SANKALAN

(SPECIAL ISSUE – CRISP VERSION)

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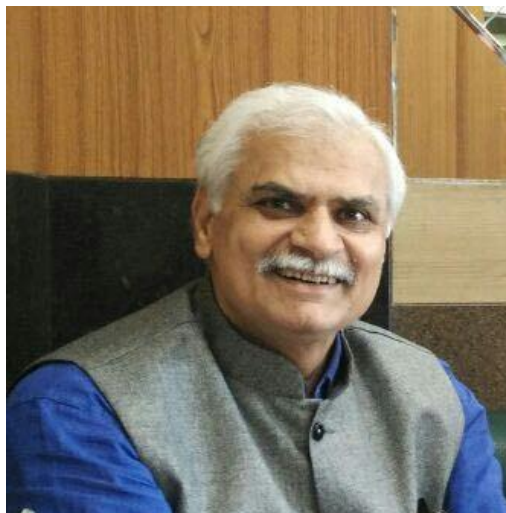
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MESSAGE AND NOTE THROUGH DESK

[A]. Mentor - Prof. (Dr.) R.K. Khandal

Prof. Dr. R. K. Khandal

Brief Profile:

a. Prof. Dr. R.K. Khandal Is the President, R&D and Business Development at India Glycols Limited, a well renowned and one of its kind company in the world manufacturing Surfactants from sugarcane molasses. Former Vice Chancellor, Uttar Pradesh Technical University, Lucknow, a Fellow of the Royal Society of Chemistry, London

b. Unanimously elected President of WAITRO (World Association of Industrial & Tech. Organizations), a UN body, 2010-2012 and 2012-2014

c. Expert member of High level Committees of Govt. of India:

    i.   Ministry of Science and Technology
    ii.   Ministry of Child and Women Welfare
    iii.   Ministry of Food Processing Industries
    iv.   Recruitment and Appraisal committees of CSIR, DRDO etc

d. Guided 30 PhD's from 10 Universities. 15 International Patents published 118 research papers in peer reviewed journals, five books and two edited.

e. He has received several awards; prestigious ones include:
    i.   INSME (International award for innovation);
    ii.   R.N. Bangur Memorial award for novel technologies;

iii.   R.G. Deshpande award for popularizing Radiation processing technology;

iv.   U.P. Ratna Award, 2014 for Transforming Technical Education in U.P.

v.   Rajasthan Samman Award, 2015 from Rajasthan Associations;

vi.   Meri Dilli award, 2010 for improving the living standards of citizens of Delhi

vii.   Srishti awards for green technologies, waste management etc.

viii.   Amity Academic Excellence award for pioneering research and academics

ix.   AMAR UJALA Excellence Award for outstanding contribution to education

x.   Life time achievement award by World Environment Congress in food preservation, safety, environment protection and renewable energy,

xi.   Eminent Engineers Award by Institutions of Engineers, India

xii.   Academic Excellence Award from Engineering Watch, India, in Singapore,

Growth Path:

a. Born on September 6, 1957, he started his career in 1982, as a **lecturer in Indian School of Mines, Dhanbad** at a very young age of less than 25 years.

b. In 1985, joined as a **Group leader in a UNIDO project of Govt. of India.** Post-Doctoral research` ~ 1 year in England and 2 years in France.

c. On return from France in 1991, joined as **Manager, ICI Specialty chemicals**, an MNC and worked for developing Technologies for specialty chemicals.

d. In 1993, joined **India Glycols Limited as General Manager.** Managed team of R&D and Production for 8 years to for new products for growth of the Company.

e. From 2001 to 2012, as the **Director, Shriram Institute, Delhi** established as a leader par excellence. Developed and established a self-sustainability model.

f. **DURING 2012 – 2015, AS THE** VICE CHANCELLOR OF UTTAR PRADESH TECHNICAL UNIVERSITY, **TRANSFORMED THE UNIVERSITY INTO AN INNOVATION UNIVERSITY.**

g. 2015 onwards, Prof. Khandal is, the **President, R&D and Business Development, India Glycols Limited,** a global supplier of Green performance chemicals

h. Prof. Khandal has been associated with leading private universities and institutions as a mentor

Virtues:

Prof. Khandal is a person of eminence with unique expertise and capabilities; a rare profile covering $360°$ research and innovation cycle in career: as an Academician and a Researcher (Govt. and Pvt.). He knows how to convert challenges into opportunities.

[B]. Patron - in - Chief: – Prof. S.K. Singh

He is serving the nation in the field of science & technology. He has completed his graduation degree in Engineering in Electronics & Communication Engineering, from B.I.T. Sindri, in 1986 and postgraduate in Business Management from X.L.R.I. Jamshedpur, in 2004.

He has 30 years of wide experience in applied Research, Product Development and Program Management besides developing algorithms and their implementation for real-time embedded applications for signal processing in technologies like Software Defined Radio, Digital Subscriber Line, Cable Modem, Meteor Burst Communications and Satellite communications.

Background Highlights:-

- 1986 - 1997, Defence Research & Development Organization (D.R.D.O.) as Scientist

- 1997 - 2006, As Engineering Manager / Program Manager in Multinationals like, Free scale Semiconductor, Ishoni Networks, General Electric Plessey etc.

- 2006 - 2008: Cofounded a Telecom Company Hertz Tele Networks Pvt. Ltd

- 2008 - 2010: Director: Genesis Futuristic Technology Ltd, Noida

- 2010 till date: Serving society by the innovative works till date.

- He had Co-authored a paper on the issue of inter modulation products for D.S.P. based Modulators in 2nd International Symposium on "D.S.P. for Communication Systems" held at Adelaide in 2004. D.S.P. based Modulators: Problems and Solutions.

Message from the Patron - in - Chief's Desk:-

"SANKALAN:- The Journal of Science, Technology & Humanities" (I.S.S.N. Online:- 2455 - 3557) is a Journal started with a goal to publish innovative ideas which proposes value in creating technologies for tomorrow and solving problems of today right from concept to implementation.

This Journal will try to set an example for extending opportunities to scholars of different field to publish their papers with ethics and honesty. I wish a grand success to all the stakeholders of the Journal.

[C]. Executive Editor / Publisher: - Rahul Rai

He is working as Deputy Registrar at B.I.T. Mesra, Ranchi, Jharkhand. His areas of interest are Analytics, Marketing & Entrepreneurship. He is M.B.A with Distinction Marks from B.I.T.S., Pilani, Rajasthan and B.Tech with Distinction in IT and Management. He has 06 years of industrial experience in Analytics and Research industry.

Background Highlights:-

- Worked as Academic Associate in Department of Management, B.I.T.S., Pilani, Rajasthan
- Qualified All India Level :- U.G.C. National Eligibility Test – Junior Research Fellowship (U.G.C. – N.E.T – J.R.F.) in Management in the year 2013
- Diverse Experience in various domain like Banking, Retail, Media & Marketing
- Awarded Many Prizes and appreciations in the career in several fields till date
- Organized & Participated in several seminars and events till date

Note from the Publisher / Executive Editor's Desk:-

Wishing you all a great year ahead!!!

Firstly, I will pay my gratitude to Almighty, my parents and all well-wishers with whose blessings and support we are able to start this journal "**SANKALAN:-The Journal of Science, Technology and Humanities",** (I.S.S.N. Online: - 2455 - 3557) We have started this journal publication for publishing new findings on Science, Technology and Humanities.

I hope this initiative will bring great value for academicians, researchers, students and all those who are involved in Research & Development work. We do have a highly reputed pool of advisory board members from well renowned universities, who help us in keeping high benchmark for quality and originality of our publications. Hence, I am confident that our mission to be the leading Research Journal in field of science, technology and humanities will very soon become true.

I hope very soon Buxar- Land of Rishi Vishwamitra; will soon become educational hub of Bihar.

[D]. <u>Editor - in - Chief: - Rishabh Rai (born on 04.02.1992)</u>

He is the Editor in Chief of the Multidisciplinary Journal, Sankalan: - The Journal of Science, Technology & Humanities (e - ISSN - 2455 - 3557), registered under the National Science Library, Government of India & indexed by ROAD: - Directory of Open Access Scholarly Resources, produced by ISSN - International Centre, Paris, France. He is M.Tech. in V.L.S.I. Design specialization (Electronics & Communication Engineering) with Honours & B.Tech. in Electronics & Telecommunication Engineering with Honours. Further, he is B.Ed. with first class in Science stream. Professionally, he is an academician & writer, with varied experiences. His areas of expertise are Electronics Engineering subjects as well as Physics, Chemistry & Mathematics. His hobbies are Singing & Photography.

Background Highlights:

➢ Appreciated by the Government of India for the quality publication of the Multidisciplinary Journal - Sankalan: - The Journal of Science, Technology & Humanities (e - ISSN – 2455 - 3557)

➢ Appreciated by the director, head & chairman of several organizations for the quality publication of the Multidisciplinary Journal - Sankalan :- The Journal of Science, Technology & Humanities (e - ISSN - 2455 - 3557) in the successive years 2016, 2017, 2018 & 2019

➢ Earned the respective academic degrees in the career till date i.e. (Class X^{th} to M.Tech.) with Distinction / Honours in aggregate

➢ Published 20 Technical / Research / Review / Study Papers in several National / International Conferences and Journals till date

➢ Authored many books & chapters through various publications

➢ Received Honorarium & Appreciated for the Paper Publication by A.K.G.E.C. International Journal of Technology in 2016

➢ Academic Excellence Award, for the academic performance in M.Tech. (2013 - 2015) & B.Tech. (2009 - 2013)

➢ I.E.E.E. National Merit Award - 2013, for the best Paper Presentation in National Conference - E.T.E.A.T - 2013 & Project Selection in the Sixth Science Conclave - 2013, at I.I.I.T Allahabad

➢ Amul Vidya Bhushan Award - 2009, for the academic excellence & performance in A.I.S.S.C.E. - 2009, at the District level

➢ Received many awards as Winner, recognitions, appreciations at the International, National, State, District, College & School Level in various academics and cultural (Solo Singing, Writing Books, Journals etc.) events till date

➢ Several books in various domains are under pipeline in coming days

<u>Note from the Editor - in - Chief's Desk:-</u>

Firstly, I am thankful to god and grateful to my venerated parents, and all those whose blessings and constant encouragement have helped me to complete this work, i.e. compilation and finalizing of the current issue of this Journal, Authors are requested to emphasize on novel theoretical standard and downtrodden concerns of the mentioned areas against the backdrop of proper objectification of suitable primary materials and documents. The papers must not be published, copied in parts or whole or accepted for publication anywhere else. For more information and ideas, one must visit the **"Quality & Plagiarism Check"** for such issues, as given in the website www.sankalan.org .
The entire article will must be double blind peer reviewed by our Advisory Board and will be thoroughly checked on the Plagiarism Software if selected, may be published by completing the copyright policies with the Journal. I think that it will really help the academicians / scholars / faculty members / industry delegates & professionals as well as students in finding knowledge and information on several emerging aspects in the world.

Lastly, I want to thank all the concerned authorities who are directly or indirectly related to our Journal, and must expect that their co-ordination and support are always valuable and required for us forever.

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"SANKALAN"

The Journal of Science, Technology & Humanities

SANKALAN welcomes and encourages scholarly unpublished papers on various fields of Science, Technology & Humanities from students, teachers, scholars and professionals. The Journal invites the submission of papers that meet the general criteria of significance and academic brilliance. Authors are requested to emphasize on novel theoretical standard and downtrodden concerns of the mentioned areas against the backdrop of proper objectification of suitable primary materials and documents. The papers must not be published in parts or whole or accepted for publication anywhere else.

OBJECTIVES:

❖ To develop and promote academic research activities on various contemporary techno-engineering issues and trends in management and humanities.

❖ To provide a platform to discuss the problems related to the technical as well as the managerial and research issues.

The most valuable and suggestive comments of all the readers are always awaited and welcomed in order to achieve the ultimate goal. We are looking forward for your contributions. All communications must be made only in electronic form e-mailed to:

SANKALANDOTEDITOR(AT)GMAIL(DOT)COM

CONTACT:-

**"SANKALAN -
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CONTENTS

Rebooting India via Digital Empowerment
Formidable Challenges and Exciting Opportunities

Dr. Ranjit Singh, FIETE

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Abstract: - March to Digital India offers unique opportunities for meeting new hopes and aspirations of emerging India.

Over 1 billion-plus phones, 500 million internet connections, 350 million smart phones and new modes of digital payments are creating a new paradigm of digital development in India

In a quiet subtle manner, government is responding to formidable implementation challenges in wake of demonetization that is spearheading the pace of digitalization. We are witness to an entire new phenomenon of permeation of e-wallets offered by ingenious 'Start-ups' powered by young engineering and management graduates.

The rapid pace at which rural citizens are adopting digital methods of payment demonstrates their support and enthusiasm to be a part of the digital transformation story of our country.

Interestingly, the current phase of our ecosystem will be a fulcrum to transform citizens' mindsets to leverage technology to leapfrog to an era of dizzying economic activity that will ultimately become magnet to attract FDI, while countries elsewhere, be it Europe or Russia or Middle East or Japan are desperately struggling to maintain a semblance of growth.

Moreover, Government is introducing formal cyber-security courses in a big way to prepare an army of over 1 lakh experts to neutralise nefarious designs of cyber criminals.

Besides catapulting country's GDP growth to over 7% per annum on a sustainable basis, 'Digital India' will create jobs in new disciplines. It will be a win-win situation for all stakeholders.

Citizens of India long suffer from corruption see a rainbow of hope via digital empowerment. The government aims to empower them by providing all information digitally under the 'Digital India' Mission.

Members of Parliament can now use their allocated funds to set up Wi-Fi systems in villages and educational institutions. The move, which would allow internet connectivity and accessibility to a number of rural areas, has been allowed under recent guidelines of the MP Local Area Development Scheme.

A new e-wallet app, BHIM, named after Dr. B.R. Ambedkar, was launched on 25th December 2016 to make it easier to transact online. The Aadhaar-based mobile payment application which boasts of over 10 million downloads will allow people to make digital payments directly from their accounts in over 35 banks. Digital transactions will be rewarded with raffle-like cash prizes. The BHIM app is being improved upon so that in time, "only your thumb will be needed to make a payment, "you will eventually not be dependent on the internet, or smart phones: your thumb will be your bank."

This is an innovative alternative to card-payments that made its way into Indian merchant establishments two decades ago. Its acceptability was poor due to 2-3% charges that merchants levy and the 2% charges the card companies levy. BHIM app eliminates such fee payments, which has been a stumbling block in merchants switching to digital payments making it affordable to even merchants in remote villages.

Merchants need to download the Aadhaar cashless merchant app on their smartphones connected to a biometric reader, which is currently available for Rs. 2,000. The customer will then feed his or her Aadhar number into the app, select the bank through which the transaction will take place, and the biometric scan will work as a password for the transaction to be authenticated. This app can be used by a person to make payments without any phone.

e-wallets like Paytm and Mobiqwik have become omnipresent in just 2 months. Another innovation that dawned on the Indian digital ecosystem is APM -- 'Airtel Payments Bank', offering 7.5% interest instead of the usual 3-4%. It operates using basic mobile phones at

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250,000 retail stores – a number exceeding ATMs in India!

Empowering Rural India

The outreach campaign 'DigiDhan Abhiyan' has enrolled over 1 crore rural citizens for digital methods of payment since its launch. Over 3 lakh merchants have started offering digital payment options to rural customers across many districts and blocks in rural India.

The rapid pace at which rural citizens are adopting digital methods of payment demonstrates their support and enthusiasm to be a part of the digital transformation story of our country.

Similarly, in cities and towns, with smartphone prices crashing and penetration increasing rapidly, consumers are rapidly using mobile devices as their primary means to book travel.

Interestingly, digital technology will take government and bureaucracy out of the equation, and negate the role of the middleman. Such a system will be open, and thus less susceptible to corruption and fraud.

Demonetization shock to the system will help in accelerating the digitalization of the economy. Notwithstanding the acute pain, UIDAI has helped pave the way to a cashless economy, and even made India better prepared to handle monetary jolts.

The biggest challenge thrown up by demonetization is disruption of the flow of money, more so in small transactions, at shops and small establishments. The risk is that economic activity will come down. So the key is making merchant transactions cashless, and UIDAI is the requisite infrastructure.

There are people who don't have smart phones or 'feature' phones, but they have Aadhaar. People can use their Aadhaar number and make a cashless payment. They can also use the card at micro ATMs, at grocery stores and PCs.

If we have to address a billion people's aspirations, we have to rethink and reimagine. For example, this UIDAI architecture can be seamlessly applied to education and health. Aadhaar enabled payments will bring a metamorphosis in the digital payments ecosystem in the country.

Over 1 billion-plus phones, 500 million internet connections, 350 million smartphones and new

modes of digital payments are going to create a new paradigm of digital development in India. Once the Aadhaar enabled payments start, there is going to be a metamorphosis of the digital payments ecosystem in the country. Efforts are afoot to make all the 5.5 lakh ration shops Aadhaar enabled, which will plug enormous leakages in the system.

India is changing on the ground, we need to recognize it. We have two lakh common service centres (CSCs). They are the front-end shoulders of Digital India in the hinterland. They make Aadhaar cards, do digital payments. There are also 12,000 banking correspondents, and some of them also do railway ticket booking.

Enhanced Tax Collection

One key impact of pushing digital payments would be to enlarge the tax kitty of the government for development purposes. Once more payments begin happening digitally, there will be more accountability and more sources of funding will be revealed.

This will result in an increase in tax earnings. And higher the tax collection more will be the financial robust discretion

available. And obviously once the tough action against the corrupt and corruption goes on, India will be a better society.

The logic of digital payments would drive the conventional banking industry to adopt new technology just as conventional money order gave way to digital money order.

It is all a part of that process. Once there is a realization that digital ecosystem is building, Indians will quickly adapt.

In a bid to promote less cash economy, the government said small traders and businesses with a turnover of up to Rs 2 crore will pay less tax if they accept payments through banking and digital means. About 40 crore bank accounts have been linked to Aadhaar.

Giving a digital push to the Haj application process, last January India launched a mobile application that provides information and facilitates e-payments for the pilgrimage. It is for the first time that Haj application process is going to be digital.

A Short Case Study

With the current wave of digitization across the financial sector, banks are looking at ways to introduce automation to ensure that decision-making and services are prompt. If you walk into a bank branch next time and get greeted by a human-shaped robot offering help, don't be surprised. The country's second largest private sector lender HDFC Bank is in the process of introducing `Ira' a robot developed in India meaning "Intelligent Robotic Assistant" which is planned to be used for smoother customer service, marketing, employee assistance and also process automation.

While introducing Ira, the bank also launched the second edition of its Digital Innovation Summit, and said it was betting on block chain technology, artificial intelligence, internet of things and technology services aimed at smoothening the processes in rural banking to drive customer services. Around 71% of this bank's transactions happen through mobile and internet banking, creating an immense amount of digital trail.

Rural Challenge

If we remain stuck in the card and point-of-sale paradigm, we cannot achieve scale in electronic payments. One needs to move away from this paradigm by adopting new technologies which are simpler to use.

Government moved from the awareness creation stage to one where people are actively trying out electronic payment options. The common service centres (CSCs) set up are spearheading this campaign. The drive was launched with a target of digitally educating 1 crore rural citizens, which meant that people ought to know as consumers what all payment options are available to them and what is best suited for them. The response has been phenomenal. Over 38 lakh rural citizens and 120,000 merchants have already enrolled for digital payments.

The programme also seeks to educate merchants. Most people have a desire to make the switch because of the convenience it offers. In mobile banking, there is no requirement for having separate infrastructure for fund transfer and acceptance since mobile

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phones are widely used. India also has the unique advantage of having a large biometric footprint. With people becoming more familiar with these options and technology becoming simpler, acceptance level will go up.

Adoption of digital payment methods by 38 lakh people in such a short period is a little difficult to explain unless there is a certain appetite for it in the population. A massive disruption is set to take place in the market. One may expect even bigger players like Google or Facebook will get into this space. Mobile banking led by telecom service providers such as Airtel Money, Jio Money, Vodafone m-pesa are also there.

Security Issues

It is imperative to understand that large-scale adoption of digital transactions attracts cyber criminals who wait for opportune moments to exploit a system's vulnerabilities. There is nothing called 100% secure. Anyone who says that their system is 100% watertight neither understands neither technology nor risk management. You can only manage and minimize the risk.

Cyber security has taken Centre stage in India, following a massive data breach involving nearly 32 lakh debt and credit cards of Indian banking customers, and the hacking of Twitter and email accounts of prominent figures by a group that identified itself as 'Legion'.

Cyber-attacks cost the world $575 billion in 2016, and numbered 90 million. In these attacks, 38% of the systems were compromised within seconds, while 60% were compromised in minutes. However, it took organizations an average of 205 days to detect that a breach had occurred.

As we move towards a digital economy, we would face sophisticated and global cyber-attacks and cyber-crimes. Whether we like it or not, we are not prepared to deal with cyber-attacks and cyber-crimes. Cyber-crimes investigation capabilities of Indian law enforcement agencies must be enhanced through techno legal trainings and skills development. As cyber-attacks and cyber-crimes are international in nature, it requires good techno legal training to trace, investigate and punish the cyber-criminal.

We should be proactive in the Cyber space. As India digitalizes, security will become fundamental to seizing the unprecedented opportunities for businesses, cities and citizens. Government is ensuring digital infrastructure is well protected.

In light of the rapidly-evolving cyber tactics and shared risks in cyberspace, the need to work side-by-side with industry partners on pressing cyber-challenges becomes increasingly important. Companies like Cisco are collaborating with the government to enhance the security of India's digital infrastructure.

Cisco and Indian Computer Emergency Response Team (CERT-In) signed a memorandum of understanding (MoU) for cyber security cooperation, to establish a threat intelligence sharing programme.

The government's push for a less-cash economy will offer better career prospects for those aspiring to become cyber security experts. National Institute of Electronics and Information Technology (NIELIT) is starting cyber security courses for students.

This is part of a slew of measures taken by the IT ministry to prepare for the challenges likely to come up as the country moves towards a cashless economy. The NIELIT, an autonomous scientific society under the ministry, is engaged in capacity building in IT and communications.

In the coming five years, it is proposed to bring up 1.14 lakh qualified professionals who will be involved in creating cyber security awareness campaigns.

The incidents of cyber security breaches in the country as reported to the computer emergency response team-India (CERT-In) — which engages in 24x7 monitoring of internet traffic in the country — have ranged between 45,000 and 50,000 every year since 2014.

Digital payments infrastructure of India needs to be robust and resilient from cyber security and cyber-crimes perspective. Similarly, liability of banks and customers for cyber frauds and cyber thefts must be clearly specified. An effective dispute resolution procedure must also be established by to resolve disputes arising out of digital payments.

E-wallet companies must look at a layered approach to data security that provides protection at every stage of the payment and business service ecosystem, such as: better access control techniques, stronger authentication measures and use of end-to-end encryption and proper key management.

Basic cyber hygiene helps in keeping trouble at bay. You must never share passwords with others nor should you save them on public computers. Use security measures such as receiving a one-time password (OTP) for every transaction.

Do not click on links that come through SMSs or emails as these may lead to inadvertent downloading of malware programs that can steal sensitive data from your mobile device or computer. Malware attacks can also be avoided by steering clear of untrustworthy websites and unverified apps.

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Dr Ranjit Singh, FIETE (b. 17 Aug 1948) obtained B.Tech, M.Tech. and Ph.D degrees from Indian Institute of Technology, Kanpur in 1969, 1971 and 1975 respectively specializing in the area of Electronic circuits and devices. Has abiding passion for research and innovative approach to teaching. Guided BTech, MTech and PhD scholars. Attended international conferences held in France, Singapore, USA, Hong Kong and Nepal.

He is founding Editor-in-Chief of the '*AKGEC International Journal of Technology*', which is running in ninth volume. Delivered seven Guest lectures on emerging technology trends.

Earlier served IETE as Editor during 1975-1987; Technical Editor at *Telematics India* during 1987-2001 and Editor of *Industrial Purchase* journal during 2002- 2008.
From September 2008 to February 2015, he taught at Ajay Kumar Garg Engineering College where, he was a Professor in the EC department.
Thereafter appointed as Head of the ECE and EI departments, IEC Engineering College, Greater Noida from April 2015 – May 2016, where he supervised setting up of e-Yantra lab.Daily practices Art-of-Living advance meditation

Instruction, Calamity, Organization Actions & Their Part in Civilization

Anil Kumar

1. Research Scholar.P. G. Department of Education, University of Kolkata, Kolkata (West Bengal, India)

ABSTRACT: - **Disasters like earthquake, drought, flood, tropical cyclone, chemical leakage, etc. are increasing day by day not in India only but in the world. The United Nations General Assembly declared the decade 1990-2000 as the International Decade for Natural Disaster Reduction, in 1989.The objective of this declaration is to reduce loss of lives and property and also restrict socio-economic damage through concerted international action, especially in developing countries.**

Gujarat (2001), the super cyclone in Orissa (1999) and Kashmir had earthquakes and the Tsunami hitting the coasts along the Indian Ocean. In addition, North and East India are regularly flooded and large parts of the country are experiencing drought. Environmental degradation and unsustainable use of natural resources climate change, deforestation, industrialization etc. changes the nature of disaster. Various government and non-government agencies are working in the field of disaster management. In India, The National Disaster Management Authority (NDMA) is the primary government agency responsible for planning, capacity-building, strategic risk management and mitigation, as well as developing policies and planning to deal with diastral situations. The National Disaster Response Force (NDRF) is the government agency primarily responsible for emergency management during natural and man-made disasters. The Indian Armed Forces also plays an important role in the rescue/recovery operations after a disaster. Aniruddha's Academy of Disaster Management (AADM) is a non-profit organization in Mumbai, India with 'disaster management' as its principal objective. Countries like United Kingdom**,** Somalia**,** Russia**,** Pakistan**,** and United States…….etc. **have their own agencies to deal with disasters. Since 1980, the World Bank has approved more than 500 projects related to disaster management, dealing with both disaster mitigation as well as reconstruction projects, amounting to more than US$40 billion. The objective of this paper is to highlight the increasing role of disaster management agencies in the changing world. It also stressed on the need of education about these agencies.**

Keywords: Disasters, Management, Perspectives, Agencies, Sustainable.

1. INTRODUCTION

Etymologically the word 'Disaster' is derived from French word 'desastre' and Italian word 'disastrous' which in turn comes from the Greek pejorative prefix 'dus' (bad) and aster (star).Thus disaster means 'bad star 'that comes from an astrological theme in which it is to refer to the destruction or deconstruction of a star as a disaster.

The Disaster Management Act, 2005 defines disaster as "a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or manmade causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area".

The United Nations defines disaster as "the occurrence of sudden or major misfortune which disrupts the basic fabric and normal functioning of the society or community".

India is facing variety of challenges like population explosion, environment imbalance, climate change and pollution. In case of a disaster, poor people, the aged persons, children, persons with disabilities and women suffer greater losses of assets and are therefore in a weaker position to cope and recover in disaster. Disasters involve widespread human, material, economic or environmental impacts, which exceed the ability of the affected community or society to cope using its own resources. Disaster may be of any kind like pandemic emergencies, environmental emergencies, complex emergencies and natural disasters. Disaster can have serious effects on the health, social and economic networks of local communities and countries and have adverse effects on essential

services, such as health care, electricity, water, sewage/garbage removal, transportation and communications.

2. CLASSIFICATION OF DISASTER MANAGEMENT

It is very important to understand categories of disaster as this enhance the understanding of disaster and immediate action to be taken.

Disaster is categorized as

2.1 Natural Disaster

2.2 Man Made Disaster

2.1 Natural Disasters are the results of natural events but it is possible that human intervention that disturber nature could leads to natural disaster. Some of these are,

- Flood ,cloud-burst

- Droughts

- Earthquakes

- Volcanoes

- Typhoon, Tornadoes, Cyclones

- landslide, soil erosion,

- Hailstorm, , snow avalanche

2.2 Man Made disasters are the result of human activities. These are caused accidently and can be prevented by taking certain precautionary measures. Some of these are

- Chemical leakage

- Fire

- Nuclear leakage

- Terrorist Attacks

- Epidemics

- Structural collapse

- Road, air, rail accidents

Disasters may be sudden in time like floods and earthquakes or they may develop over a period of time like drought, cyclones and tornadoes.

The High Power Committee on Disaster Management, constituted in 1999, has identified 31various disasters, categorized into five major sub-groups which are:

: List of various D

S.No	Sub-Groups	Various Disasters
I	Water and climate related disasters	Floods and drainage management, Cyclones, Tornadoes and hurricanes, Hailstorm, Cloud burst, Heat wave and cold wave, Snow avalanches, Droughts, Sea erosion, Thunder and lightning and Tsunami
II	Geological related disasters	Landslides and mudflows, Earthquakes, Dam failures/ Dam bursts and Minor fires
III	Accident related disasters	Forest fires, Urban fires, Mine flooding, Oil spills, Major building collapse, Serial bomb blasts, Festival related disasters, Electrical disasters and fires, Air, road and rail accidents, Boat capsizing and Village fire
IV	Chemical, industrial and nuclear related disasters	Chemical and industrial disasters, Nuclear disasters
V	Biological related disasters	Biological disasters and epidemics, Pest attacks, cattle epidemic sand Food poisoning

Fig. 1   Showing five major sub-groups of Disasters

Source: High Powered Committee Report-1999

3. DISASTER MANAGEMENT AGENCIES

Disaster management agencies are of two types

3.1 Governmental agencies

3.2 Non-governmental agencies

3.1 Governmental agencies: Governmental agencies are organized groups which function under the direct control of Government of India e.g. Central Government, State Government and District Authorities. The Government of India is a member of various international organizations in the field of disaster response and relief. These are

- UN Office for Coordination of Humanitarian Affairs (UN OCHA), which has been made responsible by UN General Assembly mandate for all international disaster response.

- United Nations Development Programme (UNDP), responsible for mitigation and prevention aspects of disaster management.

- UN Disaster Assessment and Coordination (UNDAC) System.

The Government of India has no policy to issue a formal appeal on behalf of the Government, either directly or through any other agency, to attract relief. Reliefs are accepted on voluntary basis and are also acknowledged. The Government of India has no objection to NGO's issuing appeals for relief donations.

3.2 Non-governmental agencies:-Non-governmental agencies are usually non-profit making, voluntary, independent of government and predominantly humanitarian group which are organized on a local, national or international level. NGOs by virtue of their operations work very closely with the masses. There are national level NGOs, state level NGOs, and many Community Based Organizations (CBOs), which are also playing a significant role in disaster management. Disaster Management Agencies are self-motivating agencies for providing assistance in case of disaster situations

These are task-oriented groups and are driven by people with a common interest. NGOs perform a variety of service and humanitarian functions, bring citizen concerns to Governments, advocate and monitor policies and encourage political participation through provision of information. Some NGOs are area specific, such as human rights, environment or health.

4. ROLE OF GOVERNMENT AGENCIES IN DISASTER MANAGEMENT

Government agencies are playing their role at the following levels:

4.1 Central Level
4.2 State Level
4.3 District and Local Level

4.1 Role at central level (Central Government):-

Central Government provide assistance on the bases of existing policy and keeping in view the factors like the gravity of a natural disaster, the requirements of Central assistance, nature of natural disaster and scale of assistance provided by the State Government.

The Contingency Action Plan (CAP) chalks out the procedures and identifies administrative machinery for launching of relief and rescue operations.

The Ministry responsible for various categories of disasters is as

Disaster	Nodal Ministry
Natural Disasters Management (other than Drought)	Ministry of Home Affairs
Drought Relief	Ministry of Agriculture
Air Accidents	Ministry of Civil Aviation
Railway Accidents	Ministry of Railways
Chemical Disasters	Ministry of Environment & Forests
Biological Disasters	Ministry of Health
Nuclear Disasters	Department of Atomic Energy

Source: Report of tenth five year plan: 2002-07, Ch-7 (Disaster Management: The Development Perspective)

Standing bodies that are responsible for disaster management and decision-making are -

Standing bodies	Head
Union Cabinet	The Prime Minister
Empowered Group of Ministers	The Deputy Prime Minister
National Crisis Management Committee (NCMC) .	The chairman of the Cabinet Secretary

Source: Report of tenth five year plan: 2002-07, Ch-7 (Disaster Management: The Development Perspective).

Various organization and departments are also working to provides technical support. It also work to bring coordination. These are

- The Indian Meteorological Department (cyclone/earthquake)

- Bureau of Indian Standards (norms)

- Central Water Commission (floods)

- Defense Research & Development Organization (nuclear/biological)

- Building and Material Promotion Council (construction laws)

4.2 Role at State level (State Government):-

The State Government is responsible to cope with natural disasters and the Central Government will play supplementary role. State Governments have their own relief manuals and the districts have their contingency plans. The Chief Secretary (Head of The State level committee) is responsible for relief operation in the State. The State Relief Commissioner of the State function under the overall direction and control of the state level committee.

4.3 Role at District and Local level:-

The district administration (District Magistrate/Deputy Commissioner) is responsible to implements, monitors and supervises all governmental plans and activities. In some cases district level relief committee consisting of officials and non- officials also function for relief and rehabilitation. Local bodies like Panchayati Raj Institutions are given powers under the 73rd and 74th constitutional amendments can be effectively instrumented in disaster management including rehabilitation, relief Recovery, providing medical assistance, food, water, clothes and shelter to the victims.

The central, state, district and local level governments are functioning in the field of disaster management. Besides these we have various stakeholders who are working in disaster management in the country. These may include the armed and the police forces, civil defense and home-guards, fire services, non-government organizations (NGOs), public and private sector and media who are playing a very important and essential role in disaster management.

5. MECHANISMS FOR DISASTER MANAGEMENT

To improve the effectiveness of Disaster Management in the country, India's institutional mechanisms for disaster management such as National Disaster Management Authority (NDMA), State Disaster Management Authorities (SDMA), District Disaster Management Authorities (DDMA), line Ministries, Departments and Agencies as stipulated in Disaster Management Act, 2005 gives due priority in involving NGOs.

Institutional framework under the Disaster Management Act 2005

Government of India			
NDMA National Disaster Management Authority	NEC National Executive Committee	MHA Ministry of Home Affairs	
SDMA State Disaster Management Authorities	SEC State Executive Committee	NDRF National Disaster Response Force	NIDM National Institute of Disaster Management
DDMA District Disaster Management Authorities			

Source: Report No. 5 of 2013 (Ministry of Home Affairs)

National Disaster Management Authority (NDMA) headed by the Prime Minister State Disaster Management Authorities (SDMAs) headed by Chief Ministers and District Disaster Management Authorities (DDMAs) headed by district collectors/magistrates.

National Policy on Disaster Management. (2009).The Policy aims at developing an integrated, holistic, multi-disaster oriented and technology driven strategy for disaster management involving prevention, mitigation, preparedness and response. It outlines the institutional, financial and techno-legal arrangements relating to disaster management and details response, relief, rehabilitation, reconstruction and recovery mechanisms.

6. CONCLUSION

Coordination between Government and Non-government organizations will definitely help India to achieve the goal of safer and sustainable national development of India .Disaster management occupies an important place in this country's policy framework. Disaster Management Act, 2005 give stress on the involvement of NGOs for improving the effectiveness of Disaster Management in the country. The aim of Disaster Management activities during Preparedness, Prevention, Relief, Recovery, Reconstruction and Rehabilitation is to reduce and prevent natural or manmade hazards. Skills, awareness, information and Coordination among disaster management agencies are some of the way to reduce the impact of disasters. But recent incident in Gurdaspur district of Punjab State where at least 60 people have lost their eyesight after an operation at an eye camp organized by an NGO and sterilization surgery camp at district Bilaspur: in the state of Chhattisgarh where twelve women died and 49 others were hospitalized during in the month of November 2014rise a question mark against the functions of NGOs.

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[A]. Shri Awadhesh Narayan Singh, Honourable Chairman, Bihar Vidhan Parishad, launching the First Volume & Issue of the Journal on 16.01.2016 in Buxar

[B]. Chief Guest, Guest of Honour, Editor - in – Chief (SANKALAN) and others in Lightening of the Lamp

31

[C]. Dignitaries on the Dias in the Launching Function

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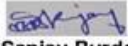
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April 15th, 2018

APPRECIATION

I am pleased to write this, in appreciation of the efforts being made by the Chief Editor of the e-journal "SANKALAN", Mr. Rishabh Rai, the young and energetic fellow. It is a novel idea to bring out such a journal for facilitating academicians pursuing multi- disciplinary research in various institutions, especially from the private sector. It has been a great platform for youth engaged in resolving the issues of industry, society, and policymakers, to share their experiences with others. I am glad to note that the quality of the papers published in this journal has shown consistent improvement over each rendition.

For quality education, it is imperative that students and faculty carry out research to create and acquire new knowledge. Consequently, one looks to the level of research being performed at an institution to gauge the quality of education. In order to evaluate the quality of research, one refers to the quality of publications and patents. It is to be noted that as one publishes more, the quality improves. To that effect, SANKALAN will help youth learn from the work being done by experts at the global level.

I wish the authors and team SANKALAN great success in their endeavours.

Regards,

Rkkhandal

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Foreword

It is my pleasure to write this in appreciation of the efforts made by Shri S.K. Singh, Shri Rishabbh Rai and the team for the e-journal Sankalan (www.sankalan.org) on Science, Technology and Humanities. It is of importance to the scholars for publishing their ideas and observations pursuing Master and Doctoral degree. Besides pure research, applied research papers have been reported in this journal with consistent improvement. It has lot of value in the present context where Government is encouraging scholars to pursue research and to create Intellectual Property.

I wish the "Sankalan" team and all the stakeholders of this online Journal a great Success!

Sincerely

(Prof. S.K. Singh)

D). Prof. (Dr.) B. S. Jassal – Senior Scientist, D.R.D.O., India)

Dec. 12, 2018

Prof. (Dr.) B.S. Jassal

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It gives me immense pleasure to write this in appreciation of the efforts being made by Mr. Rishabh Rai, the Editor - in - Chief and the SANKLAN team for bringing out the upcoming issue of the online journal SANKLAN (www.sanklan.org). This will go a long way for the benefits of the students pursuing multi - disciplinary research in their studies. The working scientists and engineering managers engaged in providing solutions for the real time problems will also get benefitted. It has been observed that this team is making consistent efforts in improving the quality of the successive issues of the journal.

With emphasis by the Government of India, it is now imperative to carry out research activities by the faculties and the students to pursue innovation in their curriculum. To that effort, SANKLAN will help to meet their respective objectives.

I wish the authors and the SANKLAN team a grand success in their endeavors.

Regards,

(Prof. (Dr.) B.S. Jassal)

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