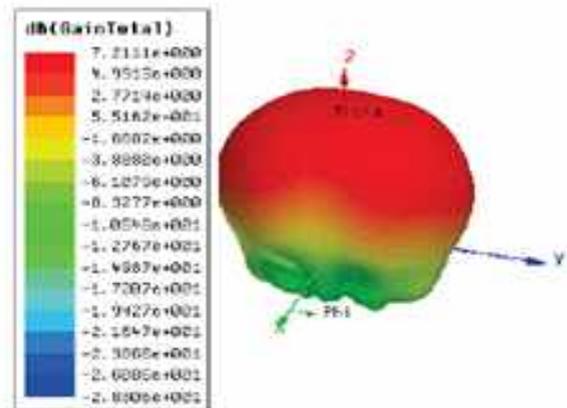


Fig.3. 3D Gain Plot of Antenna

The gain of the conventional Micro-strip patch antenna for 2.4GHz is 7.21dBi as shown in Fig.3.

A. Antennabacked by AMC

Artificial Magnetic Conductors (AMC) is used to reduce the size of RF devices. An AMC surface reflects the incident wave without phase inversion. A 7x7 array of AMC integrated over the antenna is shown in Fig.4. The distance between the patches is kept 39.6mm.

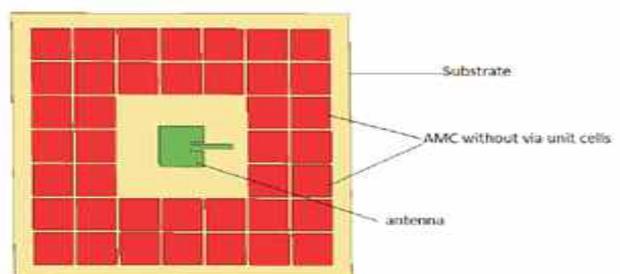


Fig.4 Antenna backed by AMC

The reflection coefficient of AMC is shown in Fig.4 with a value of 17.15dB at the desired frequency of 2.4GHz.

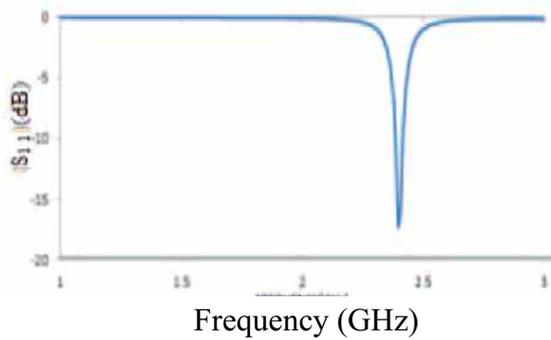


Fig.5. Reflection Coefficient of antenna backed by AMC

The 3-D gain of the antenna has been much more improved by AMC, with a value of 9.01dBi as shown in Fig.6.

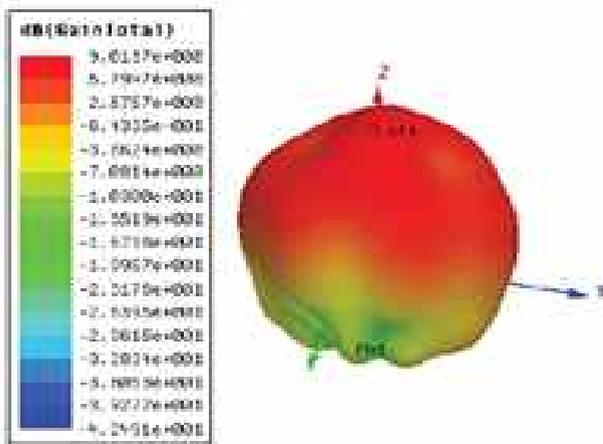


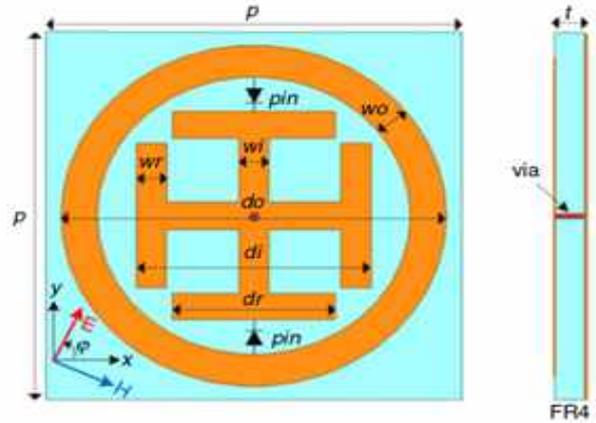
Fig.6. 3D Plot of antenna backed by AMC

The AMC without via when integrated with antenna has improved the gain from 7.21dBi to 9.01dBi.

POLARIZATION CONTROL THROUGH A METAMATERIAL ABSORBER

A metamaterial absorber is a type of metamaterial intended to efficiently absorb the electromagnetic radiations. It has some artificial design properties such as ultrathin, compact structure, low cost, and near-unity absorption [8]-[11]. An active metamaterial absorber with electrical control of both polarization and frequency is presented. The unit cell of the proposed metamaterial absorber consists of an outer circular ring and an inner Jerusalem cross with two pin diodes mounted between them. Tuning the diodes ON/OFF, the absorption response of the metamaterial absorber can

beswitched between two performances [12].



\\Fig. 7. Unit Cell of Metamaterial Absorber

The unit cell of the proposed metamaterial absorber is shown in Fig. 7. The structure is designed by a specific metallic pattern layer and a metallic plane separated by an FR-4 dielectric slab with a dielectric constant of 4.4.

The optimized geometry dimensions of the unit cell are: $p = 13.8$ mm, $do = 12.8$ mm, $wo = 1.2$ mm, $di = 7.8$ mm, $wi = 1$ mm, $dr = 5.4$ mm, $wr = 1$ mm, and $t = 1$ mm.

The pin diode is mounted as a resistor with the equivalent resistances of 10Ω and $1 \text{ M}\Omega$ for ON and OFF states, respectively. When a plane wave incident on the architecture, the absorptivity can be determined as:

$$A = 1 - |S_{11}|^2 \quad (5)$$

In OFF state, it is observed from Fig. 8. that the frequency response of the structure exhibits dual-band absorption peaks at 4.3 and 5.9 GHz for both polarization angle i.e. $\phi = 0^\circ$ and 90° . In ON state, the absorption response appears polarization sensitive as shown in Fig. 9. The structure exhibits two resonant absorption peaks at 4.3 and 5.9 GHz for $\phi = 0^\circ$, while exhibiting a single absorption dip at 5 GHz for $\phi = 90^\circ$. The dual-band absorption peaks remain unchangeable for OFF state as the polarization angle is increased, whereas for ON state gradually turn to a single band absorption spectrum with a frequency of 5 GHz depicted in Fig. 9.

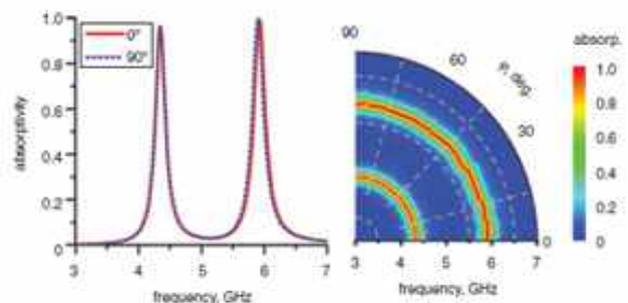


Fig.8 Absorption and Polarization angle in OFF state

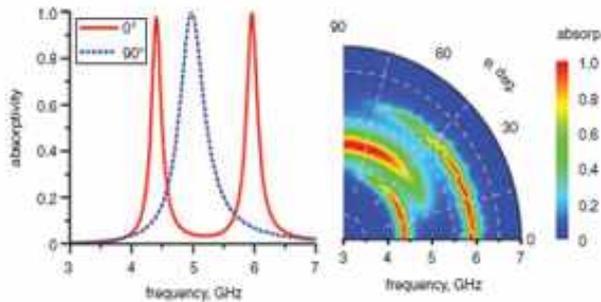


Fig. 9. Absorption and Polarization angle in ON state

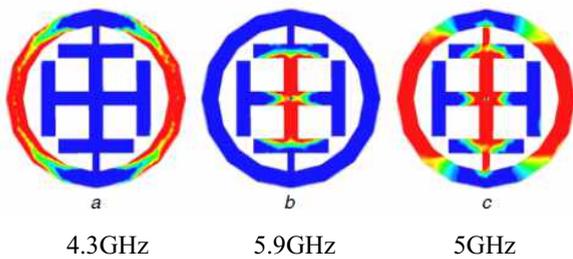


Fig.10 Surface Current Distribution at Absorption frequencies

Figs. 10.a and b clearly reveal the resonances of 4.3 and 5.9 GHz are associated with the excitation of outer circular ring and inner Jerusalem cross, respectively. Switching the pin diodes ON, a current path between the outer and inner sections produces a connection bridge at both parts. Therefore, a new absorption peak at the middle frequency 5 GHz is obtained as in Fig.10.a

RESULTS

The response of the metamaterial devices at high frequencies is much better than the devices with conventional materials. A 2.4 GHz patch antenna has been designed whose gain is 7.21 dBi and return loss is -16dB. The gain of the Microstrip antenna backed by AMC is 9.01dBi and return loss is -17.15 dB. For metamaterial absorber the dual band absorption peaks exist at frequencies 4.3 and 5.9 GHz for $\phi = 00$ to 900. When the pin diode is ON two resonant absorption peaks appear at 4.3 and 5.9 GHz for $\phi = 0^\circ$ whereas single band absorption peak appears at 5GHz for $\phi = 900$.

CONCLUSION

Metamaterials are engineered materials whose properties are not available in nature. It can be classified in to four categories i.e. DPS, ENG, MNG and DNG. The gain of the conventional inset feed microstrip patch antenna can be enhanced by using a metamaterial surface i.e. AMC over the conventional patch antenna. The gain of the conventional antenna is improved from 7.21dBi to 9.01dBi by using an AMC metamaterial surface. The metamaterial absorber controls the polarization and frequency. When the pin diode of the absorber is in OFF state, adual-band absorption response with polarization-independent characteristics can be achieved. When the diode is ON then single band absorption peak with polarization dependent characteristics is achieved.

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THE ROLE OF FUZZY LOGIC IN INTERDISCIPLINARY STUDY AREAS LIKE MATHEMATICS, MANAGEMENT & ENGINEERING

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Abstract

Fuzzy Logic, one area from soft computing field can be used to show the belongingness and membership of a particular element in any set. Fuzzy Logic provides much more value options than set theory. Fuzzy Logic can be applied to any area like electrical engineering to control the machines, to computer science for better software development, to management for better decision making etc. The authors in this paper have tried to provide a systematic literature on Fuzzy Logic, its use and application areas. The major focus of this paper is to provide an insight on the better decision making for the use of Fuzzy Logic.

Keywords: *Fuzzy Logic, Fuzzy controller, Computer Science, Soft Computing*

INTRODUCTION

In recent years, the number and variety of applications of fuzzy logic have increased significantly. The applications range from consumer products such as cameras, camcorders, washing machines, and microwave ovens to industrial process control, medical instrumentation, decision-support systems, and portfolio selection.

Fuzzy Logic is very useful for each and every area like engineering, mathematics, management. It is a research oriented field that is basically used for research and development in the field of mechanical, electrical, civil, chemical, computer science, mathematics, medical researches, business and management analyst and many other.

We can define fuzzy logic in two ways- in narrow sense narrow sense; fuzzy logic is a logical system, which is an extension of multivalued logic. However, in a wider sense fuzzy logic (fl) is almost synonymous with the theory of fuzzy sets, a theory which relates to classes of objects with unsharp boundaries in which membership is a matter of degree. In this perspective, fuzzy logic in its narrow sense is a branch of fl. Even in its more narrow definition, fuzzy logic differs both in concept and substance from traditional multivalve logical systems[1].

The Basic idea of Fuzzy Logic is explained in foundation of fuzzy logic which underline the linguistic variable that is a variable whose values are words rather than numbers. Fuzzy if –then rules or simply fuzzy rules plays a central role in most of the applications. Although in Artificial intelligence (AI) rule –based System is used from the long time and what is missing in such System is a mechanism for dealing with pro and cons of fuzzy system.

Generally, fuzzy logic, neural computing and genetic Algorithm are the principal constituents of field called soft

computing. The guiding principle of soft computing is: Exploit the tolerance for imprecision, uncertainty, and partial truth to achieve tractability, robustness, and low solution cost. In the future, soft computing could play an increasingly important role in the conception and design of systems whose MIQ (Machine IQ) is much higher than that of systems designed by conventional methods [1].

For practical implementation and for appropriate results of fuzzy logic we use fuzzy toolbox in Mat lab. It is the Technical software tool used for solving problems with fuzzy logic. The implementation on this tool can be performed with the help of membership function and linguistic values.

LITERATURE REVIEW

- In paper [19] the comparison between fuzzy interference system for intelligence traffic transmission over optical code-division multiple areas network architectures is performed. It outlines the basic difference in both approaches of fuzzy on the network architecture and highlight the performance of the system.
- This paper [5] focuses on real world applications of fuzzy technique for data mining. It gives a theoretical background of applications. One of two major goals the concept of similarity and machine learning framework. It basically focuses on area like medical, educational, chemical, and multimedia.
- This paper [20] focuses on real life applications of fuzzy logic on various engineering fields as- electrical, mechanical, computer science and many others.
- This paper [4] specifies the comparison between fuzzy interface systems by applying both approaches on air –conditioning system.

- This paper [21] specifies the comparison between fuzzy interface systems by applying both approaches on space fault detection system.
- In this paper [7] author explains the work done by professor zadeh and also specifies the solutions of different problem explain by zadeh.
- This paper [22] specifies the brief history behind the concept of fuzzy logic and how it came into existence by professor Zadeh.
- This paper [23] is the survey of studies that include design processes of some fuzzy expert systems for applications in some medical area.
- This paper [24] specifies the work of medical field in both classical and non-classical field that is traditional and fuzzy logic and demonstrate many explains in medicine that show the improvement in field.
- This paper [25] provides the survey of the application of fuzzy set theory in production management research.

THE CURRENT SEARCHING TRENDS OF FUZZY LOGIC

In this section we are comparing fuzzy logic with genetic algorithm and neural network. All the graphs have been generated on the basis of current google search at google trends.

Figure 1: shows the country wise use of fuzzy logic, genetic algorithms and artificial neural network in different region.

Figure 2 specifies the comparison of fuzzy logic with genetic algorithm and neural network worldwide on the basis of their web search. Graph specifies that mostly searched topic in current is fuzzy logic and has increase the scope widely day by day. This comparison specifies that the fuzzy logic is most and widely used in each and every field.

Figure 3, 4, 5 specifies the comparison of fuzzy logic with genetic algorithm and neural network in India on the basis of their web search, YouTube search and image search respectively. Graph specifies that mostly searched topic in current is fuzzy logic and has increase the scope widely day by day. This comparison specifies that the fuzzy logic is most and widely used in each and every field.

APPLICATION & USES OF FUZZY LOGIC IN DIFFERENT AREAS

In recent fuzzy logic is widely used as

- Fuzzy Logic has very simple mathematical concept behind fuzzy reasoning that are very easy to understand.
- It is very flexible that it can be easily layer to any system with more functionality .and to build the process rather than tracking to the end of the process of the fuzzy Logic.
- It is basically based on natural language that is based on human communication and basically focuses on words.

A. Management Applications:

Management has moved toward becoming in a key

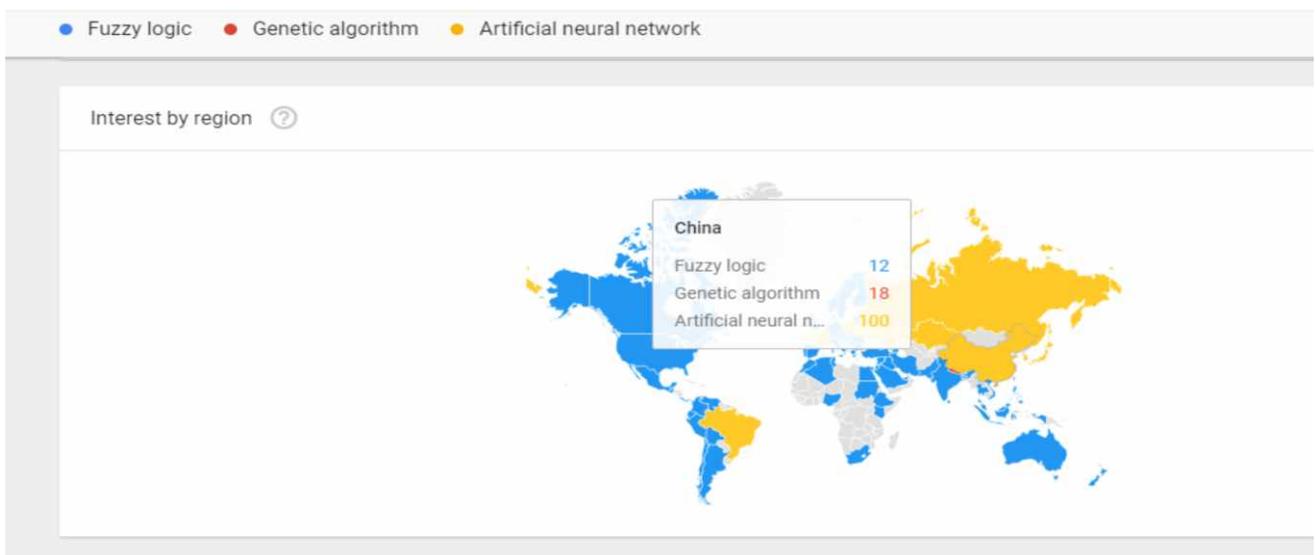


Fig 1: Country wise searching on google search for comparison of fuzzy logic, genetic algorithm and neural network

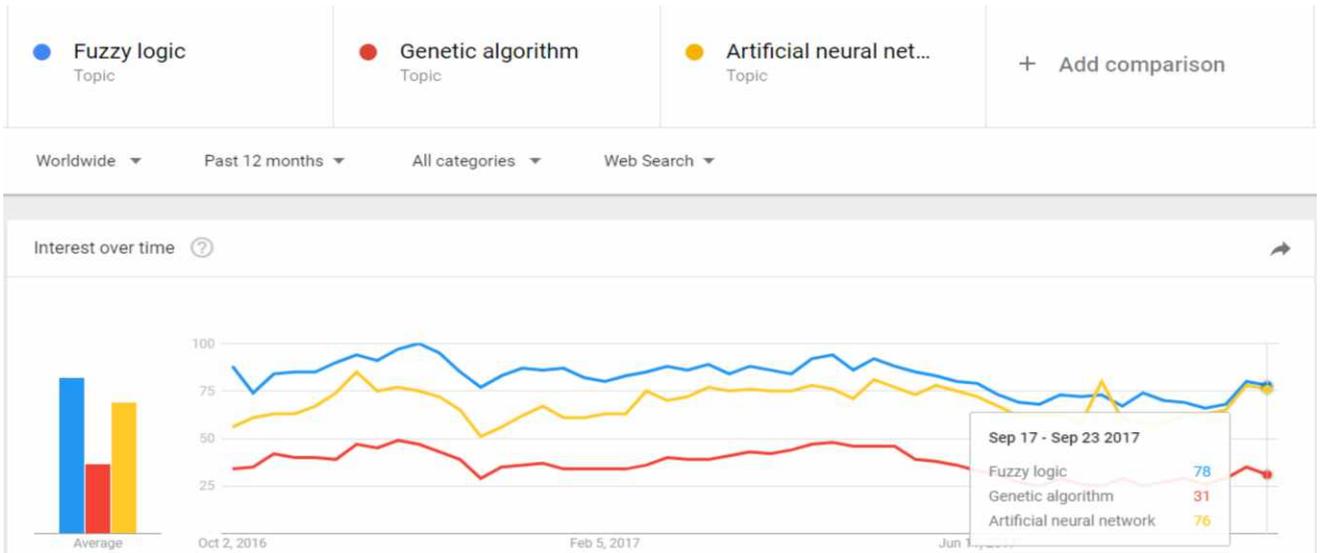


Fig 2: Comparing fuzzy logic with genetic algorithm and neural network worldwide

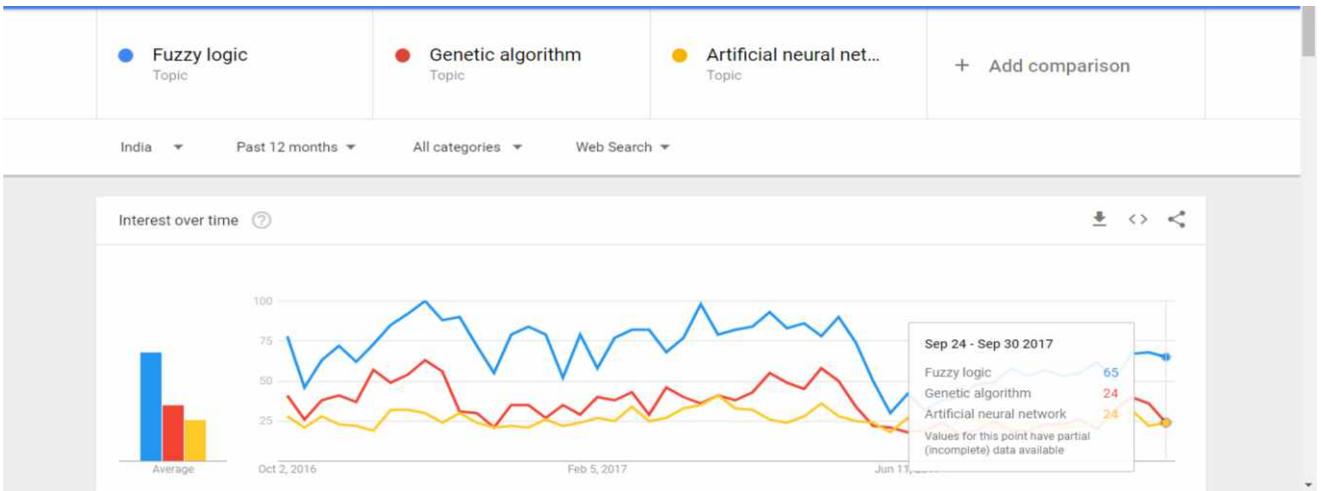


Fig 3: Comparing fuzzy logic with genetic algorithm and neural network in India by web search

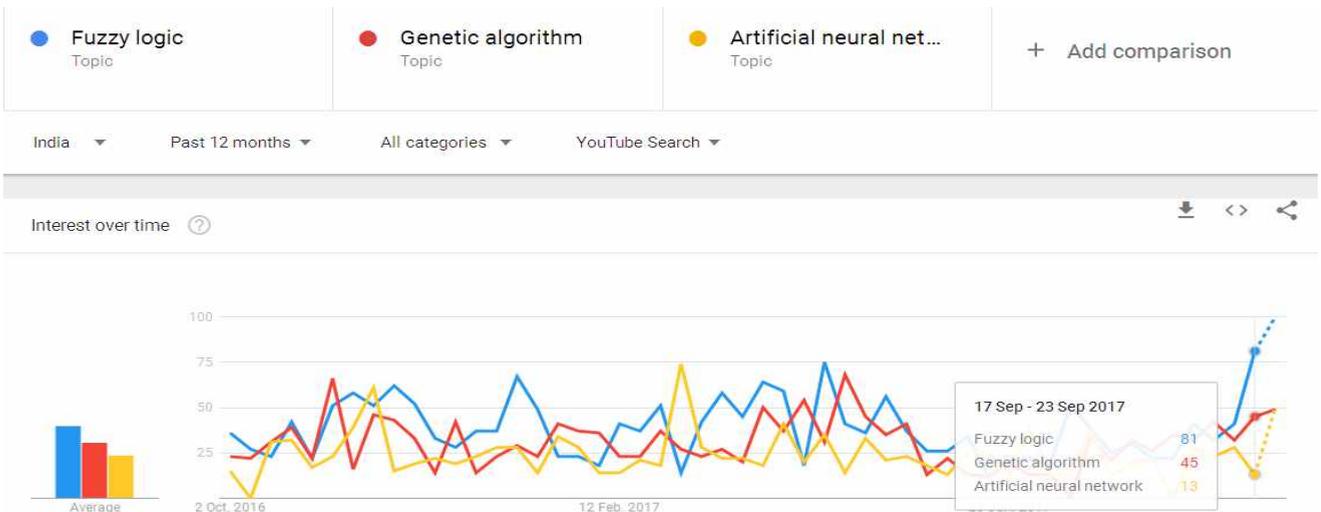


Fig 4: Comparing fuzzy logic with genetic algorithm and neural network in India by YouTube search

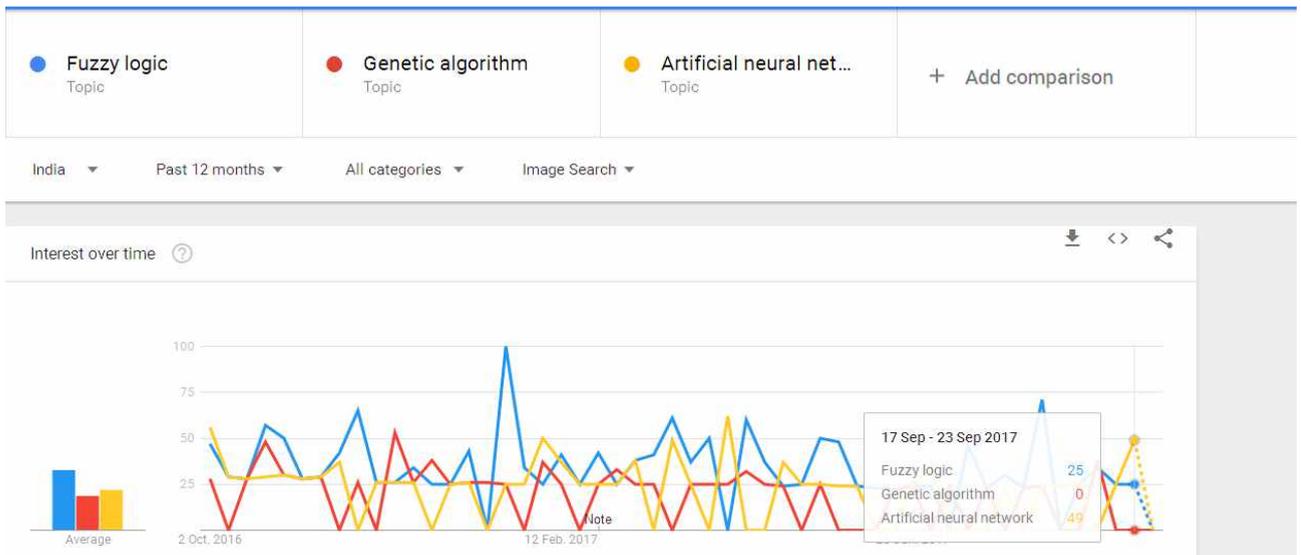


Fig 5: Comparing fuzzy logic with genetic algorithm and neural network in India by image search

achievement factor for organizations since it favors a superior comprehension of big business, inward and outer, situations and it offers a more practical view, in an organization.

One of the essential tools for uncertainty bounding is the fuzzy logic and, therefore, the main objective of this to do the analysis of the literature about the application of fuzzy logic measurement systems operating within uncertainty environments with the aim of categorizing, conceptualizing and classifying the works [6].

B. Mathematics Applications:

Professor Zadeh one of most impressive thinkers explain his work in different mathematical concept namely introduction of fuzzy sets, fuzzy logic and soft computing. Mathematics is the mother of all scientific discipline. Over the centuries, mathematicians and scientists have introduces many new notions and have developed some novel possibility; some of these theories finding applications programme in our everyday lifetime. The hypothesis of fuzzy sets and fuzzy system of logic sets and fuzzy logic is one of such mathematical theory [26].

C. Engineering Applications:

Fuzzy logic was put forward earliest in 1965 by L.A.Zadeh. One of the primary applications of fuzzy logic was subway system in Sendai city of Japan. The applied result showed that fuzzy logic control was superior to traditional control. But finding out the correct rule set and determining the essence and range of fuzzy variables is time consuming work. Such as in subway system of Sendai, to obtain correct input sets, the engineers spent several months. Similarly, in central air conditioning system field today, there is a long way to find out a mature expert fuzzy control model which must need plenty of project experience [3]. Air conditioning

is not only a name of the product, but by using ideas and methods of air conditioning to create comfort and natural living environment while at same time reduce the ravages of nature and achieve real sense harmony of human and nature to maximum extent [4].

D. Medical Applications:

In recent, the fuzzy logic is widely used in medical field basically in medicine and bioinformatics.

Fuzzy logic plays a vital role in medicine. There are various example specifies that fuzzy logic has crossed many disease groups like – to predict the response for treatment with citalopram, to analyze diabetic neuropathy ,to determine appropriate lithium dosage[8, 9]. And flexon-tendon repair technique and many other. The term bioinformatics derives from computer analysis biological data. It consists of the information stored in the genetic code, and also experimental results (and hence imprecision) from various sources, patient statistics, and scientific literature [10].

Fuzzy logic & fuzzy technology now very widely used in bioinformatics. Some of common examples are as: to increase flexibility of protein, analysis gene expression data and to analyses the relationship between genes and decipher a genetic network and many others.

CONCLUSION

This paper explains how fuzzy logic can be implemented in different interdisciplinary areas to enhance the performance and make a system more human focused. Fuzzy logic can be used in different areas like –medical, management, engineering & mathematics and every field has its unique implementation through fuzzy .with the help of fuzzy toolbox in mat lab we can practically implement it and analyses the outcome.

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DIGITAL FUEL LEVEL INDICATOR FOR SEPARATE AMOUNT OF FUEL

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Abstract

The fuel indicator in the automobiles is also made digital it help to know the separate and exact amount of fuel inter in the fuel tank. We determined a proper amount of fuel solution for indicating the accurate availability of fuel in the tank in digitally. Here we are indicating the amount of fuel in the tank in litres. This value in litters will be in numerical digits. A Liquid pressure transducer is used to find out the fuel level which is economic and also exact. This project concentrates about the indication of fuel level in tanks (two and four wheeler tanks) Various other features like the distance covered, mileage obtained, can be added with this system which explain the clear performance of the vehicles and the fuel used. The amount of fuel available in the tank at any position of the vehicle is predicated indicator device. The principle of liquid pressure is based on the calculation through which the pressure of vented fuel available in the tank is found out and the separate and exact amount of fuel in tank is displayed in digital.

Keywords: Analog Fuel Gauge, Mileage, A/D Converter, Float Gauge, Microcontroller

INTRODUCTION

The analog fuel level has two main parts, which are the sending units and the gauge, when the tank will be empty, resistance value increases and current value decreases, when the fuel tank will be full, resistance value decrease, current value increase. Three terminals (B- battery, F-float, G-ground) are used in the rear side of the analog fuel gauge. From these terminals, voltage values are taken from the terminals – FG and resistance value is taken from the terminals- F from zero to 11 litres. The litters value will be shown in digital for a particular volt value. Along with this, fuel mileage is also displayed in A/D converter to the corresponding fuel in the fuel tank. Fuel mileage in vehicles refer to the relationship between the distance can be travelled by an automobile to the amount of fuel in the fuel tank.

I. PROJECT COMPONENTS

The main components required for the functioning of the project procedure are elucidated below.

- 1- Pic 16F877A Microcontroller- It is a 14- bit words microcontroller and has 8 KB of Flash programmable and erasable read only memory. It has an operating frequency of DC-20hz.
- 2- LCD - LCD (Liquid Crystal Display) screen is an electronic display modules and finds a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various

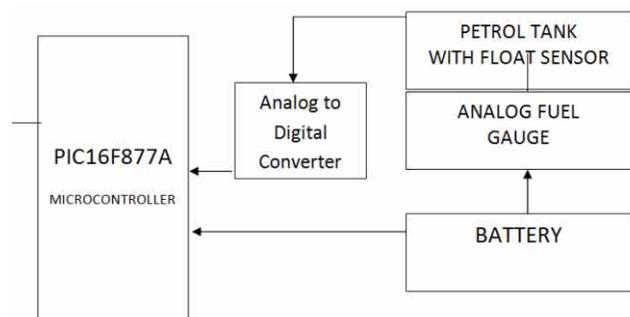
devices and circuits. These modules are preferred over seven segments.

- 3- Analog fuel gauge- It is a Device which shows the amount of petrol in petrol tank (Empty, HALF, FULL)
- 4- Petrol Tank with Float- It is used to store petrol in two-wheelers. Float is an object which sinks over the petrol inside the petrol tank to measure the amount of petrol left in the tank.
- 5- A/D Converter - It is a device which converts analog value into digital value.
- 6- Battery - A 12 volt 7Ah battery is used to give supply to Analog fuel gauge, A/D converter along with LCD.

II. Analog to Digital Converter

II. LCD

III. ANALOG FUEL GAUGE



BATTERY

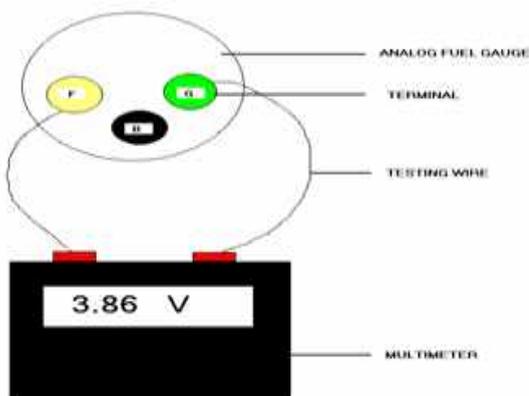
PROPOSED SOLUTION

This project focuses on creating a device which can help to actively display the separate and exact amount of fuel. It involves the making of the system to provide a mileage indicator which is reliable, easy to read. The system comprises of Fuel tank, Analog fuel gauge, Battery, A/D converter with LCD display and microcontroller.

EXPERIMENTATION METHOD

The rear side of the analog fuel gauge has three terminals, namely F, G and B. From these terminals, we had taken terminals-FG as constant and collected the voltage values from those terminals to the corresponding litres in the petrol tank. By removing the terminal-F separately from the setup, we had taken resistance values from that terminal, to the corresponding litres in the petrol tank. The volt and resistance values was taken with the help of multi-meter. The current is obtained by using the formula, $I = V/R$.

Rear view of analog fuel gauge connected with multi meter to measure potentials a different fuel levels of tank as in figure



F - Float

G - Ground

B - Battery

MILEAGE OBTAINED AT VARIOUS SPEED INTERVALS

Here the mileage value is taken for 1 litre of petrol and the distance travelled [8] corresponding to it is tabulated below at various speed intervals.

So, the average mileage for both single person and double person load will be around 50 (km/ltr).

SPEED (km/hr)	MILEAGE OBTAINED (km/ltr)	
	SINGLE PERSON LOAD	DOUBLE PERSON LOAD
10	51	48
20	54	51
30	56	53
40	60	57
50	58	55
60	56	53
70	50	46
80	44	41
90	28	25

METHOD FOR SEPARATE FUEL

This method use to find out separate and exact amount of fuel and display on LCD. The separate fuel means which fuel inter in tank without available amount of fuel. This is separate from total fuel. Tank has 2 litres fuel and inter 1 litre amount of fuel in the tank. 1 litre is separate amount; Total fuel in the tank is 3 litres. So 1 litre fuel shows on display device.

We consider the zero level indicator for separate amount of fuel.

AvailableFuel in litre	Fuel inter in tank (L)	Total fuel (L)	Separate amount of fuel (L)
0	1	0+1=1	1-0=1
1	0.5	1+0.5=1.5	1.5-1=0.5
1.5	0.5	1.5+0.5=2.0	2.0-1.5=0.5
2.0	1.5	2.0+1.5=3.5	3.5-2.0=1.5
3.5	1.0	3.5+1.0=4.5	4.5-3.5=1.0
4.5	2.0	4.5+2.0=6.5	6.5-4.5=2.0
6.5	1.5	6.5+1.5=8.0	8.0-6.5=1.5
8.0	1.8	8.0+1.8=9.8	9.8-8.0=1.8
9.8	1.2	9.8+1.2=11.0	11.0-9.8=1.2

DESCRIPTION

The main blocks are micro controller unit, fuel level sensor and LCD display unit. The fuel level detection circuit is used to detect the level of the fuel in the tank; here sensors are placed at certain place to find out the fuel level and the signal is sent to the micro controller unit for further operations.

Here sensor is placed at fuel tank to sense the fuel level and the signal from that sensor is sent to the micro controller unit to decide the exact level information. When the fuel level



reaches the top level sensor which means that the tank is full and this will be indicated to the user by means of maximum tank level and the Level information is indicated through LCD. The LCD connected with vehicle which showing the present fuel level as 2.1 litres and the distance can be travelled as 105 Kilometre. Most of the basic display unit will indicate empty, half, full with analog display but the market available digital display units were displays the information in terms of percentage but our proposed method will displayed in terms of exact fuel level and these information are pre-programmed according to the sensor positional values (Resistance-Voltage).

FUEL TANK (litres)	MIN (volts)	MAX (volts)	DIGITS CONSID (Volts)	RESISTANCE VALUES IN (ohms)	CURRENT OBTAINED (amps)	DISTANCE TO ZERO (KM)
<1.0	3.82	4.00	3.83 to 3.82	<89.5	< 0.0425	< 50
1.0	3.81	4.00	3.81	89.5	0.0425	50
1.1	3.79	4.00	3.80 to 3.79	88.26	0.0430	55
1.2	3.77	4.00	3.78 to 3.77	87.02	0.0434	60
1.3	3.75	4.00	3.76 to 3.75	85.78	0.0438	65
1.4	3.73	4.00	3.74 to 3.73	84.54	0.0442	70
1.5	3.71	4.00	3.72 to 3.71	83.3	0.0446	75
1.6	3.69	4.00	3.70 to 3.69	82.06	0.0450	80
1.7	3.67	4.00	3.68 to 3.67	80.82	0.0455	85
1.8	3.65	4.00	3.66 to 3.65	79.58	0.0459	90
1.9	3.63	4.00	3.64 to 3.63	78.34	0.0464	95
2.0	3.61	4.00	3.62 to 3.61	77.1	0.0469	100
2.1	3.59	4.00	3.60 to 3.59	75.97	0.0473	105
2.2	3.57	4.00	3.58 to 3.57	74.84	0.0478	110
2.3	3.55	4.00	3.56 to 3.55	73.71	0.0482	115
2.4	3.53	4.00	3.54 to 3.53	72.58	0.0487	120
2.5	3.51	4.00	3.52 to 3.51	71.45	0.0492	125
2.6	3.49	4.00	3.50 to 3.49	70.32	0.0497	130
2.7	3.47	4.00	3.48 to 3.47	69.19	0.0502	135
2.8	3.45	4.00	3.46 to 3.45	68.06	0.0508	140

The proposed technique can be improved by adding a buzzer to announce the user about the abnormal conditions like low level, half level and full levels of the fuel tank. A float type sensor is placed within the fuel tank the variation of the fuel can change the position of variable resistance which is connected with the float. The varied resistance can change the voltage of the analog fuel level indicator to show the approximate value. But the variable resistance from the fuel tank is connected with the analog to digital converter unit to show the exact quantity of fuel in the fuel tank. The setup can show the exact value of fuel in the connected LCD and the setup is programmed to show the distance to zero by considering the rough mileage as 50 kmpl. The distance to zero can also be an accurate by programming the

2.9	3.43	4.00	3.44 to 3.43	66.93	0.0513	145
3.0	3.41	4.00	3.42 to 3.41	65.8	0.0519	150
3.1	3.39	4.00	3.40 to 3.39	64.78	0.0524	155
3.2	3.37	4.00	3.38 to 3.37	63.76	0.0530	160
3.3	3.35	4.00	3.36 to 3.35	62.74	0.0535	165
3.4	3.33	4.00	3.34 to 3.33	61.72	0.0541	170
3.5	3.31	4.00	3.32 to 3.31	60.7	0.0546	175
3.6	3.29	4.00	3.30 to 3.29	59.68	0.0552	180
3.7	3.27	4.00	3.28 to 3.27	58.66	0.0559	185
3.8	3.25	4.00	3.26 to 3.25	57.64	0.0565	190
3.9	3.23	4.00	3.24 to 3.23	56.62	0.0572	195
4.0	3.21	4.00	3.22 to 3.21	55.6	0.0579	200
4.1	3.19	4.00	3.20 to 3.19	54.69	0.0585	205
4.2	3.17	4.00	3.18 to 3.17	53.78	0.0591	210
4.3	3.15	4.00	3.16 to 3.15	52.87	0.0597	215
4.4	3.13	4.00	3.14 to 3.13	51.96	0.0604	220
4.5	3.11	4.00	3.12 to 3.11	51.05	0.0611	225
4.6	3.09	4.00	3.10 to 3.09	50.14	0.0618	230
4.7	3.07	4.00	3.08 to 3.07	49.23	0.0625	235
4.8	3.05	4.00	3.06 to 3.05	48.32	0.0633	240
4.9	3.03	4.00	3.04 to 3.03	47.41	0.0641	245
5.0	3.01	4.00	3.02 to 3.01	46.5	0.0649	250

Microcontroller by taking the input of present mileage with respective speeds and tank levels. Voltage, Resistance, Current and Distance to zero for various fuel levels is tabulated below

CONCLUSION

The A/D converter with LCD was fitted with the Analog fuel gauge of the two-wheeler and the result was successfully obtained. The A/D converter

shows the amount of fuel in fuel tank in exact litres. The A/D converter shows the exact fuel in litres only when the fuel in the fuel tank is more than 1 litre. The accuracy level is upto 95 – 98% because the error was around ± 0.2 litres, because the fuel in the fuel tank was measured on the basis of float level in the tank and we didn't use any other sensors. It displays the exact litres on plane roads and shows error value on slope surfaces.

FUTURE ENHANCEMENTS

The proposed technique can be improved by adding fuel

cells at different places of fuel tank to measure separate and exact fuel levels at different conditions like day/night for particular densities at different altitude conditions of vehicle and a buzzer to announce the user about the abnormal conditions like low level, half level and full levels of the fuel tank to refill or warn themselves. The accurate distance to zero can also be done by programming the microcontroller by taking the input of present mileage with respective speeds and tank levels.

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