Journal of Management Science, Operations & Strategies

Globalisation of market and operations places tremendous pressure on productive management of services and manufacturing enterprises. Services are increasingly important in today's developed economies. Nevertheless, manufacturing plays a major role in national economies and is essential for the survival of service organisations. Considering the globalisation of services and manufacturing, journal focusing on global perspective of operations management is of paramount importance. This journal focuses on new strategies, techniques and technologies for improving productivity and quality in both manufacturing and services.

Focus and scope Covers

- Operations Strategy in Services/Manufacturing, SMEs
- Designing Service/Manufacturing Enterprises, Virtual Enterprises
- Value Chain Perspectives
- Service Blue Printing
- Service Delivery process, Performance Measures/Metrics
- Managing Capacity
- Managing and Measuring Quality
- Information Technology, MRP, ERP
- Human Resources
- Production Planning and Control, Scheduling, JIT
- Lean/agile production
- Supply chain/Inventory management
- Product and Process design
- E-commerce and Operations
- Location and Facility Planning

About NRJP Journals

Your education is your base on which your success story has been built. WE believe that no one is born with writing skills thus we are vowed to provide you a platform to publish your article and ideas FREE OF COST, Rather than Rejection, we believe in Revision. Our first priority will be to covert ordinary content in to quality content by suggesting revisions. Thereby, providing opportunity to authors for improve their research work. We also *make academic publication simple and affordable while providing greater experience to authors.*

Our vision is YOUR SUCCESS IS OUR SATISFACTION.

Journals published under the aegis of *National Research & Journal Publication*, is following a common policy from editorial perspective, which states:

- To promote quality research, we will not charge authors for submission, processing or publication charge. Services for authors are free of charge.
- We will follow, fair policy of publication with no preference to any individual or society or institution, whatsoever.
- Articles will be reviewed on first come- first review basis.
- With our limited resources, we will try to check each and every article with the plagiarism check software before it is sent in to the review.
- As much as possible, we will follow double blind peer review process so as to ensure fair and quality review feedback.

Online NRJP journals platform

- NRJP Journal is meant to facilitate a cost effective access to the quality research findings in the domains of commerce through the publication of quality scholarly journals.
- Rapid online publication of papers, soon after their formal acceptance.
- Promotional support to papers of specific interest.
- Online Submission of Manuscripts.
- Provides an online peer review process, with a highly acclaimed editorial board.
- Free online open access to the abstracts of all articles.
- Worldwide circulation and visibility.
- Free access to authors to the journals in which papers are published by them.

Highlights of the forth coming Issue:

- Worldwide circulation of published work.
- Instant Indexing of published papers on various indexing websites and catalogues.
- No Registration, Submission and Publication Fees.

Pledge by Authors:

- No Plagiarism.
- Empowering knowledge through Research or Review work.
- Following Author Guidelines and Referencing pattern.
- Will help other researches to do relevant and focused research.

Resources for authors

- General advice on preparing a manuscript

- Tracking your article through production
- Language polishing service
- Promoting your article when published
- Tracking usage of your article when published

National Research & Journal Publication adopts a holistic approach to find ranking and relative importance of academic journals. The main objective is to help researcher's select appropriate journal while submitting research paper and publish in most reputed journal available with us. This is a complete automated process and there is less chance for any error or manipulation.

National Research & Journal Publication helps the researchers ***FREE OF COST*** by providing right direction in their research with the help of its worldwide research association members.

How Publishing with Us Credits You

Publish Open-Access: Articles published with us are fully accessible for readers with no fee restrictions. This enables wider readability of research material and thereby increased citation of the same.

Google Scholar Indexing: Every article is indexed at Google Scholar. Thus, your papers reach to masses, increase your readership, and appreciated in academia.

- NRJP is into publication of Journals, Books, Souvenirs, Special Issues and Proceedings
- Publication services can be availed by connecting through info@nrjp.co.in
- Our main agenda is to provide all sort of publication services to the scientific community
- NRJP Journals empowers and enriches knowledge through its quality published content
- Providing user friendly platform and services to Associations and Societies through official collaboration
- No charges from authors for publishing their work and editorial services
- Rapid publishing and ahead of print online issues
- Highly qualified and sound professional editorial board
- Professional editorial service
- Completely automated and without any charge author support and guidance
- Sound and ethical professional publishing practices
- High quality professional copy editing and proof reading services
- Publication free from Plagiarism
- Indexing in leading abstracting and indexing websites and databases
- High level of citation due to indexing
- Wide reach across the globe
- High quality reader base involving eminent scientist, industry professionals and academicians
- Journal archiving facility
- Highly suitable for new and seasoned authors
- Certification to Authors for publishing their work in NRJP Journals
- Eminent Editorial Board from all across the globe
- Professional Copyediting and Formatting services

- 100% assistance provided to new authors
- Global accessibility of the Journals

Authors are invited to submit their Research Articles, Review Papers, Case Studies, Empirical Analysis and Industry Reports.

INFORMATION FOR LIBRARIANS

We support research librarians to catalog NRJP journal in the midst of their library's electronic journal assets. As well, it may be noting that NRJP journal's open source publishing system is suitable for libraries to host for their faculty members to use with journals they are involved in editing.

Subscription Details:
Online Mode: Register with the NRJP journals as reader and pay using NEFT Transfer of Fund in NRJP account (Details provided in Subscription Form).

Offline mode: Subscribers may download, print, fill out, and attach cheque or demand draft and duly filled Subscription form stating the name of NRJP Journals and duration of subscription to the postal address given below by a secured post.

National Research & Journal Publication
A Unit of Swaranjali Publication
FF1, Plot No1-B, Sector 10 B, Vasundhara, Ghaziabad UP-201012.
Mobile: +91- 8700124880, 9560298789

Subscription and Access Norms General
Journal strives to bring- out its issues regularly, but we cannot guarantee on its uninterrupted publication. Journal is not liable for any loss or consequences that might occur owing to the delay or non- publication of a manuscript in a scheduled issue of this journal. The Director, NRJP Journals, who is also a chairman of the Publication Management Team of the NRJP Journals, is empowered to change the subscription rates of the Journals for an ensuing subscription year with or without a notice to the subscribers. NRJP Journals, reserves all rights for any change in policy without prior notice.

Individuals
NRJP Journals online access has been provided solely on individual basis, hence a user is not supposed to share log-in id and password with anyone. A user needs to ensure that logs-out after completing work, else access will be denied in the next session. In case your log-in id and password are compromised, please intimate us at the earliest.

NATIONAL RESEARCH & JOURNAL PUBLICATION

Advisory Board Members

Letter from Editor in Chief

I am very delighted and pompous to put pen to paper for a highly motivated and aimed team. I am not only hoping but strongly indomitable that National Research and Journal Publication have a bright future and prosperous journey ahead.

I also thankful to NRJP to chose me as editor in chief. I vowed to support them always and fulfil the adequacy of my position. I am not only the position holder but I also the witness of their hard work, team spirit and goal oriented job, I was there from the first bench to saw the building of the publication team, rising of a journal house and publishing of their first journal.

I also feel very proud that, the mission of the journal has a very downstream purpose “Do Revision not Rejection”. They even work harder to teach a layman student, technical paper writing. Meanwhile, the team has to work rather harder to make a paper ready to publish.

In sum, then, language is an important accessory, but never the main thing.

Every success story was written on the very first step, so with your first step and all the next steps, I shall always bless you and promise you to guide on every steps you needed from my end.

With Blessings and Regards,

Prof. Vinod Kumar Gupta
(Principal)
Vidya Mandir Degree College
Kaimganj, Farrukhabad (UP)

From Director's Indite

It is my privilege to present the print version of our Journals of Commerce and Management Studies. The intension of these Journals is to create an atmosphere that stimulates vision, research and growth in the area of Management and Studies. Timely publication, honest communication, comprehensive editing and trust with authors and readers have been the hallmark of our journals. NRJP Journals provide a platform for scholarly research articles to be published in journals of international standards. NRJP journals strive to publish quality paper in record time, making it a leader in service and business offerings. The aim and scope of NRJP Journals is to provide an academic medium and an important reference for the advancement and dissemination of research results that support high level learning, teaching and research in all the Management and studies domains.

We not only restricted our journals to published papers but we also prone to career enhancing of a students for that we will propose a career section in our journal, in which the students can find the different path to enlighten his career. Beside this we also provide and industry or research insight for higher education students, in which we shortly elaborate any industry or the current research trends in the sector, for that we are highly appreciate our executive editors, who continuous support us to make the students career bright and brighter.

We also thankful to our Editor in Chief, and their vision of the advertisement of collages, across the city. His proposals for the advertisement of the collages, workshops and seminars through our journals are impactable, by which we are acting as a connection to integrate them and make them in light of current status and situations.

Finally, I express my sincere gratitude to our Editorial and Reviewer board, Authors and publication team for their continued support and invaluable contributions and suggestions in the form of authoring write ups, reviewing and providing constructive comments for the advancement of the journals. With regards to their due continuous support and co-operation, we have been able to publish quality Research and Reviews findings for our customers base. I hope you will enjoy reading this issue and we welcome your feedback on any aspect of the Journal.

Swaranjali Gupta

Chairman, Swaranjali Publication
Director, NRJP Journals

NATIONAL RESEARCH & JOURNAL PUBLICATION

Editorial Board Member

Journal of Management Science, Operations & Strategies

Journal of Management Science, Operations & Strategies

Volume 2 Issue 1

Jan, 2018

Content Page

Available online at http://www.nrjp.co.in

Journal of Management Science, Operations & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 1-3p, August, 2018

National Research & Journal Publication

Review Article

समाकलित विकास हेतु पर्यावरण उन्नयन

राजेश कुमार

भूगोल विभाग, बद्री विशाल महाविद्यालय, फर्रूखाबाद (उ.प्र.)

Abstract

पर्यावरण में वे जैविक व अजैविक तत्व सम्मिलित है,जिनसे मनुष्य का सीधा सम्बन्ध होता है। पशु, पक्षी वनस्पति, भूमि जल, सौर उर्जा वायु व खनिज पर्यावरण के जैविक व अजैविक तत्व है। ये तत्व विभिन्न क्रिया कलापों के द्वारा एक दूसरे से सम्बंधित होकर पर्यावरण को संतुलित करते है। इन जैविक व अजैविक तत्वो में मनुष्य के क्रिया कलापों के द्वारा हानिकारक परिवर्तन होते है जिससे पर्यावरण प्रदूषण की समस्या उत्तपन्न होती है। तीव्र विकास करने की प्रवृत्ति, आवष्यकताओं की पूर्ति बेरोजगारी सुरक्षा आदि ने उद्योगों की स्थापना वाहनों का अत्यधिक प्रयोग खनन कार्य नाभिकीय शस्त्रों का विकास व वन विनाश आदि को प्रोत्साहित किया है। जिसके कारण पर्यावरण प्रदूषित हुआ है।

परिचय

पर्यावरण और विकास के बिना मनुष्य अपना जीवन स्वस्थ और सरल नहीं बना सकता है। जिसके कारण पर्यावरण प्रदूषित हुआ है पर्यावरण और विकास दोनों एक दूसरे से पृथक होते हुए भी सम्बंधित है। यदि विकास पर ध्यान न देकर केवल पर्यावरण पर ही ध्यान दिया जाय तो बढ़ती जनसंख्या, को खाद्यान आवास रोजगार चिकित्सा सुविधायें सामुदायिक सुविधायें उपलब्ध कराना असंभव होगा। और यदि पर्यावरण पर ध्यान न देकर केवल विकास पर ध्यान जाये तो पर्यावरण प्रदूषित होगा। मानव ने विकास पर ध्यान देकर पर्यावरण को प्रदूषित किया है जो आज विश्व के लिए चुनौती बन गया है। उद्योग व यातायात के साधनों का विकास करके स्थानों के मध्य दूरी को कम किया है वहीं दूसरी और इन साधनों से निकलने वाला धुँआ, कार्बन–डाई–आक्साइड, कार्बन–मोनो ओक्साइड, सल्फर–डाई ऑक्साइड, नाईट्रोजन, आक्साइड गैस वायु को प्रदूशित करती है और धरातल के तापमान में वृद्वि करती है तापमान में वृद्वि के कारण विश्व में ग्लोबल वार्मिंग की समस्या उत्पन्न हुई है। ग्लोबल वार्मिंग के कारण ग्लेशियर का पिघलना नदियों में बाढ़, समुद्र के जल स्तर में वृद्वि फसलों की गुणवत्ता

में कमी मरूस्थलीकरण ओजोन परत का क्षरण आदि प्रभाव परलक्षित हो रहा है। अत्यधिक तकनीकि विकास विज्ञान की प्रगति व मानव के जीवन को सुविधा संपन्न बनाने की लालसा ने फ्रीज, कुलर, एसी़ के प्रयोग में वृद्वि हुई जिससे क्लोरोफ्लोरो कार्बन नामक जहरीली गैस उत्सर्जित होती है जो वायु मंडल की ओजोन परत को क्षति पहुँचाती है। ओजोन परत के क्षरण से सूर्य से आने वाली पराबैंगनी किरणें धरातल पर पहुँच कर अनेक रोग जैसे त्वचा रोग केंसर मोतियाबिंद आदि में वृद्वि करती है। मानव ने विकास तो किया परन्तु पर्यावरण पर कोई ध्यान न देकर अनेक पर्यावर्णीय समस्याओं को जन्म दिया है जो मानव के लिए हानिकारक है।

जनसंख्या द्वारा नदियों झीलों तालाबों व समुद्र के समीप आवास व उद्योग बनाने से घरों व उद्योग से निकलने वाला अपशिष्ट पदार्थ इन जल स्त्रोतों में प्रवाहित कर दिया जाता है, जिससे जल प्रदूषित हो जाता है। जल प्रदूषण के प्रभाव से जलीय जीव–जंतु व मछलियों की मत्यु हो जाती है और जल पीने योग्य भी नहीं रहता दूषित जल का पेयजल के रूप में प्रयोग करने से टायफायड, पीलिया, कॉलरा, डायरिया आदि रोग हो जाते हैं। नदियों पर बाँध बनाकर बिजली उत्तपादित करना व नदियों से नहरें निकाल कर सिंचाई करना आदि कार्यों से प्राकृतिक सौंदर्य पर बुरा प्रभाव पड़ा है।

लकड़ी पर आधारित माचिस उद्योग, फर्नीचर उद्योग, खिलौना उद्योग व यातायात के साधनों में लकड़ी का प्रयोग आदि से निरन्तर वृक्षों की कटाई हो रही है। वहीं दूसरी और वृक्षों की कमी से अनियंत्रित बाढ़ मिट्टी अपरदन ग्लोबल वार्मिंग जल व वायु प्रदूषण जैसी समस्याओं में वृदि से पर्यावरण प्रदूषित हो रहा है। वहीं दूसरी और वृक्षो ंके कारण खाद्यान की पूर्ति के लिए वनों को साफ करके कृषि की जा रही है। वृक्षों के आभाव में सौर उर्जा को संग्रहित करने की समस्या उत्तपन्न हुयी है। सौर उर्जा का वार्षिक संचय भूमध्यरेखीय वन क्षेत्र 14000 कैलोरी प्रति वर्गसेंटीमीटर व कोंधारी वन 11000 कैलोरी प्रति वर्ग सेंटीमीटर करते हैं। फसलों के अधिक उत्पादन के लिए खेतों में रासायनिक उर्वरकों के प्रयोग से मृदा प्रदूषण में वृद्वि हो रही और इस प्रकार के अनाजों के प्रयोग से मनुष्य के स्वाथ्य पर बुरा प्रभाव पड़ता है।

मनुष्य की बढ़ती आवश्यकताओं और तीव्र विकास की लालसा ने पर्यावरण को इतना प्रदूषित कर दिया है कि यह मनुष्य के लिए ही हानिकारक हो रहा है। मानव जीवन के स्वाथ्य एवं उच्च जीवन स्तर के लिए पर्यावरण और विकास दोनों ही अन्यन्त आवश्यक है। इनमें से किसी का भी आभाव होने से व्यक्ति का सर्वांगीण विकास नहीं हो सकता है। इसलिए विकास के साथ पर्यावरण को स्वच्छ

एवं संरक्षित करना अन्यन्त अवश्यक है। उद्योगों को स्थापित करने के समय से ही अपशिष्ट पदार्थों के लिए सीवेज प्लांट स्थापित करने चाहिए और चिमनी की ऊँचाई अधिक होनी चाहिए। ऊर्जा के अन्य स्त्रोत जैसे–सौर ऊर्जा पवन ऊर्जा आदि का प्रयोग करना चाहिए। पोलीथिन के प्रयोग पर रोक लगाई जाय, इसके स्थान पर पोली बैग का प्रयोग करना चाहिए। जितने वृक्ष काटे जाएँ उतनी ही संख्या में पौधे लगाये जायें। सरकार को सड़क के किनारे, नहरों व नदियों के किनारे वृक्ष लगवाने चाहिए। इसके साथ प्रत्येक व्यक्ति को वृक्षारोपण करना चाहिए। जिससे प्रदूषण को कम किया जा सके।

सन्दर्भ ग्रन्थ सूची

1. सक्सैना रजत, पर्यावरण अध्ययनश ग्रन्थम प्रकाशन, कानपुर ,2005
2. सिद्वार्थ एस.और मुखर्जी,एस., भूगोल किसलय पब्लिकेशन, दिल्ली, 2010
3. भूगोल और आप अंक–8,संख्या 1, जनवरी–फरवरी, 2009,

Available online at http://www.nrjp.co.in

Journal of Management Science, Operations & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 14-17p, August, 2018

National Research & Journal Publication

Review Article

Global Environment and Sustainable Development

Veedisha Nagaich

(Faculty of Management & Education) Utkarsh Business School, Bareilly (Uttar Pradesh).

Abstract

The environmental issue has assumed the status of global problem, mobilizing society organizations and governments from the last two decades of the twentieth century. Exposures to environmental pollution remain a major source of health risk throughout the world, though risks are generally higher in developing countries, where poverty, lack of investment in modern technology and weak environmental legislation combine to cause high pollution. Much of the discussion of global environment change has ignored the potential of human agency, which is essential to sustainable development. Environmental policy has been slow to recognize that until a new sense of urgency is injected into the policy agenda to developed world is unlikely to pay serious attention to renewable sources of energy. Human behaviors affect global environmental change in a variety of ways. This paper discusses the potential for such integrated systems in the stationary and portable power market in response to the critical need for a cleaner energy technology. Anticipated patterns of future energy use and consequent environmental impacts (acid precipitation, ozone depletion and the greenhouse effect or global warming) are comprehensively discussed in this paper. Throughout the theme several issues relating to renewable energies, environment and sustainable development are examined from both current and future perspectives.

Keywords:-*Pollution, Environment, Global, Development*

INTRODUCTION

As a broad descriptor of prosperity goals related to an integrated approach between the economy, ecology and community improving each domain without diminishing the other.

As improvements in environmental performance of social and economic systems (resources consumed and waste produced) sustainable development is living on nature's income rather than its capital.

Infact we are consuming earth's resources beyond its sustainable capacities of renewal, thus we have run down that capacity over time.

Solution For Global and Sustainable Development Leave the world better than you found it, take no more than you need try not to harm life or environment make amends if you do.

Factors Affecting Global and Sustainable Development

Social- Governance & Decision making, Education, Religion, Health, Culture Worship, Family & Informal Associations, Politics, creating opportunities and capacity for citizens to participate in the shaping of the future and creating educational , health human sources, spiritual, artistic and other system .to support growth and renewal.

Natural - Firms, Watersheds Air, Minerals and others Project, preserve, Restore the adaptive capacity of Bioregional Systems, , Water Supply, Waste System, Transportation Grid, Information

Highways, Building Codes, Zoning Systems, Design Built Environment that reduces consumption of Natural Resources.

Economic- Firms, Currencies, economies, Labor Markets, Technology, Support ways of creating wealth without harming natural system or human beings.

The use of Renewable and Non Renewable Resources in a manner that satisfies our current needs but does not compromise the future availability of resources. It meets the needs of present without sacrificing the ability of future generations to meet their own needs..

It is saddled with triple bottom-line. It has to meet Environmental, Economic and Social Goals simultaneously.

Neighborhood Sustainability Dovetails:-

Water—Drilled Wells, Dug wells, and catchments for rain water harvesting.

Waste Management – Proper recycling, used of land fill to power sewage management & treatment plant, composing.

Green Space- Community green space sports, spaces for pedestrians cycling and bike friendly and safe for children.

Community Space Food- Food Farmer's Market Backyard Gardens, Buying Locally or Sustainability Grown produce, Home Sustainability as home designs(green roofs, solar panels in yard or on roof facing north and south to catch south east breezes trees on east and west sides of house), Building materials (salvaged wood, local materials, sustainable insulation, recycled fiber glass insulation) an interior products(energy star appliances, repurposed hardwood floors and cabinetry, low flow faucets and toilets, compact fluorescent light bulbs,ecofriendly paints, counter tops made of recycled materials, glass aluminum paper recycled carpet made of natural fibers**.**

Effect Of Global Environment On Human Health:-With the change of global environment the human health is adversely getting affected like malnutrition, diarrhea, water related health risks also arise from chemical contamination such as arsenic as a cause of skin pigmentation, hyperkeratosis, cardiovascular disease, neuropathy and cancer.

Climate Change and Health:-Risks to health will arise by direct and indirect pathways and will reflect changes in both average climate conditions and in climate variability. The risks are as follows-

- Population is affected by the natural change.
- Effect on heat waves and extreme events (cyclones, floods, storms, wildfires)
- Effect on Ecology.
- Effects on food yields.
- Effect on fresh water supplies.

Effect of Global Warming On Environment

- Floods and droughts will arise.
- **Green House Effect-** The major cause is the nature of earth's surface to absorb the incoming heat. Once, the heat comes in, it doesn't get released back at the same level and remains trapped. This causes green house effect.
- **Water Crisis-**Problems of water availability are likely to be more serious. In future, warmer world will face water crisis in some parts while in other regions it will be wetter than it is now.

Effect of Environment on Businesses

Extraction of minerals beyond it's capacity for renewal. The waste is not been recycled properly to enhance the fertility

of the earth. Earth is slowly degraded and is just at the brink of being barren due to the irrational extraction of minerals. The Business houses are making the society more materialistic creating undue pressure on the earth's limited resources.

What is Development

Development is gradual growth of the situation, circumstances, conditions aimed at the betterment of the society for which the process is put into churning .Development involves a progressive transformation of economy and society.

What is Sustainable?

Sustainable is defined as a requirement of our generation to manage the resource base such that the average quality of life that we ensure ourselves can potentially be shared by all future generations.

What is Sustainable Development?

Sustainable Development is the economic development that is conducted without depletion of natural resources or as a process of meeting human development goals while sustaining the ability of natural systems to continue to provide the natural resources.

It is seen that in order to fulfill his desires man exploits the environmental factors to a greater extent, by which the natural capacity of environment decays. The impact of man's various activities that are detrimental to the environment are as rapid urbanization, increase in population density, massive industrial growth, inadequate food and depletion of resources.

With the increasing demand of time human beings deliberately exploit the natural environment to improve their quality of life. Unknowingly, different environmental activities such as construction of roads dams, airports, buildings, irrigation projects, power plants and industries have negative repercussion on the environment in which man lives.

Sustainable Development is implied to regulate the demands of man in such a manner that the ability of the same environment to sustain his development will remain un-repaired.

Disaster Risk Reduction in Sustainable Development

Disaster is something resulting from natural hazard such as floods, drought, earthquakes, cyclones, forest fires etc. Disaster damage infrastructure, lifelines and critical facilities in human, financial and environmental losses and decrease the economic potential of society by exacerbating poverty, disrupting small business and industry activities. Disasters also reduce human capital as a result of death, injuries and long term trauma suffered by affected individuals.

Under the circumstances we now face, achieving sustainable development is of vital importance to every country. The various impediments such as political or social conflicts, financial crisis, diseases (e.g., HIV/AIDS), environmental degradation and natural disasters hinder efforts to create a/ sustainable world. Disaster risk management is therefore essential for the realization of sustainable development.

Causes of Disasters

Natural Disasters-Rain and wind storms, flood. Earthquakes, volcanic eruptions.

Man Made Disasters-Acts of war and terrorism, fires, water (broken pipes, leaking roofs, blocked drains, fire extinguishing), explosions, building deficiencies (structure, design, environment, maintenance).

Natural Disasters cannot be prevented, but measures can be taken to eliminate or reduce the possibility of trouble. Regardless of the many forms a disaster may take the actual damage to collection is usually caused by fire or water.

Prevention Carry out a building inspection and alter factors which constitute a potential hazard. Install automatic fire detection and extinguishing systems, and water-sensing alarms.

References

1. www.nbi.nlm.gov/pmc/articles/pmc2214484
2. www.preservearticles.com/201107308743/sustainabledevelopement.html
3. www.impotantindia.com/11701/essay-on-global-warming

Available online at http://www.nrjp.co.in

Journal of Management Science, Operations & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 18-21p, August, 2018

National Research & Journal Publication

Review Article

Thermal pollution and its consequences

[1] Prof. Madhubala Sarojny [2] Dr Angad Singh Dohare

Govt (P.G) College, Mahoba, Uttar Pradesh.

Govt (P.G) College, Lavkushnagar Chhatarpur (M.P)

Abstract

Thermal pollution defined as the addition of excess of undesirable heat to water thereby making it harmful to man, animal or aquatic life. Thermal pollution may also cause neither significant departures from nor activities of aquatic communities. Thermal pollution has been used to indicate the detrimental effects of heated effluents discharged by various power plants. It denotes the impairment of quality and deterioration of aquatic and terrestrial environments. The heated water discharged from industrial plants like thermal, atomic, nuclear, coal fired plants, factories in rivers ,lakes, streams and ponds etc., have reduced concentration of dissolved oxygen which produces distinct changes in aquatic biota ,bacteria ,protozoa, micro-organisms organic matter production and has over all deleterious effects on the ecosystem.

Keywords: *Thermal Pollution, addition, effects*

INTRODUCTION

Objectives

Thermal pollution is defined as the addition of excess of undesirable heat to water thereby making it harmful to man, animal or aquatic life. Thermal pollution may also cause neither significant departures from nor activities of aquatic communities.

Sources of Thermal Pollution:

The following sources contribute to thermal pollution.

1. Nuclear power plants
2. Coal fired plants
3. Industrial effluents
4. Domestic sewage
5. Hydro-electric power
6. Nuclear power plants Nuclear power plants including drainage from hospitals, research institutions, nuclear experiments and explosions, discharge a lot of heat that is not utilized along with traces of toxic radio nuclides into nearby water streams. Emissions from nuclear reactors and processing installations are also responsible for increasing the temperatures of water bodies. The major contributor of heat in the aquatic environment. Heated effluents from power plants are discharged at 10 C higher than the receiving waters that affect the aquatic flora and fauna.
7. Coal-fired power plants Coal fired power plants constitute a major source of thermal pollution. The condenser coils in such plants are cooled with water from nearby lakes or rivers. The resulting heated water is discharged

into streams thereby raising the water temperature by 15C. Heated effluent decreases the dissolved content of water resulting in death of fish and other aquatic organisms. The sudden fluctuation of temperature also leads to *"thermal shock"* killing aquatic life that has become acclimatized to living in a steady temperature.

8. Industrial effluents Industries like textile, paper, pulp and sugar manufacturing release huge amounts of cooling water along with effluents into nearby natural water bodies. The waters polluted by sudden and heavy organic loads result in severe drop in levels of dissolved oxygen leading to death of several aquatic organisms.
9. Domestic Sewage Domestic sewage is discharged into rivers, lakes, canals or streams with minimal treatment or without any treatment. These wastes have a higher organic temperature and organic load. This leads to decrease in dissolved oxygen content in the receiving waters resulting in the set-up of anaerobic conditions causing release of foul and offensive gases in water. Eventually, this leads to development of anoxic conditions resulting in rapid death of aquatic organisms.
10. Hydro-electric power Generation of hydroelectric power sometimes leads to negative thermal loading in water systems. Apart from electric power industries, various factories with cooling requirement contribute to thermal loading.

Thermal pollution in streams by human activities Industries and power plants use water to cool machinery and discharge the warm water into a stream

1. Stream temperature rises when trees and tall vegetation providing shade are cut.
2. Soil erosion caused due to construction also leads to thermal pollution
3. Removal of stream side vegetation
4. Poor farming Practices also lead to thermal pollution

Effects of Thermal pollution

1. Reduction in dissolved oxygen Concentration of Dissolved Oxygen (DO) decreases with increase in temperature.
2. Increase in toxicity The rising temperature increases the toxicity of the poison present in water. A 10C increase in temperature of water doubles the toxicity effect of potassium cyanide, while 80C rise in temperature triples the toxic effects of o-xylene causing massive mortality to fish.
3. Interference in biological activity Temperature is considered to be of vital significance to physiology, metabolism and biochemical processes that control respiratory rates, digestion, excretion, and overall development of aquatic organisms. Temperature changes cause total disruption to the entire ecosystem.
4. Interference in reproduction In fishes, several activities like nest building, spawning , hatching, migration and reproduction depend on optimum temperature.
5. Direct mortality Thermal pollution is directly responsible for mortality of aquatic organisms. Increase in temperature of water leads to exhaustion of microorganisms thereby shortening the life span of fish. Above a certain temperature, fish die due to

failure of respiratory system and nervous system failure.

6. Food storage for fish abrupt changes in temperature alter the seasonal variation in the type and abundance of lower organisms leading to shortage of right food for fish at the right time.
7. Change in metabolic rate Fishes show a marked rise in basal rate of metabolism with temperature to the lethal point. The respiratory rate, oxygen demand, food uptake and swimming speed in fishes increase.
8. Increased vulnerability to disease Activities of several pathogenic micro-organisms are accelerated by higher temperature. Hot water causes bacterial disease in salmon fish.
9. Invasion of destructive organisms in cold water: Thermal pollutants may permit the invasion of organisms that are tolerant to warm water and highly destructive.
10. Undesirable change in algae population: The life in an aquatic ecosystem is greatly influenced by the growth of algae. Excess nutrient from the wash-out water from farmlands, combined with thermal pollution cause an excessive algal growth with consequent acceleration of entropic and other undesirable changes.
11. Growth of blue-green algae: In unpolluted stream diatoms grow best at 16 to 20C, green algae, at 30 to 35C and blue-green algae, at 35 to 40C. It is evident that thermal discharges to a water course may favors the growth of blue-green algae over algae, resulting in a damage to ecosystem.
12. Biochemical Oxygen Demand (BOD): When the temperature of the stream containing biodegradable matter rises, the intensified action of aquatic organisms causes the BOD to be accomplished at a lower temperature.

Control measures for thermal pollution

the following methods can be adapted to control high temperature caused by thermal discharges:

1. Cooling towers Use of water from water systems for cooling systems for cooling purposes, with subsequent return to the water way after passage through a condenser, is called cooling process. Cooling towers transfer heat from hot water to the atmosphere by evaporation.
   Cooling towers are of two Types
   Wet cooling tower: Hot water coming out from the condenser (reactor) is allowed to spray over baffles. Cool air, with high velocity, is passed from sides, which takes away the heat and cools the water.
   Dry cooling tower: Here, hot water is allowed to flow in long spiral pipes. Cool air with the help of a fan is passed over these hot pipes, which cools down hot water. This cool water can be recycled.
2. Artificial lakes artificial lakes are man-made bodies of water, which offer possible alternative to once-through cooling.

   The heated effluents can be discharged into the lake at one end and the water for cooling purposes may be withdrawn from the other end. The heat is eventually dissipated through evaporation. So, these lakes would have to be rejuvenated continuously.

Conclusion

The problems associated with thermal pollution can be alleviated by the following methods:

1. Prevention of thermal pollution in natural streams can be done through plant sitting,
1. Coupled with effective use of regulated river systems.
2. Channeling of thermal effluents.
3. Using adequate cooling tower or ponds.
4. Efficient designing of out-falls to prevent thermal block from occurring.
5. Avoiding interference of hot water mass with fish migration.
6. Temperature prediction models can be used to develop the safe engineered designs.
7. By improving the efficiencies of electric power generating plants.

Refrences

1. Agarwal R.K. and Sangal V.K. (2010) "Environmental pollutions and their effects" Environment and ecology, Krishna publications Meerut, pp 146-148.
2. Megha Sinha (2006) "Environmental pollutions" Environmental studies, vandana publications New Delhi, p 158.
3. Megha Sinha (2006) "Environmental pollutions" Environmental studies, vandana publications New Delhi, p 203.
4. http://mjcetenvsci.blogspot.in/2013/11/thermal-pollution-causes-effects retrieved at 15 Jan 2017.

Available online at http://www.nrjp.co.in

Journal of Management Science, Operations & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 22-27p, August, 2018

National Research & Journal Publication

Review Article

पर्यावरण प्रदूषण की समस्या और समाधान

[1] डॉ. मीनाक्षी शर्मा [2] डॉ. कौशलेन्द्र दीक्षित

[1] राजनीतिक शास्त्र गोकुल दास गर्ल्स डिग्री कॉलेज मुरादाबाद उत्तर प्रदेश

[2] राजनीति शास्त्र) नेशनल पी.जी. कॉलेज भोगाँव, मैनपुरी

Abstract

वर्तमान समय में पर्यावरण सम्बन्धी मुद्दे लोगों में इसे लेकर कोई जागरूकता नहीं है। पर्यावरण का सीधा सम्बन्ध प्रकृति से है। अपने परिवेश में हम तरह–तरह के जीव–जन्तु, पेड़–पौधे तथा अन्य सजीव–निर्जीव वस्तुएँ पाते है। ये सब मिलकर पर्यावरण की रचना करते है। मानव के परिवेश में पाए जाने वाले जीव–जन्तु पादप, वायु, जल तथा भूमि के पर्यावरण की संरचना करते है। शिक्षा के माध्यम से पर्यावरण का ज्ञान शिक्षा मानव जीवन के बहुमुखी विकास का एक प्रबल साधन है। इसका मुख्य उद्देश्य शक्ति के अन्दर शारीरिक, मानसिक, सामाजिक, सांस्कृतिक तथा आध्यात्मिक वृद्धि एवं परिपक्वता लाना है। प्राकृतिक वातावरण के बारे में ज्ञानार्जन की परम्परा भारतीय संस्कृति में आरम्भ से ही रही है। प्राकृतिक वातावरण के बारे में ज्ञानार्जन की परम्परा भारतीय संस्कृति में आरम्भ से ही रही है। परन्तु आज के भौतिकतावादी युग में परिस्थितियाँ भिन्न होती जा रही है। एक ओर जहाँ विज्ञान एवं तकनीकी के विभिन्न क्षेत्रों में नए–नए अविष्कार हो रहे है। आने वाली पीढ़ी को पर्यावरण में हो रहे परिवर्तनों का ज्ञान शिक्षा के अर्न्तसम्बन्धों का ज्ञान हासिल करके कोई भी व्यक्ति इस दिशा में अनेक महत्वपूर्ण कार्य कर सकता है।

परिचय

पर्यावरण प्रदूषण का अर्थ होता है पर्यावरण का विनाश अर्थात ऐसे माध्यम जिनके कारण हमारा पर्यावरण दूषित होता है। इसके प्रभाव से मनुष्य और प्राकृतिक दुनिया को ना भुगतना पड़े उससे पहले हमें इसके विषय में गहन विश्लेषण करना पड़ेगा क्योंकि हम एक ऐसे सुन्दर गृह पृथ्वी में रहते है जो एक मात्र ऐसा गृह है जहाँ पर्यावरण और जीवन है। यह एक नितान्त सत्य है कि अगर हम पृथ्वी को बचाना चाहते है तो हमें विविध प्रयास करने पड़ेंगे जिससे हम दूषित वातावरण से अपनी पृथ्वी को बचा सके। पर्यावरण और मानव, एक–दूसरे से जुड़े हुए हैं। जहाँ मानव है, वहाँ पर्यावरण की भी आवश्यकता अनिवार्य है। अधिक जनसंख्या द्वारा प्राकृतिक पर्यावरण का दोहन होता है, जिसके परिणामस्वरूप पर्यावरण प्रदूषण का जन्म होता है। प्रदूषण एक भयंकर पर्यावरणीय समस्या है। आज पशु–पक्षी, पेड़–पौधे इंसान और जानवर, सब इसके चंगुल में फंस चुके हैं। वृक्षों की कटाई दिन प्रतिदिन बढ़ती जा रही है जिससे प्रदूषण को बढ़ावा मिल रहा है। आज का युग औद्योगिक युग है, जिससे कि कारखानों से कई प्रकार की प्रदूषित गैसें निकलती हैं, जैसे क्लोरोफलोकार्बन गैस, जो उच्च वायुमण्डल की ओजोन परत को नुकसान

पहुँचाती है, यह ओजोन परत सूर्य की पैराबैगनी किरणों से हमारे चारों तरफ का वायुमण्डल भी प्रदूषित हो रहा है, जिससे हमें अनेक प्रकार की बीमारियों का सामना करना पड़ता है – एलर्जी, अस्थमा, कैंसर, हड्डी रोग, गुर्दे की बीमारी आदि बढ़ती हुई जनसंख्या तथा अनेक विविध आयाम पर्यावरण प्रदूषण के उत्तरदायी हैं। आज मानव ने जहाँ औद्योगिकरण से अपनी पहचान बनाई है, भौतिक प्रगति की है, वहीं दूसरी तरफ प्राकृतिक संसाधनों का अनियन्त्रित एवं अव्यवस्थित रूप से उपयोग करके प्रदूषण को बढ़ावा दिया है।

पर्यावरण प्रदूषण का अर्थ है पर्यावरण का विनाश जिसका संजीवो पर प्रत्यक्ष रूप से प्रभाव पड़ता है तथा पारिस्थितिक तंत्र का नुकसान द्वारा अनेक अप्रत्यक्ष प्रभाव पड़ते हैं। विज्ञान के इस युग में जहाँ मानव को कई वरदान मिले है, वहीं कुछ अभिशाप भी मिले हैं। 'प्रदूषण' एक ऐसा अभिशाप है जो विज्ञान की गर्भ से जन्मा है और आज जिसे सहने के विश्व की जनता मजबूर है। पर्यावरण प्रदूषण में मानव की विकास प्रक्रिया तथा आधुनिकता का महत्वपूर्ण योगदान है। यहाँ तक कि मानव की अपनी सामान्य गतिविधियों के द्वारा भी पर्यावरण प्रदूषण को बढावा मिल रहा है जिसे वह अनभिज्ञ भी नहीं है।

जनसंख्या के लगातार बढ़ने से जल प्रदूषण, वायु प्रदूषण, ध्वनि प्रदूषण एवं नाभकीय प्रदूषण को बढ़ावा मिला है। दुनिया भर में हर साल मोटर गाड़ी से होने वाली मौतों की तुलना में वायु प्रदूषण से होने वाली मौतें अधिक हैं। पेट्रोल व डीजल से निकले नाइट्रोजन के आक्साइड से स्मॉग का जन्म होता है, जो सूर्य के प्रकाश में हाइड्रो कार्बन से क्रिया कर, घातक प्रकाश रासायनिक धूम्र स्मॉग को जन्म देता है। लन्दन में 1952 में हुए स्मॉग से पाँच दिन में हजारों लोगों की मृत्यू हो गई, सैकड़ों श्वांस एवं हृदय रोग से ग्रसित हो गये थे। अमेरिका में पर प्रतिशत प्रदूषण केवल परिवहन से ही होता है। हमारे देश में वैसे तो वाहनों की संख्या कम है, परन्तु उनका रख–रखाव ठीक नहीं होने से प्रदूषण की मात्राा ज्यादा है।

आगरा स्थित ताजमहल विश्व के सात आश्चर्यों में सम्मिलित है, परन्तु 1972 में मथुरा में लगे तेल शोधक कारखाने से निकलने वाला धुँआ जल से मिलकर सल्यफ्यूरिक एसिड के रूप में ताजमहल पर गिरता है, जिससे संगमरमर का क्षरण होता है। ओजोन गैस की अधिक कमी होने पर पराबैगनी किरणें पृथ्वी पर पहुँच जायेंगी और वहाँ का जनजीवन खतरे में पड़ जायेगा। सन् 1985 के सर्वेक्षण में ज्ञात हुआ कि अण्टार्कटिका में हेली घाटी के ऊपर ओजोन गैस की कमी होने के कारण छिद्र हो गये हैं। ओजोन गैस की कमी अन्तर्राष्ट्रीय चिन्ता का विषय है। एक अन्य सर्वेक्षण के अनुसार 1977 से 1984 के मध्य ओजोन में 40 प्रतिशत की कमी पायी गयी। यूनेक दस्तावेज के अनूसार यदि सी0एफ0सी0 गैस का निस्तारण 80 के दशकों के समान होता रहा, तो अगले 70 वर्ष में ओजोन पर्त 3 प्रतिशत सिकुड़ जायेगी। (2) स्पष्ट है कि वायु प्रदूषण क्रमिक रूप से घुलता हुआ जहर है, जो न केवल मनुष्य, अपितु समस्त जीव–जगत को प्रभावित कर रहा है। इसका प्रभाव अभी सीमित हो सकता है, किन्तु यदि इस दिशा में पर्याप्त प्रयत्न नहीं किये गये, तो यह ऐसी अवस्था में पहुँच जायेगा, जहाँ विनाश होगा और हम कुछ नहीं कर पायेंगे। 'सामदेव' में वायु (शुद्ध रूप में) को रोगविनाशक औषधि बताया जाता है

'वात या वातु भेषजम' जल प्रकृतिप्रदत्त एक अनमोल उपहार है, जो केवल मानव का ही नहीं, वरन् जीव– जन्तु आदि के जीने का आधार है। मैक्सवेल के अनुसार 'जल आर्थिक, सांस्कृतिक व जैविक दृष्टि से अत्यधिक उपयोगी संसाधन है। हम इसे पीते हैं, पुनः बाहर निकालते हैं, स्नान करते हैं, शान्त होते हैं, मछली पकड़ते हैं, खाना बनाते हैं, पौधों को सींचते हैं, ऊर्जा और शक्ति प्राप्त करते हैं, परिवहन और मनोरंजन करते हैं। इसलिए विश्व की सभी महत्वपूर्ण सभ्यताएं जल के स्त्रोतों के किनारे विकसित हुई है।[4] जल जीव–जगत की आत्मा है। जल के प्रदूषित होते ही सभी प्राणी इसकी चपेट में आ जाते हैं और अनेक बीमारियों का शिकार होते है। प्रदूषित जल में रासायनिक एवं जैव रासायनिक आक्सीजन मांग Carbon Oxygen Demand C.O.D. और बायोलोजिकल आक्सीजन डिमांड B.O.D. बढ़ जाती है, जो प्रदूषण की मात्रा का सूचक है। प्रदूषित जल में अनेक प्रकार के बैक्टीरिया प्रोटोजोआ और ग्लोकोमा पाये जाते हैं।

मेरठ मेडिकल कालेज के एक सर्वेक्षण दल ने यह पाया कि नगर के जिन क्षेत्रों में जल आपूर्ति ठीक नही है तथा लोग कुँए या हैण्डपम्पों का पानी पीते हैं, वहाँ पीलिया की घटनाएँ अधिक हैं। प्रदूषित जल में हैजा जैसी महामारी फैल जाती है । 1988 में दिल्ली में हैजे का प्रकोप इसका ज्वलन्त उदाहरण है। दिल्ली में यमुना और भोपाल में छोटी झील का जल मानवीय उपयोग का नहीं है। कानपुर, पटना का भी यहीं हाल है।

ऋग्वेद में कहा गया है

"सर्वेषाम् भेषजम् अप्स् मे,
जीवना जीवनम् जीजोजगत।"

अर्थात 'जल प्राणियों का प्राण है, मैने तुम्हारे लिए सभी प्रकार की औषधियाँ जल में सुरक्षित रख छोड़ी है।

एक अन्य श्लोक में कहा गया है
"आपोइद्वा उभेषजोरायो अभीव चातकी। आपस सर्वस्य भेषजो स्तास्तृ कृषणतु भेषजम।"

अर्थात 'जल औषधि है। यह रोगों का नाश करने वाला और उनका शुद्ध रूप है। यह तुम्हारे सभी रोगों का दूर कर देगा।'

इसी तरह ध्वनि प्रदूषण से भी हम अछूते नहीं है। आस्ट्रेलिया के एक विचारक के अनुसार 'शोर मनुष्य को समय से पहले वृद्ध कर देता है।' कैलिफोर्निया में शोध के बाद निष्कर्ष निकाला गया है कि 'शान्त स्थानों में रहने वाली गर्भवती महिलाओं की तुलना में शोरग्रस्त क्षेत्रों में रहने वाली महिला द्वारा जन्में शिशुओं में जन्मजात विकृति है।'

सूडान देश की एक जनजाति 'सबान' है। यह जाति अत्यन्त ही शान्त वातावरण में रहती है। ये लोग किसी भी प्रकार के रक्तचाप व हृदय बीमारी से ग्रसित नहीं होते हैं। जब से ये अधिक शोर वाले क्षेत्रों में आवास करने लगे हैं, तब से इनमें कई रोग उत्पन्न होने लगे हैं। यह प्रमाण इस बात को सिद्ध करता है कि अधिक शोर मनुष्य में कई बीमारियाँ उत्पन्न करता है। मुम्बई के वैज्ञानिक डा0 वाई0टी0 ओकेबा के अनुसार 'शोर अत्यधिक शारीरिक, मानसिक और अव्यवहारिक गड़बड़ी पैदा करता है। 88 डेसीबल से अधिक का शोर व्यक्ति को बहरा बना सकता है।

प्राचीन भारत में मंत्र शक्ति और शब्द शक्ति का प्रयोग विभिन्न प्रकार की उपयोगी ऊर्जाओं की उत्पत्ति और निर्माण

कार्य के लिए किया जाता रहा है। इन शक्तियों का प्रभाव अद्‌भुत पाया गया है। शब्दों में पदार्थों, वनस्पतियों और प्राणियों को प्रभावित करने की विलक्षण क्षमता होती है। भारतीय संगीत में ध्वनि प्रवाह के अनेकानेक प्रभावों की चर्चा होती है। बुझे हुए दीपक को जलाने वाला दीपक राग, बादलों में पानी बरसाने वाला मेघ मल्हार, सांस को प्रभावित करने वाला मोहन राग, मदमत्त हाथी को नियंत्रित करने वाला राग शंकर, सूखे पत्ते को हरा करने वाला श्री राग,। ये सभी ध्वनि माध्यम के प्रभावकारी भारतीय पक्ष हैं। वैज्ञानिक प्रयोंगो में भी ध्वनि और शब्दों की क्षमता का आकलन बहुत पहले ही देश–विदेश में अनेकों बार हो चुका है।

वैज्ञानिकों के अनुसार पर्यावरण सन्तुलन हेतु 33 प्रतिशत भू–भाग में वनों का होना आवश्यक है, परन्तु बढ़ती हुई आबादी एवं मानव विकास की अन्धी दौड़ के फलस्वरूप वनों का सफाया निर्वाध गति से जारी है। 1980 में किये गये संयुक्त राष्ट्र संघ के खाद्य एवं कृषि संगठन के अध्ययन के अनुसार 'अकेले एशिया एवं प्रशान्त क्षेत्र में प्रतिवर्ष 20 लाख हेक्टेयर वन समाप्त होते जा रहे हैं, जबकि भारत में वन क्षेत्र 2.8 प्रतिशत प्रतिवर्ष कीदर से घटते जा रहे है। भूमि की उर्वरा शक्ति दिनप्रतिदिन कम होती जा रही है।

पर्यावरणीय प्रदूषणों में नाभकीय संकट सर्वाधिक गम्भीर और हानिकारक हैं। इसका हानिकारक प्रभाव जल, थल और वायुमण्डल के पर्यावरण पर पड़ता है। अनेक नाभकीय पदार्थ जैसे यूरेनियम, थोरियम, कोबाल्ट अपार शक्ति के स्त्रोत हैं। परमाणु शक्ति प्राप्त करने के लिए इन्हें अनेक प्रक्रियाओं से गुजारा जाता है। इन प्रक्रियाओं के दौरान ये रेडियोधर्मी विकिरण फैलाते हैं। मानव, पशु, जनजीवन के लिए अनेक गम्भीर बीमारी के रूप में संकट उत्पन्न करते है, जैसे–कैंसर, अंगो का गलना, चर्मरोग, अनेक अनुवांशिक बीमारियाँ न केवल मानव को, बल्कि पशु–पक्षियों व वनस्पति को लग जाती है। नाभकीय प्रदूषण से जीन्स एवं गुणसूत्रों के लक्षणों में परिवर्तन हो जाता है। उदाहरण के लिए द्वितीय विश्व युद्ध के समय पहली बार परमाणु बम अमेरिका द्वारा जापान के हिरोशिमा और नागासाकी शहरों में गिराये गये ।इन परमाणु बमों में विस्फोटों से निकलने वाले रेडियोधर्मी प्रभाव के कारण से लोगो के अनुवांशिक और शारीरिक लक्षण बदल गये है। रेडियोधर्मी प्रभाव के कारण से आज भी वहाँ अपंग बच्चे पैदा होते हैं। भारत में सबसे भयंकर नाभकीय प्रदूषण आपदा 1984 में भोपाद आपदा थी। यह यूरेनियम कार्बाइड के उर्वरक उत्पादन का रखाने से एम0आई0सी (मिथारल आइसी साइनेट) के रिसाव के कारण हुई। इस रसायन का रिसाव संयन्त्रों की खराब देखरेख के कारण हुआ। सर्दियों की रात होने के कारण गैस का प्रभाव अधिक हुआ। निष्कासिकत गैस से जलन उत्पन्न होती है, जो बाद में अंधता और फेफड़ो की बीमारी में बदल जाती है। इससे 5100 लोगों की मृत्यू हो गयी और लगभग 25,50,000 लोग रोगग्रस्त हो गये।

नेशनल रिमोट सैन्सिंग एजेन्सी के अनुसार प्रतिवर्ष वनों की कटाई के फलस्वरूप वन क्षेत्र में वनों का प्रतिशत निरन्तर कम हो रहा है। यदि यही स्थिति रही तो अगले 15 या 20 वर्षों में कितने वन क्षेत्र रह जायेंगे, यह एक विचारणीय प्रश्न है।

मृदा में विभिन्न प्रकार के लवण, खनिज तत्व, कार्बनिक पदार्थ, गैस एवं जल एक

निश्चित मात्रा एवं अनुपात में होते हैं। मृदा में उपयुक्त पदार्थों की मात्रा एवं अनुपात में उत्पन्न असन्तुलन 'मृदा प्रदूषण' को जन्म देता है। मृदा प्रदूषण भूमि में विभिन्न प्रकार के उर्वरक डालने से भी होता है।

मानव प्राकृतिक पर्यावरण का सबसे बड़ा उपभोक्ता हैं। अतः वह पर्यावरण का उपभोग इस तरह करें, जिससे कि वर्तमान व भावी पीढ़ियों को भी स्वस्थ प्राकृतिक पर्यावरण उपलब्ध हो सके। यजुर्वेद में कहा गया है– 'नभो वृक्षेभ्यो हरिकेभ्यो।'

अर्थात् 'तुम वनस्पतियों को जितना बढ़ाओगे, वनस्पतियाँ भी तुम्हे उतना ही बढ़ायेगी।'

प्राकृतिक रूप से पृथ्वी को गर्म करने का कार्य वायुमण्डल में उपस्थित वाष्प करती है, किन्तु मानवीय कारणों से ग्रीनहाउस प्रभाव उत्पन्न करने वाली गैसों जैसे कार्बन डाई आक्साइड, मीथेन, नाइट्रोजन, क्लोरो–लोरो कार्बन आदि की वायुमण्डल में वृद्धि तापमान को बढ़ा रही है।' (6)

मनुष्य इस प्रकृति–चक्र का स्वयं एक हिस्सा है। प्रकृति के साथ न तो उसकी प्रतियोगिता है, न प्रकृति को जीतने का उसको अधिकार है।

वह भी अन्य प्राणियों की भांति प्रकृति की गोद में खेलता, खाता, पीता और आन्नदपूर्ण जीवन जीता है। प्रकृति में अन्तर्निहित इन गहन व सूक्ष्म अन्तः सम्बन्धों से समझना अत्यन्त आवश्यक है। इस व्यवस्था में दृव्य व अदृव्य शोर दृव्य जल, वायु, भूमि, पेड़, पशु–पक्षी, कीट–पतंगे व मनुष्य एक सूझ–बूझ को नष्ट कर देने पर सारी व्यवस्था बिगड़ जाती है और इसके दुष्परिणाम सामने आने लगते हैं। (11) मानव को वृक्षारोपण कर, जल के दुरूपयोग एवं अपव्यय को रोककर सीमित परिवार की अवधारणा अपना कर, अपने उपभोग संरचना को भिन्नवत बनाकर एवं पर्यावरण नियमों का पालन करें । घरेलू कूड़ा–करकट निर्धारित स्थान पर डालें, कृषि में जैविक खाद एवं जैव कीटनाशकों का प्रयोग करें।

ट्रकों व अन्य भारी वाहनों को यथासम्भव आबादी वाले भागों से निकलने पर रोक लगे वाहनों के हार्न्स भी तेज आवाजों वाले (एअर हार्न्स) न हो। अधिक आवाज वाले कारखाने व उद्योगों को शहर से काफी दूर स्थानान्तरित कर दिया जाना चाहिए। 'मुरादनगर (गाजियाबादःउत्तर प्रदेश) में हजारों पेड़ तथा वहाँ की फसलों की बरबादी के का कारण पास में ही चल रही कागज मिल है। शीशम और जामुन के पेड़ों की मानों निशानदेही ही बची है। किसान कहते हैं कि धान की फसल आठ दिन में इस जल के पानी से सूख जाती है। पानी में अधिक देर खड़े हों, तो पैरों में जलन मचने लग जाती है। संभवतः पेपर मिल में खस रसायनों का प्रयोग किया जाता हो। (12)

वास्तव में आज आवश्यकता इस बात की है कि पॉलीथीन की थैली के स्थान पर कागज व कपड़े की थैली का प्रयोग करें, क्योंकि गाय व अन्य पशु, छिलकों के साथ पालीथीन भी खा जाते हैं, जो उनकी आंतो में फंसकर मौत का कारण बनती है। नाली में पॉलीथीन नहीं फैंकनी चाहिए, अन्यथा सीवर चौक हो जाते हैं। ध्वनि वाले यन्त्रों का प्रयोग कम या आवश्यकता होने पर करें। ईंधन के रूप में लकड़ी के विकल्प के रूप में सौर ऊर्जा तथा गोबर गैस का उपयोग किया जाये। शवदाह हेतु विद्युत शवदाह गृहों के

उपयोग का चलन शुरू किया जाये। सुधरी हुई (विकसित) शवदाह प्रणाली में लकड़ी कम व्यय होती है, उसका लाभ लें। (13)

निष्कर्ष

वैज्ञानिक दृष्टि से विकास, प्रकृति और मानव समाज की निर्भरता और विश्व–पर्यावरण के सन्दर्भ में इनके महत्व को स्वीकारना चाहिये। हमें तकनीक एवं ज्ञान के सामंजस्य को पर्यावरण संतुलन की दृष्टि से देखने की आवश्यकता है और सम्पूर्ण जीव–जगत के हित में अर्न्तराष्ट्रीय सहयोग की आवश्यकता है। साथ ही आवश्यकता इस बात की भी है कि वाहन की नियमित जाँच करायें, ट्यूनिंग सही रखें, वाहन को अभिशंसित गति से ही चलायें, निरर्थक क्लच तथा ब्रेक्स का उपयोग न करें। अंत में यह कहना गलत ना होगा कि व्यक्ति का मूलभूत अधिकार है एक ऐसे पर्यावरण का निर्माण, जिसमें खुशी, स्वतन्त्रता, स्वस्थता, समानता तथा रहन–सहन की प्र्याप्त सुविधा उपलब्ध हो। साथ ही उसका यह दायित्व भी है कि पर्यावरण को स्वस्थ व सुरक्षित रखें जिसमें उसका सर्वांगीण विकास हो सके और हमारा समाज निरन्तर विकसित व पल्लवित होता रहे। हम सभी लोग अपनी पृथ्वी को स्वच्छ रखना चाहिए। वातावरण को दूषित न करें जिससे पृथ्वी स्वच्छ रहे क्योंकि पृथ्वी हमारा घर है। पृथ्वी का विनाश अर्थात् मानव का विनाश।

सन्दर्भ

1. अमित कुमार पर्यावरण अध्ययन, विश्व भारती पब्लिकेशन्स, 2006, पृ0 173।
2. राधावल्लभ उपाध्याय पर्यावरण शिक्षा, अग्रवाल पब्लिकेशन्स, आगरा, 2013/14, पृ0 सं0 214।
3. डॉ0 सन्धया मिश्रा 'वत्स'पर्यावरणीय शिक्षा, आर0लाल बुक डिपो, 2010, पृ0 सं0 101।
4. अमित कुमार पर्यावरण अध्ययन, विश्व भारती पब्लिकेशन्स, 2006, पृ0सं0 162।
5. डॉ0 सन्धया मिश्रा 'वत्स' पर्यावरणीय शिक्षा, पृ0 सं0 125।
6. आर0ए0शर्मा पर्यावरण शिक्षा, आर0 लाल बुक डिपो, मेरठ 2010, पृ0सं0 244.
7. डॉ0 एम0के0 गोयल पर्यावरण शिक्षा, अग्रवाल पब्लिकेशन्स, आगरा 2010, पृ0सं0 115.
8. डॉ0 रविन्द्रनाथ मुखर्जी प्रारम्भिक समाजशास्त्र, शिवलाल अग्रवाल एण्ड कम्पनी, आगरा, पृ0सं0 159.
9. डॉ0 सन्धया मिश्रा 'वत्स' पर्यावरणीय शिक्षा, आर0लाल बुक डिपो, 2010, पृ0 सं0 130।
10. एम0एल0गुप्ता समाजशास्त्र, साहित्य भवन पब्लिकेशन्स, आगरा 2010, पृ0सं0 228.
11. मीता सिंह पर्यावरण चेतना, हिन्दी मासिक लखनऊ, अगस्त 2013, अंक–4, पृ0सं0 14.
12. डॉ0 एम0 के0 गोयल पर्यावरण शिक्षा, अग्रवाल पब्लिकेशन्स, आगरा, 2010, पृ0सं0 222.
13. डॉ0 एम0 के0 गोयल पर्यावरण शिक्षा, अग्रवाल पब्लिकेशन्स, आगरा, 2010, पृ0सं0 113.

Available online at http://www.nrjp.co.in

Journal of Management Science, Operations & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 28-32p, August, 2018

National Research & Journal Publication

Review Article

महिला सशक्तिकरण मे शिक्षा का योगदान

डॉ.अजय सिंह

एसोसिएट प्रोफेसर शिक्षा विभाग, पी एस.एम.(पी जी)कालेज, कन्नौज,उ.प्र

Abstract

महिला सशक्तिकरण की जब भी बात की जाती है, तब सिर्फ राजनीतिक एवं आर्थिक सशक्तिकरण पर चर्चा होती है पर सामाजिक सशक्तिकरण की चर्चा नहीं होती ऐतिहासिक रूप से महिलाओं को दूसरे दर्जे का नागरिक माना जाता रहा है। उन्हें सिर्फ पुरुषों से ही नहीं बल्कि जातीय संरचना में भी सबसे पीछे रखा गया है। इन परिस्थितियों में उन्हें राजनीतिक एवं आर्थिक रूप से सशक्त करने की बात बेमानी लगती है, भले ही उन्हें कई कानूनी अधिकार मिल चुके हैं। महिलाओं का जब तक सामाजिक सशक्तिकरण नहीं होगा, तब तक वह अपने कानूनी अधिकारों का समुचित उपयोग नहीं कर सकेंगी। सामाजिक अधिकार या समानता एक जटिल प्रक्रिया है, कई प्रतिगामी ताकतें सामाजिक यथास्थितिवाद को बढ़ावा देती हैं और कभी–कभी तो वह सामाजिक विकास को पीछे धकेलती हैं।

परिचय

प्रत्येक विकसित समाज के निर्माण में स्त्री एवं पुरूष दोनों की सहभागिता आवश्यक है। भावी पीढ़ी के रूप में व्यक्ति से लेकर परिवार, समाज तथा राष्ट्र तक के चहुँमुखी विकास की जिम्मेदारी में पुरुषों के साथ स्त्रियों की अपेक्षाकृत अधिक भागीदारी है। इस भागीदारी को सुनिश्चित करने के लिए ही परिवार की धुरी, महिला का सशक्तीकरण जरूरी है और सशक्तीकरण के लिए शिक्षा।

शिक्षा आर्थिक और सामाजिक सशक्तीकरण के लिए पहला और मूलभूत साधन है। शिक्षा ही वह उपकरण है जिससे महिला समाज में अपनी सशक्त, समान व उपयोगी भूमिका दर्ज करा सकती है। दुनिया के जो भी देश आज समृद्ध और शक्तिशाली हैं, वे शिक्षा के बल पर ही आगे बढ़े हैं। इसलिए आज समाज की आधी आबादी अर्थात महिलाएं जो कि विकास की मुख्य धारा से बाहर है, उन्हे शिक्षित बनाना हमारी पहली प्राथमिकता होनी चाहिए।

इस संदर्भ में राधाकृष्णन आयोग ने कहा है–'' स्त्रियों के शिक्षित हुए बिना किसी समाज के लोग शिक्षित नहीं हो सकते। यदि सामान्य शिक्षा स्त्रियों या पुरूषों मे से किसी एक को देने की विवशता हो, तो यह अवसर स्त्रियों को ही दिया जाना चाहिए, क्योकि ऐसा होने पर निश्चित रूप से वह शिक्षा उनके द्वारा अगली पीढ़ी तक पहुँच जाएगी।'' इसी प्रकार राष्ट्रीय शिक्षा नीति में यह बात स्वीकार की गई है कि महिला शिक्षा का महत्व न केवल समानता के लिए, बल्कि सामाजिक विकास की प्रक्रिया को तेज करने के लिए भी जरूरी है।

स्वतंत्रता के बाद सरकार, महिला संगठनों ,महिला आयोगों आदि के प्रयासो से महिलाओं के लिए विकास के द्वार खुले, उनमें शिक्षा का प्रसार बढ़ा जिससे उनमें जागृति आई, आत्मविश्वास उत्पन्न हुआ परिणामस्वरूप वे प्रगतिपथ पर आगे बढ़ी।

आज महिलाएं राजनीति, समाजसुधार, शिक्षा, पत्रकारिता, साहित्य, विज्ञान, उद्योग, व्यावसायिक प्रबन्धन, शासन–प्रशासन, चिकित्सा, इंजीनियरिंग, पुलिस, सेना, कला, संगीत, खेलकूद आदि क्षेत्रों में पुरूषो के साथ कंधे से कंधा मिलाकर कार्य कर रही हैं । एक ओर यह परिदृश्य अत्यधिक उत्साहवर्धक है परंतु वर्तमान शैक्षिक परिदृश्य पर दृष्टि डालने से पता चलता है कि आज भी शिक्षा के क्षेत्र में महिलाओं की स्थिति संतोषजनक नहीं है।

पूरी दुनिया में स्कूल न जाने वाले 121 मिलियन बच्चों में 65 प्रतिशत लड़किया है। दुनिया के 875 मिलियन निरक्षर वयस्कों में दो तिहाई महिलाएं हैं। इसी प्रकार 2001 की जनगणना के अनुसार भारत में महिला साक्षरता दर 53.67 प्रतिशत है जिसमें नगरीय क्षेत्र की महिला साक्षरता 72.99 प्रतिशत तथा ग्रामीण क्षेत्र की महिला साक्षरता 46.58 प्रतिशत है अर्थात भारत में लगभग 50 प्रतिशत महिलाएं अभी तक शिक्षा से वंचित हैं।

इसी प्रकार प्राथमिक स्तर पर प्रवेश लेने वाली बालिकाओं में से 24.82 प्रतिशत कक्षा 5 तक की पढ़ाई पूरी नहीं कर पाती और उन्हे विद्यालय छोड़ना पड़ता है। उच्च प्राथमिक स्तर पर 50.76 प्रतिशत बालिकाओं को बीच में ही विद्यालय छोड़ कर घरेलू कार्यों में संलग्न होना पड़ता है। स्कूल का दूर होना, यातायात की अनुपलब्धता, घरेलू काम, छोटे भाई–बहनों की देखरेख, आर्थिक व विभिन्न सामाजिक समस्यायें आदि कुछ ऐसे कारण हैं जो कि बालिका शिक्षा की राह में बाधा उत्पन्न करते हैं।

आज बालिका शिक्षा का प्रसार ग्रामीण क्षेत्रों में करने की महती आवश्यकता है। सरकार द्वारा विभिन्न योजनाओं के माध्यम से इस दिशा में निरन्तर प्रयास किए जा रहे हैं। देश की विकासशीलता के परिवेश में विचार करना आवश्यक है कि महिलाओं की शिक्षा किस प्रकार की हो?

महिलाओं को मात्र साक्षर न बनाया जाए बल्कि उन्हें ऐसी व्यावसायिक शिक्षा देनी चाहिए जो उन्हे अपने पैरों पर खड़े होने में मददगार सिद्ध हो। यदि महिलाएं शिक्षित होकर आत्मनिर्भर हों सके तो उनको स्वयं का महत्व समझते देर नहीं लगेगी तथा धीरे–धीरे दूसरो की नजरों में भी उनका स्थान महत्वपूर्ण हो जाएगा। शिक्षित, आत्मनिर्भर, सशक्त महिलाओं के द्वारा ही भारत को एक सशक्त व विकसित देश के रूप में निर्माण कर पाना संभव हो सकेगा।

प्रश्न यह है कि सामाजिक सशक्तिकरण का जरिया क्या हो सकती हैं? इसका जवाब बहुत ही सरल, पर लक्ष्य कठिन है। शिक्षा एक ऐसा कारगर हथियार है, जो सामाजिक विकास की गति को तेज करता है। समानता, स्वतंत्रता के साथ–साथ शिक्षित व्यक्ति अपने कानूनी अधिकारों का बेहतर उपयोग भी करता है और राजनीतिक एवं आर्थिक रूप से सशक्त भी होता है।

महिलाओं को ऐतिहासिक रूप से शिक्षा से वंचित रखने का षडयंत्र भी इसलिए किया गया कि न वह शिक्षित होंगी और न ही वह अपने अधिकारों की मांग करेंगी, यानी, उन्हें दोयम दर्जे का नागरिक बनाये रखने में सहुलियत होगी। इसी वजह से महिलाओं में शिक्षा का प्रतिशत बहुत ही

कम है। हाल के वर्षों में अंतर्राष्ट्रीय परिस्थितियों एवं स्वाभाविक सामाजिक विकास के कारण शिक्षा के प्रति जागरूकता बढ़ी है, जिस कारण बालिका षिक्षा को परे रखना संभव नहीं रहा है। इसके बावजूद सामाजिक एवं राजनीतिक रूप से शिक्षा को किसी ने प्राथमिकता सूची में पहले पायदान पर रखकर इसके लिए विशेष प्रयास नहीं किया।

कई सरकारी एवं गैर सरकारी आंकड़ें यह दर्शाते हैं कि महिला साक्षरता दर बहुत ही कम है और उनके लिए प्राथमिक स्तर पर अभी भी विषम परिस्थितियाँ हैं। यानी प्रारम्भिक शिक्षा के लिए जो भी प्रयास हो रहे हैं, उसमें बालिकाओं के लिए अनुकूल परिस्थितियाँ निर्मित करने की सोच नहीं दिखती। महिला शिक्षकों की कमी एवं बालिकाओं के लिए अलग शौचालय नहीं होने से बालिका शिक्षा पर विपरीत प्रभाव पड़ रहा है और प्राथमिक एवं मिडिल स्तर पर बालकों की तुलना में बालिकाओं की शाला त्यागने की दर ज्यादा है। यद्यपि प्राथमिक स्तर की पूरी शिक्षा व्यवस्था में ही कई कमियां हैं।

प्राथमिक शिक्षा पूरी शिक्षा प्रणाली की नींव है और इसकी उपलब्धता स्थानीय स्तर पर होती है। इस वजह से बड़े अधिकारी या राजनेता प्रारम्भिक शिक्षा व्यवस्था की कमियों, जरूरतों से लगातार वाकिफ नहीं होते, जबकि ऐसा नहीं होना चाहिए था। अतरू यह जरूरी है कि प्रारंभिक शिक्षा की निगरानी एवं जरूरतों के प्रति स्थानीय प्रतिनिधि अधिक सजगता रखें। चूंकि शहरों की अपेक्षा गांवों में प्राथमिक स्तर पर शिक्षा की स्थिति बदतर है, इसलिए गांवों में बेहतर शिक्षा उपलब्ध कराने और बच्चों में शिक्षा के प्रति जागरूकता लाने पर खास जोर देने की जरूरत है।

73वें संविधान संशोधन के बाद पंचायती राज व्यवस्था के तहत निर्वाचित स्थानीय प्रतिनिधियों ने भी पिछले 10–15 वर्षों में शिक्षा के लिए उल्लेखनीय कार्य नहीं किया। सामान्य तौर पर ऐसा देखने में आया है कि पुरुष पंचायत प्रतिनिधियों ने निर्माण कार्यों पर जोर दिया क्योंकि इसमें भ्रष्टाचार की संभावनाएं होती हैं। शुरुआती दौर में महिला पंचायत प्रतिनिधियों ने भी कठपुतली की तरह पुरुषों के इशारे एवं दबाव में उनकी मर्जी के खिलाफ अलग कार्य नहीं किया। आज भी अधिकांश जगहों पर महिला पंच–सरपंच मुखर तो हुई हैं पर सामाजिक मुद्दों के प्रति उनमें अभी भी उदासीनता है। इसके बावजूद महिला पंचों एवं सरपंचों से ही सामाजिक मुद्दों पर कार्य करने की अपेक्षा की जा रही है क्योंकि सामाजिक सशक्तिकरण के लिहाज से यह उनके लिए भी जरूरी है।

इन विषम परिस्थितियों के बावजूद प्रदेश के कई पंचायतों में आशा की किरण दिख रही है। मध्यप्रदेश में सबसे पहले पंचायत चुनाव हुआ था इसलिए बदलाव की बयार भी सबसे बेहतर यहीं दिख रही हैं। झाबुआ, सतना, होशंगाबाद, हरदा सहित कई जिलों के कई पंचायतों की महिला सरपंचों एवं पंचों ने सामाजिक मुद्दों पर कार्य शुरू कर दिया है। खासतौर से शिक्षा के प्रति उनमें मुखरता आई है। अंततरू महिलाओं ने इस बात को समझना शुरू कर दिय है कि उनकी वास्तविक सशक्तिकरण के लिए शिक्षा एक कारगर हथियार है। शिक्षा को अपनी प्राथमिकता सूची में पहले स्थान पर रखने वाली महिला सरपंचों एवं पंचों का स्पष्ट कहना है कि शिक्षा में ही गांव का विकास निहित है और सामाजिक मुद्दों पर काम करने वाली महिला सरपंचों एवं पंचों को

ही वास्तविक रूप से सशक्त माना जा सकता हैं।

महिला सशक्तिकरण हेतु सरकारी प्रयास

1.1 नवंबर 1999 में प्रारंभ 'पढ़ना–बढ़ना आंदोलन' अत्यधिक सफल रहा। इस योजना के अंतर्गत एक निरक्षर को पुनः साक्षर करने पर 100 रू. गुरू दक्षिणा का प्रावधान था, वह कारगर साबित हुआ।

2.निरक्षर महिलाओं को साक्षर बनाने के लिये यथासंभव स्थानीय स्तर पर उपलब्ध शिक्षित स्वयं–सेवकों को दायित्व सौंपा गया।(8)

3.महिलाओं के नवसाक्षर होने के बाद उनके सशक्तिकरण की दिशा में महिला स्व–सहायता समूहों के गठन को बढ़ावा दिया गया। साक्षरता अभियान के माध्यम से अब तक राज्य में लगभग 2–3 हजार महिला व सहायता समूह विभिन्न जिलों में गठित किए जा चुके हैं।(9)

4.अनुसूचित जातिध्जनजाति तथा पिछड़े वर्ग की बालिकाओं, विशेषतः गरीबी रेखा के नीचे जीवन–यापन करने वाले परिवारों की बालिकाओं को निःशुल्कध्यथासंभव न्यूनतम शुल्क पर शिक्षा सुलभ कराना।

5.व्यावसायिक एवं व्यवसायोन्मुखी परामर्श एवं प्रशिक्षण (जो केवल महिलाओं पर केन्द्रित हो) का आयोजन ताकि वे अपनी योग्यताओं एवं रूचियों के अनुरूप पाठ्यक्रमों का चयन कर सकें।(10)

6.महिलाओं के नवसाक्षर होने के बाद उनके सशक्तिकरण की दिशा में महिला स्व–सहायता समूह के गठन को बढ़ावा दिया गया। साक्षरता अभियान के माध्यम से इब तक राज्य में लगभग 2–3 हजार महिला स्व–सहायता समूह विभिन्न जिला में गठित किये जा चुके हैं।

7.महिलाओं को आर्थिक स्वावलंबन प्रदान करने के लिए उनके निजी बचत खाते, बैंको, डाकघरों में खोलने को प्राथमिकता दी गई।(11)

8.साक्षरता अभियान क्रियान्वयन से जुड़ी जिला स्तर से लेकर ग्राम स्तर से लेकर ग्राम स्तर तक की समस्त समितियों में महिलाओं की भागीदारी 30–35 प्रतिशत तक सुनिश्चित की गई।

9.आकाशवाणी रायपुर, अम्बिकापुर, जगदलपुर, बिलासपुर के समय–समय पर महिला साक्षरता को सफल बनाने के लिए विभिन्न कार्यक्रमों का प्रसारण किया गया।(12)

10.शैक्षणिक पाठ्यक्रमों में नैतिक मूल्य (मूल्य आधारित) शिक्षा के समावेश हेतु आवश्यक उपाय किये गये।

11.शैक्षणिक पाठ्यक्रमों में छत्तीसगढ़ राज्य की महिला विभूतियों एवं महिलाओं से संबंधित सांस्कृतिक एवं ऐतिहासिक आख्यानों को सम्मिलित करना।

12.बालिकाओं को वैज्ञानिक व तकनीकी शिक्षा दिये जाने हेतु प्रोत्साहन।(13)

13. 1 जनवरी 1997 से पूरे प्रदेश में 'शिक्षा गारंटी योजना' शुरू की। इस योजना का सफल क्रियान्वयन हो इसका जिम्मा पंचायती राज व्यवस्था को सौंपा गया। पंचायती राज्य व्यवस्था द्वारा किये गये प्रयासों से प्रदेश की शिक्षा व्यवस्था में क्रांतिकारी परिवर्तन आए।(14)

महिलाओ का सामाजिक एवं पारिवारिक जीवन में एक महत्वपूर्ण स्थान है, इनके बिना परिवार या समाज की कल्पना नहीं की जा सकती। परिवार एवं समाज में इनका योगदान अतुलनीय है। महिलाए समाज व परिवार की मार्गदर्शक हैं, युवा पीढी की सफलता की श्रोताधार हैं, परिवार की पथ प्रदर्शक हैं । अविष्कारी मस्तिष्क तो नारी के पास सदैव रहा है। परन्तु समय के साथ–साथ मस्तिष्क इस प्रकार के विचार करने पर विराम लगा दिया अब उन्हे इस अविष्कारी विचार को पुनः प्रारम्भ करना होगा एवं अपने द्वारा उत्पन्न समाज को फिर से उन्हे राह

बताना होगा। तभी समाज में समानता आएगी । (16)

संदर्भ सूची –

1.अंसारी एम.ए., महिला और मानवाधिकार, जयपुर, 2007 पृ 224
2. सिंह गौरव,महिला सशक्तिकरण हेतु सरकारी प्रयास एवं संवैधानिक व्यवस्थाये, आन्वीक्षिकी (शोधपत्रिका), 2013, पृ. 64,
3. टी. राधाकृष्ण, मध्यप्रदेश महिला नीति भेपाल, 1997, पृ. 11,14,
4. आचार्य सम्राटश्री देवेन्द्रमुनी जी, भारतीय वाडमय में नारी, नई दिल्ली, 2006 पृ. 24,
5. श्रीवास्तव रागिनि, आधुनिक समाज एवं महिलाएं इंदौर, 2011, पृ.
6.जसटा हरिराम, आधुनिक भारत में शैक्षिक चिन्तन, दिल्ली 1992,पृ.
7.पूर्वोक्त, पृ 65
8.मेहता, बी.के, और दुबे, राकेश कुमार, शोध संप्रेषण बिलासपुर, 2004,
9.सुरजन, ललित, संदर्भ छत्तीसगढ़, रायपुर, 2004, पृ. 114,
12. सूरजन ललित, पूर्वोक्त, पृ. 114
13. मेहता, बी.के, और दुबे, राकेश कुमार, पूर्वोक्त, पृ. 114
15. हरिभूमि, 25 मार्च, 2010, पृ.10
16. पाण्डे मनोज कुमार, नारी साम्राज्य, विश्वभारती प्रकाशन , 2008

Available online at http://www.nrjp.co.in

Journal of Management Science, Operations & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 33-45p, August, 2018

National Research & Journal Publication

Review Article

Optical Fiber Communication: It's past and Future For Communication

Madan kr. Mahto

Dept. Of physics, K.S.R. College, Sarairanjan, Samastipur, Bihar

Abstract

The nonlinear behaviour of light such as chaos travelling in an optical fiber ring resonator as a single ring resonator is presented. This phenomenon can be used to generate secret codes or arbitrary digital codes of "0" and "1" applicable in the communication system such as time division multiple access (TDMA) system.

Keywoeds: *Chaotic communication; Logic Codes; TDMA system; Optimal Soliton Transmission*

INTRODUCTION

Nonlinear behaviours of light travelling in a fiber optic ring resonator are commonly induced by the effects such as Kerr effects [1-4], four-wave mixing, and the external nonlinear pumping power [5]. Such nonlinear behaviours are named as chaos, bistability, and bifurcation [6]. More details of such behaviours in a microring resonator are clearly described by Amiri et al [7]. However, apart from the penalties of the nonlinear behaviours of light travelling in the fiber ring resonator [8-9], there are some benefits that can be used in the communication system [10]. One of them known as chaotic behaviour that has been used to make the benefit of communication system in either electronic or optical communications [11-13]. Fortunately, most of the previous investigations are shown in mathematical ways, where the practical applications could be implemented [14-16]. For instance, the chaotic control input power [17-20] into the system is equal to the standard communication light source used in the system, and the implemented fiber optic devices are in the fabrication scales [21-23]. This means the ability of chaotic carriers to synchronize in a communication system is valid [24-26]. Recently, Amiri et al. have reported the successful characterization of the microring resonator with a radius of micron meters [27-28] using the optical materials called InGaAsP/InP [29-31], which are suitable for use in the practical devices and systems [32-33].

Amiri et al have also shown that an add/drop device could be constructed using a microring resonator, where the device characteristics have shown that they are suitable to implement in the practical communication system [34-35]. In practical applications, the microring resonator and add/drop device parameters are required to make them within the

ranges of the usual fabrication parameters [36-39]. This paper presents the design of the system of the chaotic signal generation that uses the practical device parameters. Such a system can be used to secure the information signals [40-41], where the tapping of the signals from the optical communication link is extremely difficult [42-44]. The results obtained have shown that the device parameters used have good potentials for practical applications. The analogy of the chaotic signal generation using fiber ring resonator and the related behaviours is described. This research is supported by the Institute of Advanced Photonics Science, Nanotechnology Research Alliance, University Teknologi Malaysia (UTM).

THEORY AND SYSTEM

A ring resonator configuration is shown in figure 1, where the circumference of the fiber ring is L [45-48]. The input and output signals are given by E_{in} and E_{out} respectively.

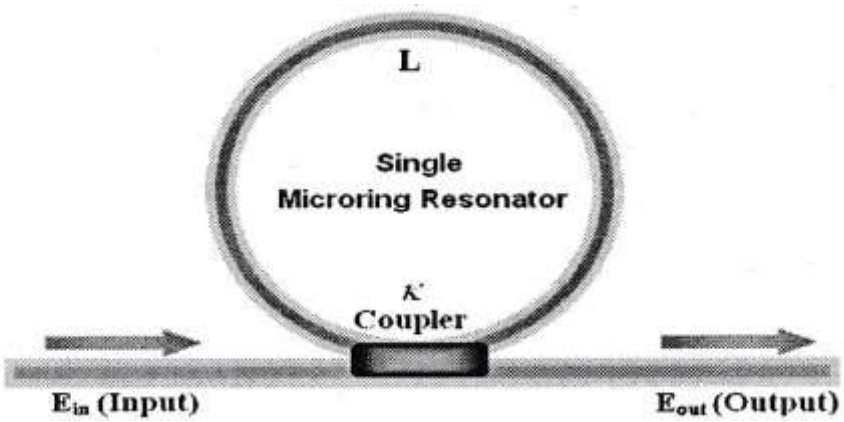


Fig. 1: A diagram of a fiber optic ring resonator

Here, the input light of the monochromatic diode laser is inserted into the system [49-54]. The input light of Gaussian beams can be expressed as [55-59],

$$E_{in}(t) = E_0 \exp\left[\left(\frac{x}{2L_D}\right) - i\omega_0 t\right] \quad (1)$$

E_0 and x are the amplitude of optical field and propagation distance respectively [60-63]. L_D is the dispersion length of the soliton pulse [64-67] where, frequency shift of the signal is ω_0 [68-70]. When a soliton pulse is input and propagated within a microring resonator, the resonant output is formed, thus, optical circuits of the system can be given by [71-73],

$$\left|\frac{E_{out}(t)}{E_{in}(t)}\right| = (1-\gamma)\left[\frac{(1-(1-\gamma)x^2)k}{(1-x\sqrt{1-\gamma}\sqrt{1-k})^2 + 4x\sqrt{1-\gamma}\sqrt{1-k}\sin^2(\frac{\phi}{2})}\right] \quad (2)$$

K is the coupling coefficient [74], and x = exp(-αL/2) represents a round-trip loss coefficient [75], $\varphi_0 = kLn_0$ [76] and $\varphi_{NL} = kLn_2|Ein|^2$ are the linear and nonlinear phase shifts [77-78] and $k = 2\pi/\lambda$ is the wave propagation number in a vacuum [79]. L and α are a waveguide length and linear absorption coefficient, respectively [80-82]. The parameters of the system were fixed to be λ_0 = 1.55 m, n_0 = 3.34[83-85], A_{eff} is the effective mode core are of the fiber [86-88], where $A_{eff} = 30$ m^2, the fiber losses α = 0.02dB/km [89-90]. The fractional coupler intersity loss is γ = 0.01 [91-92], and R = 12.5 m. The coupling coefficient varies regarding to the input power [93-94]. The nonlinear refractive indices ranged from $n_2 = 3.8 \times 10^{-20}$ m^2/W, and the 20,000 iterations of round-trips inside the optical fiber is simulated [95].

Results And Discussion

The input power is maximized at 1W, where the output power is varied directly with the coupling coefficient. Thus, the chaotic signal can be generated and controlled by varying the coupling coefficients, where the required output power is obtained. Here, the coupling coefficient ranges as 0 < k < 0.1. Figure 2 shows the output chaotic signals generated for a variety of coupling coefficients, where the coupling coefficients vary from k = 0.02 to k = 0.085. The figure 2 (a) shows the output signal in terms of round-trip, where the figure 2(b-e) show the output signals reverence to different coupling coefficients. Therefore, large coupler coefficient corresponds to lower input power which is required in many applications in optical switching and optical communication systems.

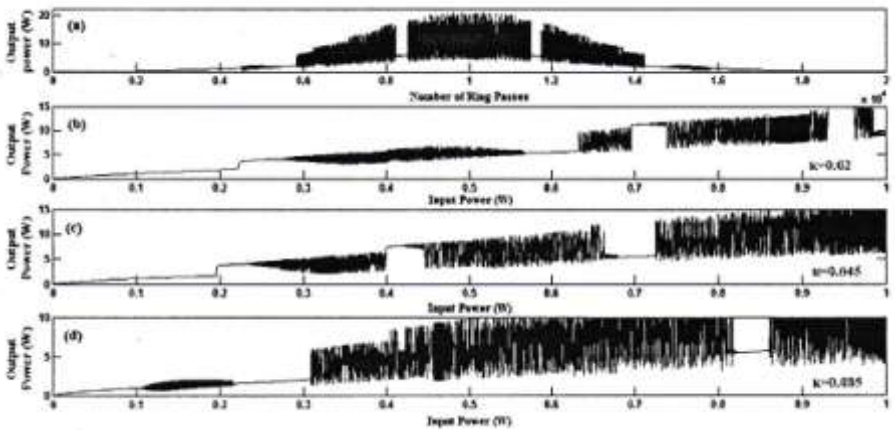


Fig. 2: Generation of chaotic signals when 0 < k < 0.1, (a): output signal versus number of round-trips, (b): Output chaotic signal where k = 0.02, (c): Output chaotic signal where k = 0.045, (d): Output chaotic signal where k = 0.085

The chaotic signals can be used to generate information of binary codes where the encoding and decoding of data can be performed via a TDMA system. This system will encode the binary logic codes of "0" and "1" and transmit them via fiber optic communication, where the decoding process is performed at the end of the transmission link. The schematic of the TDMA system is shown in figure 3, in which transmission of chaotic signals for communication networks can be obtained. Thus by using arbitrary digital coding, different signal information propagate in

the network communication via a TDMA transmission system. This system uses data in the form of secured codes to be transferred to single users via different lengths of the fiber optic line to the TDMA transmitter.

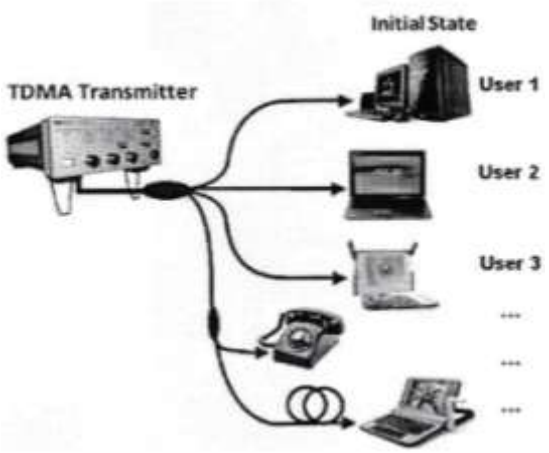


Fig. 3: Schematic of the TDMA system

Therefore, digital code information can be shared between users in different time slots. The transmission unit is a part of the quantum processing system that can be used to transfer the high capacity packet of quantum codes. Moreover, a high capacity of data can be transferred by using more wavelength carries. Here, transmission of arbitrary digital codes of "1111000000101001111000000000000011000000000001" is performed. Figure 4 shows the forms of transmitting signals in the optical fiber communication system.

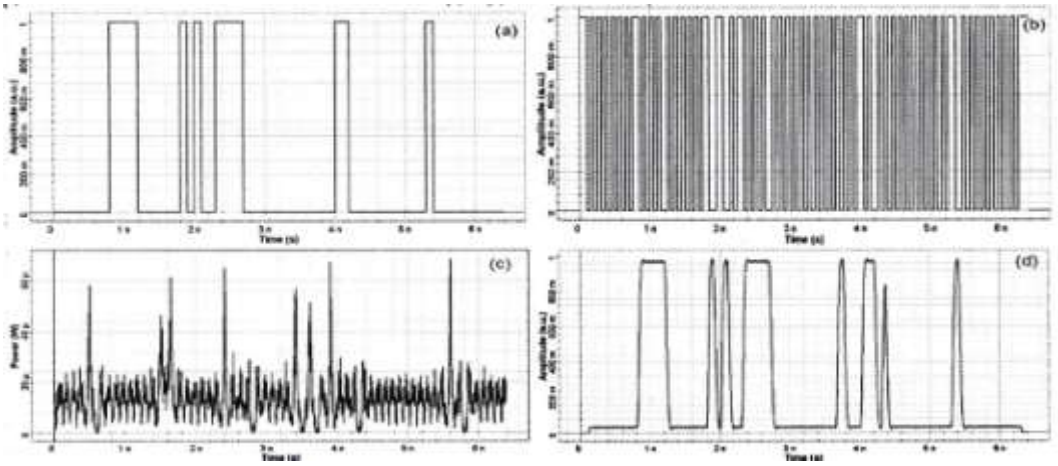


Fig. 4: Transmitting of digital codes where (a): Binary codes, (b): Secured codes, (c), Transmitted codes over 125 km fiber optics, (d) decoded signals into original signals.

Therefore, transmission of data along fiber network communication is performed using chaotic signals. The security scheme of the transmission can be obtained by encoding-decoding of data where the high capacity of transmission requires highly optical signals such as chaotic signal which is employed whether it is used as optical carrier or optical information.

Conclusion

We have proposed the optical microring resonator system that uses critical parameters such as coupling coefficient to generate and control the output signals in the form of chaotic signals..

REFERENCES

[1] I. S. Amiri, A. Afroozeh, M. Bahadoran, J. Ali, and P.P. Yupapin, Molecular Transporter System for Qubits Generation, Jurnal Teknologi (Sciences and Engineering), 55, 2012, 155-165.

[2] A. Afroozeh, M. Bahadoran, I. S. Amiri, A. R. Samavati, J. Ali, and P. P. Yupapin, Fast Light Generation Using GaAlAs/GaAs Waveguide, Jurnal Teknologi (Sciences and Engineering), 57, 2012, 17-23.

[3] J. Ali, I. S. Amiri, M. A. Jalil, M. Hamdi, F. K. Mohamad, N. J. Ridha, and P. P. Yupapin, Trapping spatial and temporal soliton system for entangled photon encoding, presented at the Nanotech Malaysia, International Conference on Enabling Science & Techonology, Kuala Lumpur, Malaysia, 2010.

[4] I. S. Amiri, A. Shahidinejad, A. Nikoukar, J. Ali, and P. Yupapin, A Study of Dynamic Optical Tweezers Generation For Communication Networks, International Journal of Advances in Engineering & Technology (IJAET), 4(2), 2012, 38-45.

[5] I. S. Amiri, M. Ranjbar, A. Nikoukar, A. Shahidinejad, J. Ali, and P. Yupapin, Multi optical soliton generated by PANDA ring resonator for secure network communication, in Computer and Communication Engineering (ICCCE) Conference, Malaysia, 2012, 760-764.

[6] J. Ali, M. Kouhnavard, I. S. Amiri, M. A. Jalil, A. Afroozeh, and P. P. Yupapin Security confirmation using temporal dark and bright soliton via nonlinear system, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lumpur, Malaysia, 2010.

[7] I. S. Amiri, R. Ahsan, A. Shahidinejad, J. Ali, and P. P. Yupapin, Characterisation of bifurcation and chaos in silicon microring resonator, IET Communications, 6(16), 2012, 2671-2675.

[8] J. Ali, K. Kulsirirat, W. Techithdeera, M. A. Jalil, I. S. Amiri, I. Naim, and P. P. Yupapin, Temporal dark soliton behaviour within multi-ring resonators, presented at the Nanotech Malaysia, International Conference on Enabling Science & Technology, Malaysia 2010.

[9] I. S. Amiri, A. Nikoukar, A. Shahidinejad, J. Ali, and P. Yupapin, Generation of discrete frequency and wavelength for secured computer networks system using integrated ring resonators, in Computer and communication Engineering (ICCCE) Conference, Malaysia, 2012, 775-778.

[10] I. S. Amiri, J. Ali, and P. Yupapin, Security Enhancement of the

Optical Signal Communication using Binary Codes Generated by Optical Tweezers, Chinese Journal of Physics, 2013.

[11] J. Ali, A. Afroozeh, I. S. Amiri, M. A. Jail, M. Kouhnavard, and P. Yupapin, Generation of continuous optical spectrum by soliton into a nano-waveguide, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lumpur, Malaysia, 2010.

[12] J. Ali, M. A. Jalil, I. S. Amiri, and P. P. Yupapin, MRR quantum dense coding, presented at the Nanotech Malaysia, International Conference on Enabling Science & Technology, KLCC, Kuala Lumpur, Malaysia 2010.

[13] J. Ali, A. Afroozeh, M. Hamdi, I. S. Amiri, M. A. Jalil, M. Kouhnavard, and P. Yupapin, Optical bistability behaviour in a doublecoupler ring resonator, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lumpur, Malaysia, 2010.

[14] J. Ali, K. Raman, A. Afroozeh, I. S. Amiri, M. A. Jalil, I. N. Nawi, and P. P. Yupapin, Generation of DSA for security application, presented at the 2nd International Science, Social Science, Engineering Energy Conference (I-SEEC 2010), Nakhonphanom, Thailand, 2010.

[15] P. P. Yupapin, M. A. Jalil, I. S. Amiri, I. Naim, and J. Ali, New Communication Bands Generated by Using a Soliton Pulse within a Resonator System, Circuits And Systems, 1(2), 2010, 71-75.

[16] M. Kouhnavard, I. S. Amiri, M. Jalil, A. Afroozeh, J. Ali, and P. P. Yupapin, QKD via a quantum wavelength router using spatial soliton, in Enabling Science and Nanotechnology (ESciNano) Conference, Malaysia, 2010, 210-216.

[17] J. Ali, S. Saktioto, M. Hamdi, and I. S. Amiri, Dynamic silicon dioxide fiber coupling polarized by voltage breakdown, presented at the Nanotech Malaysia, International Conference on Enabling Science & Technology, Kuala Lumpur, Malaysia, 2010.

[18] M. A. Jalil, I. S. Amiri, M. Kouhnavard, A. Afroozeh, J. Ali, and P. P. Yupapin, Finesse Improvements of Light Pulse within MRR System, in Faculty of Science Postgraduate Conference (FSPGC), Universiti Teknologi Malaysia, 2010.

[19] N. J. Ridha, F. K. Mohamad, I. S. Amiri, Saktioto, J. Ali, and P. P. Yupapin, Controlling Center Wavelength and Free Spectrum Range by MRR Radii presented at the International Conference on Experimental Mechanics (ICEM), Kuala Lumpur, Malaysia, 2010.

[20] A. A. Shojaei and I. S. Amiri, DSA for Secured Optical Communication, presented at the International Conterence for nanomaterials Synthesis and Characterization (INSC), Kuala Lumpur, Malaysia, 2011.

[21] M. Imran, R. A. Rahman, and I. S. Amiri, Fabrication of Diffractive Optical Element using Direct Writing CO2 Laser Irradiation, in

Faculty of Science Postgraduate Conference (FSPGC), Universiti Teknologi Malaysia, 2010.

[22] S. Saktioto, S. Daud, M. A. Jalil, I. S. Amiri, and P. P. Yupapin, FBG sensing system for outdoor temperature measurement, presented at the ICEM, Legend Hotel, Kuala Lumpur, Malaysia, 2010.

[23] A. Shahidinejad, A. Nikoukar, I. S. Amiri, M. Ranjbar, A. Shojaei, J. Ali, and P. Yupapin, Network system engineering by controlling the chaotic signals using silicon micro ring resonator, in Computer and Communication Engineering (ICCCE) Conference, Malaysia, 2012, 765-769.

[24] J. Ali, I. S. Amiri, M. A. Jalil, A. Afroozeh, M. Kouhnavard, and P. Yupapin, Novel system of fast and slow light generation using micro and nano ring resonators, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lumpur, Malaysia, 2010.

[25] I. S. Amiri, G. Vahedi, A. Shojaei, A. Nikoukar, J. Ali, and P. P. Yupapin, Secured Transportation of Quantum Codes Using Integrated PANDA-Add/drop and TDMA Systems, International Journal of Engineering Research & Technology (IJERT), 1(5), 2012.

[26] M. Kouhnavard, A. Afroozeh, I. S. Amiri, M. A. Jalil, J. Ali, and P. P. Yupapin, New system of Chaotic Signal Generation Using MRR, presented at the International Conference on Experimental Mechanics (ICEM), Kuala Lumpur, Malaysia, 2010.

[27] I. S. Amiri, A. Afroozeh, and M. Bahadoran, Simulation and Analysis of Multisoliton Generation Using a PANDA Ring Resonator System, Chinese Physics Letters, 28, 2011, 104205.

[28] I. S. Amiri, A. Nikoukar, A. Shahidinejad, M. Ranjbar, J. Ali, and P. P. Yupapin, Generation of Quantum Photon Information Using Extremely Narrow Optical Tweezers for Computer Network Communication, GSTF Journal on Computing (joc), 2(1), 2012.

[29] A. Afoozeh, I. S. Amiri, M. Kouhnavard, M. Bahadoran, M. A. Jalil, J. Ali, and P. P. Yupapin, Dark and Bright Soliton trapping using NMRR, presented at the International Confernce on Experimental Mechanics (ICEM), Kuala Lumpur, Malaysia, 2010.

[30] J. Ali, A Mohamad, I. Nawi, I. S. Amiri, M. Jalil, A. Afroozeh, and P. P. Yupapin, Stopping a dark soliton pulse within an NNRR, presented at the AMN-APLOC International Conference, Wuhan, China 2010.

[31] S. Saktioto, S. Daud, J. Ali, M. A. Jalil, I. S. Amiri, and P. P. Yupapin, FBG simulation and experimental temperature measurement, presented at the ICEM, Legend Hotel, Kuala Lumpur, Malaysia, 2010.

[32] I. S. Amiri, M. H. Khanmirzaei, M. Kouhnavard, and S. Mitatha, Quantum cryptography via a wavelength router for internet security, Piers Proceeding, Cambridge, 2010.

[33] I. S. Amiri, M. Nikmaram, A. Shahidinejad, and J. Ali, Cryptography Scheme of an Optical Switching System Using Pico/Femto Second Soliton Pulse, International Jouranal of Advances in Engineering & Technology (IJAET), 5(1), 2012, 176-184.

[34] I. S. Amiri, J. Ali, and P. P. Yupapin, Enhancement of FSR and Finesse Using Add/Drop Filter and PANDA Ring Resonator Systems, International Journal of Modern Physics B, 26(04), 2012.

[35] I. S. Amiri, S. Babakhani, G. Vahedi, J. Ali, and P. Yupapin, Dark-Bright Solitons Conversion System for Secured and Long Distance Optical Communication, IOSR Journal of Applied Physics (IOSR-JAP), 2(1), 2012, 43-48.

[36] A. Afroozeh, I. S. Amiri, M. Kouhnavard, M. Bahadoran, M. A. Jalil, J. Ali, and P. P. Yupapin, Optical Memory Time using Multi Bright Soliton, presented at the International Conference on Experimental Mechanics (ICEM), Kuala Lumpur, Malaysia, 2010.

[37] J. Ali, I. S. Amiri, M. Jalil, M. Kouhnavard, A. Afroozeh, I. Naim, and P. Yupapin, Narrow UV pulse generation using MRR and NRR system, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lumpur, Malaysia, 2010.

[38] J. Ali, M. Kouhnavard, A. Afroozeh, I. S. Amiri, M. A. Jalil, and P. P. Yupapin, Optical bistability in a FORR, presented at the ICEM, Legend Hotel, Kuala Lumpur, Malaysia, 2010.

[39] A. A. Shojaei and I. S. Amiri, Soliton for Radio wave generation, presented at the International Conference for Nanomaterials Synthesis and Characterization (INSC), Kuala Lumpur, Malaysia, 2011.

[40] I. S. Amiri, A. Afroozeh, J. Ali, and P. P. Yupapin, Generation Of Quantum Codes Using Up And Down Link Optical Solition, Jurnal Teknologi (Sciences and Engineering), 55, 2012, 97-106.

[41] J. Ali, M. Kouhnavard, M. A. Jalil, and I. S. Amiri, Quantum signal processing via an optical potential well, presented at the Nanotech Malaysia, International Conference on Enabling Science & Technology, Kuala Lumpur, Malaysia 2010.

[42] I. S. Amiri, M. A. Jalil, A. Afroozeh, M. Kouhnavard, J. Ali, and P. P. Yupapin, Controlling Center Wavelength and Free Spectrum Range by MRR Radii, in Faculty of Science Postagradute Conference (FSPGC), Universiti Teknologi Malaysia, 2010.

[43] J. Ali, A. Afroozeh, I. S. Amiri, M. A. Jalil, and P.P. Yupapin, Dark and Bright Soliton trapping using NMRR, presented at the ICEM, Legend Hotel, Kuala Lumpur, Malaysia, 2010.

[44] I. S. Amiri, A. Nikoukar, G. Vahedi, A. Shojaei, J. Ali, and P. Yupapin, Frequency-Wavelength Trapping by Integrated Ring Resonators For Secured Network and Communication Systems, International Journal of

Engineering Research & Technology (IJERT), 1(5), 2012.

[45] J. Ali, M. A. Jalil, I. S. Amiri, and P. P. Yupapin, Dark-bright solitons conversion system via an add/drop filter for signal security application, presented at the ICEM, Legend Hotel, Kuala Lumpur, Malaysia, 2010.

[46] I. S. Amiri, A. Shahidinejad, A. Nikoukar, M. Ranjbar, J. Ali, and P. P. Yupapin, Digital Binary Codes Transmission via TDMA Networks Communication System Using Dark and Bright Optical Soliton, GSTF Journal on Computing (joc), 2(1), 2012.

[47] J. Ali, M. Roslan, M. Jalil, I. S. Amiri, A. Afroozeh, I. Nawi, and P. Yupapin, DWDM enhancement in micro and nano waveguide, presented at the AMN-APLOC International Conference, Wuhan, China, 2010.

[48] I. S. Amiri, K. Raman, A. Afroozeh, M. A. Jalil, I. N. Nawi, J. Ali, and P. P. Yupapin, Generation of DSA for security application, Procedia Engineering, 8, 2011, 360-365.

[49] A. Afroozeh, I. S. Amiri, M. A. Jalil, M. Kouhnavard, J. Ali, and P. P. Yupapin, Multi Soliton Generation for Enhance Optical Communication, Applied Mechanics and Materials, 83, 2011, 136-140.

[50] J. Ali, I. S. Amiri, A. Afroozeh, M. Kouhnavard, M. Jalil, and P. Yupapin, Simultaneous dark and bright soliton trapping using nonlinear MRR and NRR, presented at the ICAMN, International Conference, Malaysia, 2010.

[51] J. Ali, I. S. Amiri, M. A. Jalil, F. K. Mohamad, and P. P. Yupapin, Optical dark and bright soliton generation and amplification, presented at the Nanotech Malaysia, International Conference, on Enabling Science & Technology, Kuala Lumpur, Malaysia, 2010.

[52] I. S. Amiri, M. H. Khanmirzaei, M. Kouhnavard, P. P. Yupapin, and J. Ali, Quantum Entanglement using Multi Dark Soliton Correlation for Multivariable Quantum Router, in Quantum Entanglement, A. M. Moran, Ed., New York: Nova Science Publisher, 2012.

[53] A. Niloukar, I. S. Amiri, and J. Ali, Secured Binary Codes Generation for Computer Network Communication, presented at the Network Technologies & Communications (NTC) Conference, Singapore, 2010-2011.

[54] C. Tanaram, C. Teeka, R. Jomtarak, P. P. Yupapin, M. A. Jalil, I. S. Amiri, and J. Ali, ASK-to-PSK generation based on nonlinear microring resonators coupled to one MZI arm, Procedia Engineering, 8, 2011, 432-435.

[55] A. Afroozeh, I. S. Amiri, A. Samavati, J. Ali, and P. Yupapin, THz frequency generation using MRRs for THz imaging, in Enabling Science and Nanotechnology (ESciNano) Conference, Malaysia, 2012, 1-2.

[56] J. Ali, I. S. Amiri, A. Jalil, A. Kouhnavard, B. Mitatha, and P. Yupapin, Quantum internet via a

quantum processor, presented at the International Conference on Photonics (ICP 2010), Langkawi, Malaysia 2010.

[57] I. S. Amiri, A. Afroozeh, I. N. Nawi, M. A. Jalil, A. Mohamad, J. Ali, and P. P. Yupapin, Dark Soliton Array for communication security, Procedia Engineering, 8, 2011, 417-422.

[58] N. J. Ridha, F. K. Mohamad, I. S. Amiri, Saktioto, J. Ali, and P. P.Yupapin, Soliton Signals and The Effect of Coupling Coefficient in MRR Systems, presented at the International Conference on Experimental Mechanics (ICEM), Kuala Lumpur, Malaysia, 2010.

[59] N. Suwanpayak, S. Songmuang, M. A. Jalil, I. S. Amiri, I. Naim, J. Ali, and P. P. Yupapin, Tunable and storage potential wells using microring resonator system for bio-cell trapping and delivery, in Enabling Science and Nanotechnology (ESciNano) Conference, 2010, 289-291.

[60] J. Ali, I. S. Amiri, M. A. Jalil, A, Afroozeh, M. Kouhnavard, and P. P. Yapapin, Multi-soliton generation and storage for nano optical network using nano ring resonators, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lumpur, Malaysia, 2010.

[61] J. Ali, M. A. Jalil, I. S. Amiri, and P. P. Yupapin, Effects of MRR parameter on the bifurcation behaviour, presented at the Nanotech Malaysia, International Conference on Enabling Science & Technology, Kuala Lumpur, Malaysia 2010.

[62] I. S. Amiri, M. A. Jalil, F. K. Mohamad, N. J. Ridha, J. Ali, and P. P. Yupapin, Storage of Optical Soliton Wavelengths Using NMRR, presented at the International Conference on Experimental Mechanics (ICEM), Kuala Lumpur, Malaysia, 2010.

[63] M. Bahadoran, I. S. Amirim A. Afroozeh, J. Ali, and P. P. Yupapin, Analytical Vernier Effect for Silicon Panda Ring Resonator, presented at the National Science Postgraduate Conference (FSPGC), Universiti Teknologi Malaysia, 2011.

[64] A. Afroozeh, M. Kouhnavard, I. S. Amiri, M. A. Jalil, A. Afroozeh, and P. P. Yupapin, Effect of Center Wavelength on MRR Performance, in Faculty of Science Postgraduate Conference (FSPGC), Universiti Teknologi Malaysia, 2010.

[65] J. Ali, K. Raman, M. Kouhnavard, I. S. Amiri, M. A. Jalil, A. Afroozeh, and P. P. Yupapin, Dark soliton array for communication security, presented at the AMN-APLOC International Conference, Wuhan, China, 2011.

[66] M. Kouhnavard, A. Afroozeh, M. A. Jalil, I. S. Amiri, J. Ali, and P. P. Yupapin, Soliton Signals and the Effect of Coupling Coefficient in MRR Systems, in Faculty of Science Postgraduate Conference (FSPGC), Universiti Teknologi Malaysia, 2010.

[67] C. Teeka, S. Songmuang, R. Jomtarak, P. P. Yupapin, M. A. Jalil, I. S. Amiri, and J. Ali, ASK

to PSK Generation based on Nonlinear Microring Resonators Coupled to One MZI Arm, in International Conference on Enabling Science and Nanotechnology, EsciNano, 2011, 221-223.

[68] J. Ali, I. S. Amiri, M. A. Jalil, M. Hamdi, F. K. Mohamad, N. J. Ridha, and P. P. Yupapin, Proposed molecule transporter system for qubits generation, presented at the Nanotech Malaysia, International Conference on Enabling Science & Technology, Malaysia 2010.

[69] J. Ali, M. Jalil, I. S. Amiri, A. Afroozeh, M. Kouhnavard, I. Naim, and P. Yupapin, Multi-wavelength narrow pulse generation using MRR, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lumpur, Malaysia, 2010.

[70] I. S. Amiri, M. A. Jalil, F. K. Mohamad, N. J. Ridha, J. Ali, and P. P. Yupapin, Storage of Atom/Molecules/Photon using Optical Potential Wells, Presented at the International Conference on Experimental Mechanics(ICEM), Kuala Lumpur, Malaysia, 2010.

[71] J. Ali, M. Kouhnavard, I. S. Amiri, A. Afroozeh, M. A. Jalil, I. Naim, and P. P. Yupapin, Localization of soliton pulse using nanowaveguide, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lumpur, Malaysia 2010.

[72] I. S. Amiri, A. Afroozeh, M. Bahadoran, J. Ali, and P. P. Yupapin, Up and Down Link of Soliton for Network Communication, presented at the National Science Postgraduate Conference, NSPC, Malaysia, 2011.

[73] D. Gifany, I. S. Amiri, M. Ranjbar, and J. Ali, Logic Codes Generation and Transmission Using an Encoding-Decoding System, International Journal of Advances in Engineering & Technology (IJAET), 5(2), 2013, 37-45.

[74] I. S. Amiri, A. Nikoukar, J. Ali, and P. P. Yupapin, Ultra-Short of Pico and Femtosecond Soliton Laser Pulse Using Microring Resonator for Cancer Cells Treatment, Quantum Matter, 1(2), 2012, 159-165.

[75] J. Ali, M. A. Jalil, I. S. Amiri, and P. P. Yupapin, Fast and slow lights via an add/drop device, presented at the ICEM, Legend Hotel, Kuala Lumpur, Malaysia, 2010.

[76] J. Ali, A. Afroozeh, I. S. Amiri, M. Hamdi, M. Jalil, M. Kouhnavard, and P. Yupapin, Entangled photon generation and recovery via MRR, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lumpur, Malaysia, 2010.

[77] A. Afroozeh, I. S. Amiri, M. Kouhnavard, M. Jalil, J. Ali, and P. Yupapin, Optical dark and bright soliton generation and amplification in Enabling Science and Nanotechnology (ESciNano) Conference, Malaysia, 2010, 259-263.

[78] J. Ali, M. A. Jalil, I. S. Amiri, Afroozeh, M. Kouhnavard, and P.

P. Yupapin, Generation of tunable dynamic tweezers using dark-bright collision, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lukpur, Malaysia, 2010.

[79] J. Ali, M. Aziz, I. S. Amiri, M. Jalil, A. Afroozeh, I. Nawi, and P. Yupapin, Soliton wavelength division in MRR and NRR Systems, Presented at the AMN-APLOC International Conference, Wuhan, China 2010.

[80] A. Afroozeh, M. Bahadoran, I. S. Amiri, A. R. Samavati, J. Ali, and P. P. Yupapin, Fast Light Generation Using Microring Resonators for Optical Communication, presented at the National Science Postgraduate Conference NSPC, Universiti Teknologi Malaysia, 2011.

[81] J. Ali, H. Nur, S. Lee, A. Afroozeh, I. S. Amiri, M. Jalil, A. Mohamad, and P. Yupapin, Short and millimetre optical soliton generation using dark and bright soliton, presented at the AMN-APLOC International Conference, Wuhan, China, 2010.

[82] F. K. Mohamad, N. J. Ridha, I. S. Amiri, J. A. Saktioto, and P. P. Yupapin, Effect of Center Wavelength on MRR Performance, presented at the International Conference on Experimental Mechanics (ICEM), Kuala Lumpur, Malaysia, 2010.

[83] J. Ali, A. Afroozeh, I. S. Amiri, M. Jalil, and P. Yupapin, Wide and narrow signal generation using chaotic wave, presented at the Nanotech Malaysia, International Conference on Enabling Science & Technology, Kuala Lumpur, Malaysia, 2010.

[84] F. K. Mohamad, N. J. Ridha, I. S. Amiri, J. A. Saktioto, and P. P. Yupapin, Finesse Improvements of Light Pulses within MRR System, presented at the International Conference on Experimental Mechanics (ICEM), Kuala Lumpur, Malaysia, 2010.

[85] S. Saktioto, M. Hamdi, I. S. Amiri, and J. Ali, Transition of diatomic molecular oscillator process in THz region, presented at the International Conference on Experimental Mechanics (ICEM), Legend Hotel, Kuala Lumpur, Malaysia, 2010.

[86] A. Afroozeh, I. S. Amiri, M. Bahadoran, J. Ali, and P. P. Yupapin, Simulation of Soliton Amplification in Micro Ring Resonator for Optical Communication, Jurnal Teknologi (Sciences and Engineering), 55, 2012, 271-277.

[87] I. S. Amiri, G. Vahedi, A. Nikoukar, A. Shojaei, J. Ali, and P. Yupapin, Decimal Convertor Application for Optical wireless Communication by Generating of Dark and Bright Signals of soliton, International Journal of Engineering Research & Technology (IJERT), 1(5), 2012.

[88] A. Nikoukar, I. S. Amiri, A. Shahidinejad, A. Shojaei, J. Ali, and P. Yupapin, MRR quantum dense coding for optical wireless communication system using decimal convertor, in Computer and Communication Engineering

(ICCCE) Conference, Malaysia, 2012, 770-774.

[89] A. Afroozeh, I. S. Amiri, J. Ali, and P. P. Yupapin, Determination of FWHM For Solition Trapping, Jurnal Teknologi (Science and Engineering), 55, 2012, 77-83.

[90] M. A. Jalil, I. S. Amiri, C. Teeka, J. Ali, and P. P. Yupapin, All-optical Logic XOR/XNOR Gate Operation using Microring and Nanoring Resonators, Global Journal of Physics Express, 1(1), 2011, 15-22.

[91] I. S. Amiri, A. Nikoukar, and J. Ali, Quantum Information Generation Using Optical Potential Well, presented at the Network Technologies & Communications (NTC) Conference, Singapore, 2010-2011.

[92] S. Saktioto, J. Ali, M. Hamdi, and I. S. Amiri, Calculation and prediction of blood plasma glucose concentration, presented at the ICAMN, International Conference, Prince Hotel, Kuala Lumpur, Malaysia, 2010.

[93] J. Ali, C. Teeka, R. Jomtarak, P. Yupapin, M. Jalil, and I. Amiri, ASK-to-PSK generation based on nonlinear microring resonators coupled to one MZI arm, presented at the Nanotech Malaysia, International Conference on Enabling Science & Technology, Kuala Lumpur, Malaysia, 2010.

[94] S. Saktioto, M. A. A. Fadhali, J. Ali, H. Shah, P. P. Yupapin, and I. S. Amiri, Power transient of time evolution for dynamic fusion fiber coupling monitoring, Optik, 2010.

[95] C. Teeka, S. Songmuang, R. Jomtarak, P. Yupapin, M. Jalil, I. Amiri, and J. Ali, ASK-to-PSK Generation based on Nonlinear Microring Resonators Coupled to One MZI Arm, in AIP Conference Proceedings, 2011, 221-223.

Available online at http://www.nrjp.co.in

Journal of Management Science, Operations & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 46-50p, August, 2018

National Research & Journal Publication

Review Article

Antenna It's History: an Overview

Pradeep kr. Jha

Dept. Of physics M.l.S.M. College, Darbhanga, Bihar

Abstract

Antennas are our electronic eyes and ears on the world. They are our links with space. They are an integral part of our civilization. Antennas have been around for a long time, millions of years, as the organ of touch. But in the last 100 years they have acquired a new significance as the connecting link between a radio system and the outside world.

Key-words*: Antenna, History, radio system*

INTRODUCTION

In the year 1864, James Clerk Maxwell (1831-1879) proposed his "Dynamical Theory of the Electromagnetic Field", wherein he observed theoretically that an electromagnetic disturbance travels in free space with the velocity of light. He then conjectured that light is a transverse electromagnetic wave. Although the idea of electromagnetic waves was hidden in the set of equations proposed by Maxwell, he had, in fact, said virtually nothing about electromagnetic waves other than light, nor did he propose any idea for generating such waves electromagnetically.

The first radio antennas were built by Heinrich Hertz, a professor at the Technical institute in Karlsruhe, Germany. In 1886, he assembled an apparatus we would now describe as a complete radio system operating at meter wavelength with an end-loaded dipole as the transmitting antenna and a resonant square-loop antenna as receiver. He also experimented with a parabolic reflector antenna.

Although Hertz was the pioneer and father of radio, his invention remained a laboratory curiosity until 20 years-old Guglielmo Marconi of Bologna, Italy, went on to add tuning circuits, big antenna and ground systems for longer wavelengths, and was able to signal over large distances. In mid- December 1901, he startled the world by receiving signals at St. Johns, Newfoundland, from a transmitting station he had constructed at Poldhu in Cornwall, England. Marconi became the Wizard of wireless.

With the advent of radar during World War II, centimeter wavelengths became popular and the entire radio spectrum opened up to wide usage. Thousands of communication satellites bristling with antennas now circle the earth in low, medium and geostationary orbits. Our probes with their arrays of antennas have visited the planets of the solar system and

beyond, responding to our commands and sending photographs and data at centimeter wavelengths [1].

Antennas are the essential communication link for aircrafts and ships. Arguably, nine different types of antennas have proliferated during the past 50 years in both wireless communication and radar systems. These nine varieties comprise dipoles/monopoles, loop antennas, slot/horn antennas, reflector antennas, microstrip antennas, log periodic antennas, helical antennas, dielectric/lens antennas and frequency-independent antennas. Each category possesses inherent benefits that make them more or less suitable for particular applications. When faced with a new system design, engineers change and adapt these basic antennas, using theoretical knowledge and general design guidelines as starting points to develop new structures that often produce acceptable results.

DISCUSSION

Antennas for cellular phones and all types of wireless devices link us to everyone and everything. With mankind's activities expanding into space, the need for antennas will grow to an unprecedented degree. Antennas will provide the vital links to and from everything out there. The future of antennas reaches to the stars.

The concept of the planar antennas was first proposed by Deschamps in 1953 [2]. However, practical antennas were developed by Munson [3, 4] and Howell [5, 6] in the 1970s. The numerous advantages of microstrip antenna, such as its low weight, small volume, and ease of fabrication using printedcircuit technology, led to the design of several configurations for various applications. With increasing requirements for personal and mobile communications, the demand for smaller and low-profile antennas has brought the microstrip antenna to the forefront [7-11].

A microstrip antenna in its simplest form consists of a radiating patch on one side of a dielectric substrate and a ground plane on the other side as shown in figure 1.1. The patch is generally made of conducting material such as copper or gold and can take any possible shape, but regular shapes are used to simplify analysis and performance prediction. The radiating patch and the feed lines are usually photo etched on the dielectric substrate. Radiation from the microstrip antenna can occur from the fringing fields between the periphery of the patch and the ground plane. Rectangular and circular microstrip resonant patches have been used extensively in a variety of array configurations. A major contributing factor for recent advances of microstrip antennas is the current revolution in electronic circuit miniaturization brought about by developments in large scale integration. As conventional antennas are often bulky and costly part of an electronic system, microstrip antennas based on photolithographic technology are seen as an engineering breakthrough. For a rectangular patch, the length L of the patch is usually $0.3333\lambda o < L < 0.5\ \lambda o$, where λo is the free-space wavelength. For the fundamental TM_{10} mode excitation, the patch length is slightly smaller than $\lambda/2$, where λ is the wavelength in the dielectric medium related to free-space wavelength λ_0 as $\lambda_0 / \varepsilon_{ef}$ and ε_{ef} is the effective dielectric constant of a microstrip line of width *W*. The value of ε_{ef} is slightly less than the dielectric constant ε_r of the

substrate because the fringing fields from the patch to the ground plane are not confined in the dielectric only, but are also spread in the air. To enhance the fringing fields from the patch, which account for the radiation, the width *W* of the patch is increased. The fringing fields are also enhanced by decreasing ε_r or by increasing the substrate thickness *h*. Therefore, unlike the microwave integrated circuit (MIC) applications, microstrip antenna uses microstrip patches with larger width and substrates with lower ε_r and thicker *h*. For microstrip antenna applications in the microwave frequency band, the height *h* of the dielectric substrate is usually $0.003\ \lambda_o \leq h \leq 0.05\ \lambda_o$. The patch is selected to be very thin such that $t << \lambda_o$ where *t* is the patch thickness. The dielectric constant of the substrate (εr) is typically in the range $2.2 \leq \varepsilon_r \leq 12$.

In the last few years, the trend of the mobile phone technology has been dramatically decreased the weight and size. Due to enhancement in this trend, the antennas used for mobile hand held devices have to be small, light-weighted, low profile, and have an omini–directional radiation pattern in the horizontal plane. However, still there are challenges in the antenna's performance during interaction with the user's head and hand. The movement of the user during usage of the mobile hand held device often lead to gain, radiation pattern and input impedance change. Therefore, antennas used in hand-held transceivers for personal communications have been recognized as crucial elements that can either improve or limit system performance. This is particularly true in terms of bandwidth and efficiency. Therefore, to carefully design a handset with superior performance, engineers need to give attention to the design of the antenna systems of the mobile transceiver.

Mobile Antenna Requirements and Challenges

The explosive growth in the demand for wireless communication and information transfer using handsets and personal communication (PCS) devices has created the need for major advancements of antenna design as a fundamental part of any wireless systems. In most cases, the handheld antenna is placed on a small plastic/conducting box that is in close proximity to biological tissue of user body and also the surrounding crowded electromagnetic waves. At the same time, the system must radiate low power and provide reliable communication of voice and possibly data (D. M. Pozar & D.H. Schaubert, 1995) Added to the operational requirements, the user and service providers demand wireless units with antennas that are small and compact, cost effective for manufacturability, low profile and easy to integrate with the wireless communication system. The antenna designer must also consider the following electrical characteristics of the antenna which include (W. Stuzman & G.Theile, 1998; C. A. Balanis, 1997).

1. antenna tuning (operating frequency);
2. VSWR and Return loss (input impedance);
3. Bandwidth;
4. Gain and directivity;
5. Radiation pattern;

6. Diversity;

But significant new variables are introduced as:

1. The size of the chassis (expressed as a function of wavelengths);

2. SAR (Specific absorption rate) of the antenna.

These design considerations have led antenna designers to consider a wide variety of antenna structures to meet the often conflicting needs for wireless systems as: operation frequency, return loss (VSWR), bandwidth, gain and directivity, location and orientation of the antenna, radiation pattern and diversity.

Microstrip Antennas

The microstrip patch antennas (J. R. James & P. 5. Hall, 1989) has increasingly wide range of applications in wireless communication systems as mobile and satellite communication systems due to their great advantages. Simply, microstrip structure consists of a thin sheet of low-loss insulating material called the dielectric substrate. It is completely covered with a metal on one side, called the ground plane, and partly metalized on the other side, where the circuit or antenna patterns are printed. Components can be included in the circuit either by implanting lumped components or by realizing them directly within the circuit as shown in Figure 1.1.

Fig. 1.1. Microstrip patch antennas

Conclusion

One type of antennas that fulfills most of the wireless systems requirements are the micros trip antennas. These antennas are widely used on base stations as well as handsets. Microstrip antennas have a variety of configurations and have been the topic of what is currently the most active field in antenna research and development.

References

1.Ahmed Elzooghpy, "Smart anterma engineering", Artech House, Inc., Mobile communication series, 2005.

2.Ahmed Khidre, Hala Elsadek and Hani Fikry," Reconfigurable UWB printed antenna with band rejection covering, IEEE8O2.lla/h', IEEE Tnt. Symp. on antennas and propagation, South Carolina, June. 2009

3.Angeliki Alexiou and Martin Haardt," Smart anterma technologies for future wireless systems: trends and challenges", IEEE communication magazine, Sep. 2006, pp: 90- 97.

4.A. P. Zhao and J. Rahola, "Quarter-wavelength wideband slot anterma for 3–5 GHz mobile applications," IEEE Antennas Wireless Propag. Lett., vol. 4, pp. 421–424, 2005.

5.Bluetooth information web site," www.anycom.com, Bluetooth@anycom.com".
6.C. A. Balanis, Antermas theory: Analysis and Design, second edition, John Wiley & Sons, USA, 1997, ch.2, 6, 7, 12, 14.
7.C. P. Huang, "Analysis and design of printed antennas for wireless communications using the finite difference time domain technique," Ph.D. Dissertation, Electrical Engineering Department, University of Mississippi, December 1999.
8.C. R. Rowell and R. D. Murch, "A capacitively loaded PIFA for compact mobile telephone handsets," IEEE Trans. Antennas Propagat., vol. 45, no. 5, pp. 837-842, May 1997.
9.Dalia Nashaat, hala Elsadek and hani Ghali, "Single Feed compact quad band PIFA anterma for wireless communication Applications", IEEE Transactions on Anterma and Propagation, Vol. 53, No. 8, Aug 2005, PP: 3631: 2635.
10. Dalia Nashhat, Hala Elsadek and Haril Ghali "A Wideband Compact Shorted Rectangular Microstrip Patch Anterma with U-Shaped Slot," will be published in the Proceedings of IEEE Antenna and Propagation Symposium, Columbus, Ohio, June 2003.
11. D. M. Pozar and D.H. Schaubert, "Microstrip Antermas The Analysis and Design of Microstrip Antermas and Arrays," IEEE Press, New York, 1995.

Available online at http://www.nrjp.co.in

Journal of Management Science, Operations & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 51-53p, August, 2018

National Research & Journal Publication

Review Article

Studies on Coupling of Fibers

Bijendra Mohan

Research Scholar, L.N.M.U DARBHANGA, Bihar

Abstract

The approach taken for analysis is an application of results presented with a comparison of the results of an exact analysis of the mode coupling problem with a Gaussian best fit. The analytical model closely mimics and the model is extended using the diffusion model . As stated , the problem is considered as crosstalk between two optical fibers whose mode field radii are broadened by diffusion. Thus there is an interaction between the fields of the two fibers and optical power is exchanged between the two fibers.

Key-words *Fibers, crosstalk, & Diffusion model*

INTRODUCTION

One fiber can be regarded as the perturbed fiber (i.e. the fiber into which no optical power is launched) and the second can be regarded as the perturbing fiber into which optical power is launched.

The ray analysis approach treats the problem as one of evanescent field interaction, i.e. frustrated total internal reflection or tunneling.[1-4] This approach is particularly useful to our analysis as the phenomenon of crosstalk between two parallel identical fibers can be used, since the underlying assumption is that there is no *z* dependent non-uniformity in the region of interest. This proceeds from the analysis of diffusion in the earlier chapter on diffusion, where the assumption was made that diffusion from the fibers is purely radial.

$$\nabla_t^2 \Psi + (k_0^2 n^2 - \beta^2)\psi = 0 \qquad (1)$$

2 CROSSTALK

Two caveats must be borne in mind; that the analysis is correct only under the weakly guiding assumption and that the optical separation is sufficient to ensure that superposition of the modal fields is valid. Consider two fibers that are in proximity to each other as indicated in Fig (3.2-1).

We restrict the analysis to the case of *2x2* couplers that are single moded at the wavelength of interest when considered in isolation. Coupling can be represented by two coupled differential equations. The field solutions are constructed from solutions to the scalar wave equation, and thus the polarization of the field is not accounted for in the strict analysis. The scalar wave equation can be represented as:

where Ψ is a field solution in any Cartesian coordinate of **E** or **H** representable in the standard cylindrical coordinate system. *k0* is the free space wave number, *n* the refractive index in the region of interest which for the case of the index profiles under consideration is symmetrical about the *z* axis, and a function of the radial coordinate *r*. is the propagation constant. The expressions for the **E** field may then be reduced to:

$$E_{x1}(x,y,z) = a_1(z)\Psi_1(x,y)exp(-j\beta z)/\sqrt{N_1} = b_1(z)\Psi_1(x,y)/\sqrt{N_1} \quad (2)$$

and

$$E_{x2}(x,y,z) = a_2(z)\Psi_2(x,y)exp(-j\beta z)/\sqrt{N_2} = b_2(z)\Psi_2(x,y)/\sqrt{N_2}, \quad (3)$$

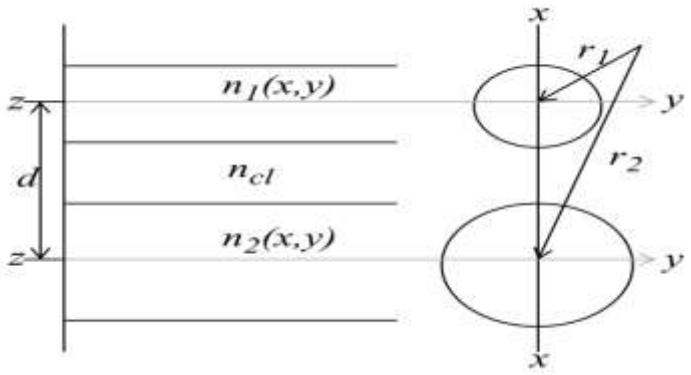


FIGURE 1 Coordinate System for Crosstalk Analysis

where the *a's* and *b's* represent the modal amplitude coefficients. Note the explicit *z* dependence of the amplitude coefficients. The factors N_1 and N_2 are normalization parameters that arise from the process of treating these as orthonormal modes. These may be represented generically as:

$$N = \frac{n_{co}}{2}\sqrt{\frac{\varepsilon_0}{\mu_0}}\int_{A_\infty}\Psi^2 dA, \quad (4)$$

where n_{co} denotes the core index of refraction. The overall region of integration is represented by the area A_∞ where the cladding is assumed to extend to infinity. It can be shown that the coupled integro-differential equation that represents the process of treating one fiber as a perturbation of the other is:

$$\frac{db_1}{dz} - j\beta_1 b_1 = \frac{jk}{4}\sqrt{\frac{\varepsilon_0}{N_1\mu_0}}\int_{A_\infty}(n^2 - \bar{n}_1^2)\Psi\bar{\Psi}_1 dA. \quad (5)$$

For a strict analysis the infinite set of radiation modes and the finite set of guided modes have to be considered. This would mean solving the expression for the scalar field for a large number of modes and thus having a large number of coupled equations. In order to simplify the problem the principle of superposition can be applied under the approximation that the fields in the fiber are a linear sum of the field of the individual fibers in isolation. This approximation of course assumes that the fibers are not too close to each other optically, and that they are very similar, if not identical. Thus we can approximate the total field for the waveguide by the expression

$$\Psi(x, y, z) = b_1(z)\Psi_1(x, y)/\sqrt{N_1} + b_2(z)\Psi_2(x, y)/\sqrt{N_2}. \quad (6)$$

This when substituted into equation (5) gives the result

$$\frac{db_1}{dz} - j(\beta_1 + C_{11})b_1 = jC_{12}b_2. \quad (7)$$

Similarly, we treat the first fiber as being perturbed by the presence of the second fiber, and obtain

$$\frac{db_2}{dz} - j(\beta_2 + C_{22})b_2 = jC_{21}b_1. \quad (8)$$

CONCLUSION

The largest value for the fundamental mode, and hence the trial function is an accurate representation of the field solution for the fundamental mode. In the selection of the Gaussian approximation for the analysis of the coupler problem, the selection was made on the basis of the fact that the formalism allowed use of both arbitrary profiles as well as provided closed form solutions for a Gaussian distributed index profile.

REFERENCES

1. [Cra75] Crank, J., *The Mathematics of Diffusion*, Clarendon Press, Oxford, 1975.

2. [Abr70] Abramovitz, M., and Stegun, I., *Handbook of Mathematical Functions*, Dover, NY, 1970.

3. [Car59] Carslaw, H.S. and Jaeger, J.C., *Conduction of Heat in Solids*, Oxford Univ. Press, NJ, 1959.

4. [Hau10] Haus, H.A. and Huang, W., *Coupled Mode Theory*, Proc. IEEE, v. 79, no. 10, pp. 1505-1518, 1991.

Available online at http://www.nrjp.co.in

Journal of Management Science, Operations & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 54-60p, August, 2018

National Research & Journal Publication

Review Article

Morphological Analysis On Air-Breathing Fishes: An Overview

Kamini Kumari

Research Scholar, L.N.M.U Darbhanga, Bihar

Abstract

This article reports about the air-breathing fishes which deals with morphology, histochemical analysis of respiratory members and muscles, morphometrics and development of respiratory organs, hematology and other parameters. The scientific significance and application of the studies of functional morphology and physiology in understanding the alteration caused by pollutants have also been elucidated.

INTRODUCTION

The air-breathing structures appeared in freshwater fish during the late Silurian or early Devonian period and are thought to have evolved as adaptation to hypoxic water conditions due to severe periodic droughts (Smith 1931;Johansen 1970).Recent studies on air-breathing fish have demonstrated that various types of morphological and physiological adaptations have made it possible for fish to utilize aquatic and aerial respiration. The morphological and physiological adaptations in these fishes are designed in a manner so that they derive maximum advantage of their surrounding environment. There is an intimate relationship among the physico-chemical characters of habitat, nature of biota, food chain and finally the morpho-physiological adaptation of animals.

2. Morphology

The structures of the different types of respiratory organs have been studied for many years by several scientists. Munshi (1961, 1962, 1962a, 1968), Hughes and Munshi (1973), Dutta (1968), Jordan (1976), Peters (1978), and Burggren (1979) found/ that certain air-breathing fishes such as *Clarias batrachus, Heteropneustes fossilis*, Blue gourami, *Trichogaster trichopterus, Anabas, Macropodus* and *Betta* possess labyrinthine air-breathing organs. These organs are derived from the epibranchial regions of the first and second branchial arches, and extend dorsally as plate-like organs to fill the suprabranchial chamber and the air-sacs which are the extensions of the opercular cavity or branchial chamber. The earlier hypothesis of Munshi (1962b) that the "respiratory islets" of *H.fossilis* and *C. batrachus* are modified lamellar structures has been confirmed later by electron microscopic studies of Hughes and Munshi (1973a). According to them, the cells forming the vascular spaces in the dendritic organs and respiratory islets are typical pillar cells of the gills.

Although the suprabranchial chambers in the Anabantidae group are extensions of

branchial chambers and the labyrinthine organs which have developed on the epibranchials, the "respiratory islets" of the accessory respiratory organs have evolved in different fashion. The hypothesis that the labyrinthine organs and the respiratory islets of the suprabranchial chambers represent modified gill structure (Munshi 1968) is now no longer tenable as the electron microscopic studies of Hughes and Munshi (1973a) revealed that in *Anabas testudineus* the pillar cells of the air-breathing organs do not have the same relationship as in gills, but are modified epithelial cells. Obviously we are dealing with analogous rather than homologous structures that are used to serve the same function, supporting the contiguous vascular units which make up these respiratory organs. Such a supporting function is clearly of importance. During evolution, different structural arrangements have been selected to provide surfaces with minimum diffusion barrier between blood and the respiratory medium (Hughes and Munshi 1968). Further, the blood capillaries of the respiratory islets of Anabas are unique structures, having a series of most characteristic type of unicellular valves ever discovered in any animal system so far (Hughes and Munshi 1973a). These valves control the movement of blood through the respiratory islets. In *Amphipnous cuchia* and *Channa* sp. the suprabranchial chambers are the extensions of the pharynx. The vascular mucosa of the air-sacs have evolved independently (Hughes and Munshi 1973a) and not from the gill lamellae as it appears in the histological preparations under light microscope (Munshi 1962a; Munshi and Singh 1968).

In Amphipnous (Monopterus) cuchia, the structure of the valve is very unique. It projects freely into the papilla lumen and appears to be involved in the regulation of blood flow through individual papilla (Hughes and Munshi 1973a). These structures were discovered for the first time and are not only new contributions to knowledge, but open up new lines of further research.

In Periophthalmus vulgaris and Boleophthalmus boddaereti, opercular chambers are modified for air-breathing purposes. The accessory respiratory organs of P. vulgaris provide an excellent example of adaptation by modification of opercular chambers (Singh and Munshi 1969). In this fish, the opercular chambers have enlarged and become vascularized for respiratory purposes. Intricate mechanisms for opening and closing of the inhalant and exhalent apertures have evolved and the branchiostegal apparatus has developed a special type of safety valve which is workable by stripes of muscles. Further, the studies on ultra structure of gills of these air-breathing fishes have made new contributions to our knowledge. The earlier hypothesis of Munshi and Singh (1968a) that the pillar cells are modified smooth muscle cells have been confirmed (Munshi 1976).

Some other forms of accessory gas exchange organs have evolved in numerous groups offish in order to obtain oxygen from air. These air-breathing organs may be in the form of modified swimbladders, pharyngeal cavities, stomach and intestine (Johansen 1966; Munshi 1976; Singh 1976). Kramer and McClure (1980) found that similar to other callichthyids, the posterior end of the

intestine of Corydoras aeneus works as an accessory respiratory organ and its anterior end is provided with a muscular bulb. Generally, these organs are utilized for oxygen uptake and gills are used for the elimination of CO_2, and these processes seem to be similar to aquatic respiration (Randall et.al 1978; Burggren 1979).

It has been observed by Jordan (1976) that some air-breathing fishes are facultative air-breathing and can survive indefinitely on dissolved on dissolved oxygen, while some such as *Protopterus*, *Lepidosiren* and *Electrophorus* are obligate air-breathers that will drown when access to air is denied. She also found that Clarias batrachus is a bimodally breathing teleost. C. Batrachus possesses an air-breathing organ with highly branched dentritic organs or respiratory 'trees' that develop as outgrowths of the second and fourth gill arches, and are located in the suprabranchial chamber.

Histochemistry

3.1 Histochemical Studies Of The Respiratory Membrance

A complete knowledge of the cellular structure of the respiratory membrane of the air-breathing organ is essential to understand its physiology. The histochemical study of the respiratory membrane reveals five kinds of specialized cells: (a) mucous cells, (b) adicophil granular cells, (c) basophil mast cells, (d) large bi-or trinucleate glandular cells, and (e) mitochondria rich cloride cells in the gills and accessory respiratory organs of many air-breathing fishes (Munshi 1960).

The typical goblet type of mucous glands are present in large numbers in freshwater fishes such as, Catla catla, Labeo rohita, Channa punctatus, Mastracembellus armatus, Clarias batrachus, Heteropneustes fossilis. In C. catla these respond to the chloride test (Munshi 1964). This means that besides mucous secretion, they also play an important role in chloride regulation. In air-breathing fishes *viz* C. *punctatus*, C. *batrachus* and *H. fossilis* only few mucous cells give positive reaction with Ag N03/HN03 test for chloride. The medullary hormones of adrenal have profound effect on the mucous cells of air-sacs and the gills of *H. fossilis* and M. *aculeatum* respectively (Guha *et al* 1967).The sulphated acid mucopolysaccharide component of the mucous keeps the air-sac moist and lubricated during gaseous exchange.

The acidophil granular cells of the gill epithelia are diastase resistant, PAs-positive. Those belonging to the connective tissue system are PAs-negative, however, almost all the granular cells are PAs-positive after extraction of lipids. The granules of these cells are composed of tyrosine-rich protein. The cells also appear to contain a large amount of RNA. The eosinophilic granular cells appear to contain carbohydrate, protein and lipid firmly bound with each other. Some of the cells give positive reactions for alkaline phosphatase. These cells do not respond to $AgN0_3/HN0_3$ test for chloride (Singh and Munshi 1968).

The basophilic mast cells are present in large numbers in the sub-epithelial connective tissues of the gill lamellae of *Hilsa ilisha.* They are closely associated with blood capillaries (Munshi 1960). It is quite meaningful that mast cells (which are reservoirs of heparin and histamine) are found in the gills of fishes.

The bi- and trinucleate glandular cells are found in the gills of siluroid fishes. They have been derived from the glands of skin of these fishes (Munshi 1960). The cytomorphosis of these glands has been studied for the first time and throw light on their origin (Mittal and Munshi 1970).

Chloride cells are found in good numbers in many of the air-breathing fishes *viz Anabas* and *Clarias* which live in brackish waters also. The endoplasmic reticulum is very well developed and a large number ofmitochondria is found in these cells (Hughes and Munshi 1973a).

Large amounts of reserve fats have been discovered in true air-breathing organs of amphibious fishes (Singh *et a11973).* The stored lipids lie in the well-developed fat cells of the connective tissue layer between the respiratory islets and the muscles of the airsacs. A direct correlation exists between the vascularity of the organs and the concentration of the fat globules, and they contain both acidic and neutral fats. The pharmacological action of adrenalin and atropine was effective in bringing about complete mobilization of the fat deposits of the air-sacs of *Saccobranchusfossilis in vivo* condition.

3.2 Enzyme Histochemistry Of The Respiratory Muscles

The gill ventilation is under the influence of buccal pressure and opercular suction pumps. These pumps are operated by means of a series of respiratory muscles. The enzyme histochemistry of these respiratory muscles has opened up a new field of investigation and it also reveals that the muscles operating these respiratory pumps are composite in nature. Red, white and intermediate muscle fibers have been distinguished in the respiratory muscles depending on their intensity of reaction for succinic dehydrogenase (Munshi *et a11975).* It has been noted that the muscles innervated by the facialis nerve are dominated by red fibers, whereas those innervated by trigeminal are dominated by white muscle fibers (Ojha and Munshi 1975). The cytochemical differentiation of the muscle fibers will reflect their metabolic activities during gill ventilation. The combined study of ultra structure and enzyme activities of muscle fibers provides an in depth understanding of the muscle physiology which can be correlated with behavioral patterns of air-breathing fishes.

Both electron microscopy and enzyme determination techniques were used by Hochachka *et al* (1978) and Johnston (1979) to determine the ultra structures and enzyme activities of white and red muscle fibers of *Aruana* and *Arapaima,* both obligate air breathers.

Their study reveals that the white muscle fibers in both species possess a rather similar ultra structure, characterized by large diameter, very few mitochondria, and few capillaries. They also found that white muscle fibersof *Aruana* displayed higher levels of enzyme activity, while enzymes in aerobic metabolism occurred at about one half the levels in *Arapaima.*

No red muscle was found in *Aruana, but* it was present in *Arapaima* and was fueled by glycogenand lipid droplets. Their studies led to a revealing conclusion that the surface skimmer sustained a higher oxidative capacity in its myotomal muscles than that of the facultative air-breather.

4. Morphometrics and development of respiratory organs

An earlier study (Das 1927) detailed only the morphometric aspect of the air-breathing organ of *Channa striatus* and C. *punctatus* during their ontogenic development. Whereas the more recent morphometric studies (Hughes *et a11973;* Hakim *et al1978)* explain the role of the gas exchange machinery of the amphibious fishes during their development and growth. Recently, Dube and Munshi (1974) have observed that *Anabas testudineus* of the lower weight group survived for a longer period than that of higher weight group, when prevented from surfacing. They reasoned that as the fish grow, the rate of increase in gill surface becomes less than that in the surface of the accessory respiratory (labyrinthine) organ.

Dube and Munshi (1974)also found out that the O2gas-diffusing capacity of the gill of *Anabas testudineus* decreases at faster rate with increasing body weight than that of *Clarias* and *Heteropneustes.* These findings explain why *Anabas* ofhigher weight group dies when not allowed to breathe atmospheric air whereas the gills and skin of *Clarias* and *Heteropneustes* are efficient enough to take care of the total metabolic demands of the fishes as they grow in size.The estimation of the diffusion capacity of the accessory respiratory organs of the air-sacs of *Amphipnous* are less suited for oxygen uptake than that of *Anabas.*

The morphometry of respiratory surface area can be used for gas transfer by using the following equation (Hughes and Morgan 1973)

$$VO_2 = K (A\ PO_2)/T.$$

where $V0_2$ = 0_2 uptake in ml 0_2/min; *A* is the area in cm^2 for gaseous exchange; $P0_2$ is the mean difference between the oxygen tensions of water and blood; K is the permeation coefficients (ml $0_2/m/cm^2$ mm Hg/min).

On the basis of morphometric deduction of the surface area, its physiological aspects can be inferred. These studies further have practical importance in rearing and transporting of these air-breathing fishes (Munshi and Ojha 1974; Munshi and Dube 1974; Munshi *et aI1974).* Other researchers (Lenfant and Johansen 1968; Farber and Rahn 1970; Hughes and Singh 1970a, b, 1971; Singh and Hughes 1971; Magid and Babiker 1975;Stevens and Holeton 1978;Magnuson *et al1982;* Ischimatsu and Itazawa 1983a, b) have also shown that there are considerable variations among air-breathing fishes in the degree of dependence on aquatic or aerial respiration depending on degree of development and efficiency of the respiratory and related structures, environmental limitations and metabolic needs of the fish.

5. Ecology, Pollutants And Air-Breathing Fishes

The extensive use of insecticides is continuously polluting fresh water. There are manifold effects of insecticides on living organisms including economically important fishes. They are also responsible for a number of physiological and biochemical disturbances. Metasystox is known to be the most widely used

insecticide against paddy sucking aphids, spiders, mites, saw flies etc. It has been proven by Natarajan (1981) that in the pesticide contaminated water, the air-breathing organs of *Channa striatus* playa very important role by extracting O2 from air during their stay in such contaminated water. He also observed the existence of DDT and Dieldrin-induced anemia as shown by the low erythrocyte count, low **Hb** content, light MCH and colour index in *Channa punctatus.* The progressive decrease in erythrocyte count, **Hb**concentration and total leucocyte count were found in C. *punctatus* exposed to malathion and methyl parathion. It has also been observed by Natarajan (1978) that when a climbing perch, *Anabas scandens* is exposed to a lethal dose of sumithion, it used its air-breathing organs extensively to overcome the pollution stress for survival.

6. Hematology:

Hematology And Other Blood Para-meters

A series of hematological studies on *Amphipnous, Anabas, Channa* and H*eteropneustes* indicate that the oxygen-carrying capacity of blood is related to body size of these amphibious fishes (Dube and Munshi 1973; Mishra *et al* 1977; Pandey *et al 1977).* Recently, a comparative study of the bloods of 45 species ofAmazonian fishes (Powers *et al* 1979) pointed out that thereis a significant difference between water and airbreathers CO_2 tension in the blood. Air-breathing fishes have much higher CO_2 tension in the blood and the arterial CO_2 tension of water breathers is generally below 5 torr (Rahn 1966).Whereas, in the air breathersCO_2 tension ranges from 15to 43 torr (Rahn and Garey 1973).

Thus, it is apparent that with the evolution ofair-breathing mechanism, adjustments occur at the molecular level of CO_2 which is the causative factor for efficient hemoglobin function to counteract the increased CO_2 load. Therefore, SOIPe of the differences in the hemoglobin of air and water breathers are related to the effect of carbon dioxide on the hemoglobins of the air-breathers (Farmer 1979). Further, while studying the effects of CO_2 on hemoglobin function of air-breathing fish, Farmer investigated three major points. First, to what extent are the oxygen binding properties of non-mammalian hemoglobins get influenced by CO_2 and whether these properties are independent of pH or not. Second, whether or not the hemoglobins of water breathers differ from the hemoglobins ofair-breathers with respect to the magnitude of the effect of carbamino CO_2 affinity. Third, whether or not there is a correlation between Bohr effectand effect of carbamino CO_2 on the O_2 affinity of hemoglobin. He also found that the blood CO_2 content of air-breathing fish and amphibians is much higher than that of water breathers, but hemoglobin showed no adaptation to an increased CO_2 load. But the drop in oxygen affinity of hemoglobin caused by CO_2 is increased by increasing pH for each hemoglobin examined.

7. Conclusion

Being a warm water tropical fish the air-breathers are not only widespread in India, but the Indian biologists have made significant contributions to the understanding of their functional morphology. Gross morphology and the behavioural aspects of the air-breathing fishes have been researched more

intensively than the applied aspects of physiology and effects of pollutants on morphology.

References

1. Babiker M M 1979 Respiratory behaviour, oxygen consumption and relative dependence on aerial respiration in the African lungfish *iProtopterus annectens* Owen) and an air-breathing teleost *(Clariaslazera); Hydrobiologia* **65** 117-187

2. Badawi H K 1971 Electrophoretic studies of serum protein of four Tilapia species (Pisces); *Marine BioI.* 896-98

3. Bader R 1937Bau, Entwicklung und Funktion des azessorischen atmungsorgan der Labyrinth fische;Z. *mss.Zool.* **149** 323—401

4. Benesch E and Benesch R E 1967 The effect of organic phosphates from the human erythrocyte on the allosteric properties of hemoglobin; *Biochem. Biophys. Res. Commun.* **26** 162-167

5. Bilgrami K S 1977 Studies on the deterioration of some pulses by fungi; *Indian Phytopathol.* **29** 374-377

6. Bishop I R and Foxon G E H 1968The mechanism of breathing in the South American lungfish *Lepidosiren paradoxa;* a radiological study; J. *Bioi. (London)* **154** 263-271

7. Burggren WWand Randall D J 1978Oxygen uptake and transport during hypoxic exposure in the Sturgeon *Acipenser transmontanus; Respir. PhysioI.* 34 171-183

8. Burggren WW 1979Bimodal gas exchange during variation in environmental oxygen and carbon dioxide in the air breathing fish *Trichoqaster trichopterus;* J. *Exp. Bioi.* **82** 197-213

9. Das B K 1927 The bionomics of certain air-breathing fishes of India, together with an account of the development of their air-breathing organs; *Philos. Trans. R.* Soc. *(London)* 216183-219

10. Deutsch H F and Goodloe M B 1945An electrophoretic survey of various animal plasma; J. *Bioi. Chem.* 1611-20

11. Dri1han A 1954 Study of the serum lipoprotein in some fish by means of paper electrophoresis; *Cr. Hebd. Seanc. Acad. Sci. Paris* 238 940-942

12. Dube S C and Munshi J S D 1973The quantitative study of the erythrocytes and haemoglobin in the blood of an air-breathing fish, *Anabas testudineus* in relation to its body size; *Folia haematol.* 100 436—446

Available online at http://www.nrjp.co.in

Journal of Management Science, Operations & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 61-70p, August, 2018

National Research & Journal Publication

Review Article

Marketing strategies of Selected Private Sector Commercial Bank

Dr. Prakash Chandra Vaish[1] & Govind Kaushal Vaishya (MBA)

[1]Associate Professor Faculty of Commerce, Govt. PG College, Hardoi UP

Abstract

This paper focuses on the marketing strategies of financial products adopted by various commercial banks in the private sector in the city of Kanpur and explains what they are currently doing in this area and the future prospects of marketing financial products. The current study is based on a questionnaire survey of eight commercial banks in the city of Kanpur to identify current marketing strategies. The study found that the marketing strategies adopted by these banks to market their products were poorly designed and incomplete. The study found that it is necessary to develop a more effective marketing strategy that is appropriate for the long-term growth of these banks. The study also found that they had very vague ideas about managing customer relationships.

KEYWORDS: *Services Marketing, Strategy, CRM, Advertising, Public Relations, Personal Selling.*

INTRODUCTION

India's financial services sector is quite competitive to face the changing environment today. Several external forces have affected the sector, including socioeconomic, regulatory and technical factors. Undoubtedly, changes in the regulatory environment have had the greatest impact in this area. In particular, the importance of technology for financial institutions of private commercial banks has increased.

Currently, there are 35 private commercial banks that operate in India and offer a variety of products, but there are some fundamental differences in structure and performance. As competition among them increases day by day, the commercialization of financial products is becoming a major concern.

This comparative study has focused on several aspects of marketing, advertising, positioning in the market and the promotion of some private commercial banks in the city of Kanpur. Private commercial banks operating in India constantly focus on understanding and anticipating the needs of customers. They have already made considerable progress in a very short period of time. Many banks have been rated as the best banks in Korea with an internationally recognized CAMEL rating. They have already become envious among competitors after achieving success in a highly dynamic industry. Commercial banks in the private sector offer a range of diverse financial products. They follow a variety of strategies to sell such products. In this article, we will mainly emphasize how private commercial banks market their products.

Objectives of the investigation.

The purpose of this study is to identify the strategies used by private commercial banks in India to market their products. At the same time, this white paper focuses on the understanding of important issues in the development of the financial services marketing strategy. We analyze the relative position of private commercial banks operated by the city of Kanpur, pricing strategies and promotional activities to determine their position in the market and competition.

How to collect data?

The key data on the bank's service marketing strategy were collected through a guide interview of each bank official. In this sense, structured questionnaires with 21 questions were used (see the Appendix of the questionnaire). Complementary data were collected from: Marketing, Marketing of financial products and other texts for brochures and reports of banks selected for this document..

APPENDIX: Sample Questionnaire

Marketing of banking services: a comparative study of some private commercial banks in the city of Kanpur

Name of the bank:

1. Do you use market segmentation for marketing financial products? As
2. Do you measure the needs of customers and the motivation for marketing financial products?
3. Do you use differentiation attributes to sell your product? Then how
4. What promotional tools do you use to sell your financial products?
5. What advertising media do you use to promote your product?
6. Create and use a brand image for product marketing?
7. What is the pricing policy for the product compared to its competitors?
8. How do you add the comfort of space (distance) to your customers versus your competitors?
9. Do you maintain a customer database in marketing of financial products?
10. Does your bank practice customer relationship management?
11. How does the bank manage customer relationships? Describe the various steps involved in this process.
12. How do you use Internet banking or electronic banking with a competitive advantage?
13. What are the key factors in the development and maintenance of customer relationships?
14. What specific tasks do relationship managers perform for marketing financial products?
15. How do I handle customer complaints?
16. What are the customer retention strategies?
17. How do you measure customer comments on the products offered?
18. What is your strategy to sell your product as an individual sale?
19. Do you use direct marketing techniques to promote your products? Then how
20. Does your bank participate in social marketing for marketing purposes?
21. What kind of social marketing are you doing?

Review of the literature

India's financial services sector is quite competitive to face the changing environment today. There are 30 commercial banks in the private sector in India, each offering different products and services, but there are some fundamental differences in structure and performance. As competition among them increases day by day, the commercialization of financial products is becoming a major concern. This white paper focuses on marketing strategies for financial products. First, it is important to know what your marketing strategy is and what financial products your bank offers.

Marketing strategy

A marketing strategy can be defined as an outline of the general marketing logic that a business unit expects to achieve the characteristics of its marketing objectives and target markets, positioning and marketing spending levels. Describe specific strategies for each element of the marketing mix and describe how they respond to the threats, opportunities and critical issues that are listed in your marketing plan.

Understanding the consumer of financial products

Understanding the needs and requirements of customers is a guiding philosophy of marketing. Marketing orientation Organizations must be able to see their business from the customer's perspective. The motivation of the consumer, the attitudes and perceptions of the company and its products, and the understanding of the decision-making process, as well as the understanding of the broader aspects of psychology and consumer behavior are necessary.

Identify and guide the financial perspectives.

The development of effective marketing strategies involves understanding the general patterns of consumer behavior of financial services, as well as financial institutions, especially commercial banks, to understand the differences between customer requirements and financial products. This problem of customer variation can be identified through market segmentation. The benefits of market segmentation can help you design your marketing strategy. The precision of market segmentation of financial institutions contributes to competitive advantage because it is one of the conditions to develop an effective marketing strategy. Several conditions have been pointed out that affect the effectiveness of the potential profitability of a marketing strategy, such as the ability to measure, the importance, the accessibility, the ability to act and the differentiation of objectives. Again, commercial banks can formulate different segmentations based on geographic or demographic variables.

Development and management of financial products.

The products are usually the basis on which customer satisfaction is created. Therefore, it is a key element of the marketing mix. The products provide the basis for competition, allow organizations to generate revenue and provide an indication of the strategic direction of the organization. Therefore, financial institutions are particularly interested in

the processes and procedures associated with new financial services and product development, and the factors that contribute to the successful adoption of new products; How to manage the life of the product to protect it from competition; A method of brand use to differentiate products in similar alternatives; When to recover low benefit products in that range; And how to effectively implement the retirement process with minimal adverse effects for banks and customers.

Distribution channel

The distribution includes a variety of activities that culminate in the creation of three types of utilities: time, place and property. From a temporal perspective, the implementation allows clients to conveniently access financial services. The products and services can be used by customers who are in a convenient and accessible location through the distribution with respect to their location. With respect to the distribution of possession, the customer gives the customer access to the product for future consumption or use. In addition, distribution functions communicate effectively with customers and provide a means for customers to communicate with banks.

Prices of financial instruments.

The price of a financial instrument can vary in many ways. Some prices are clear, others are not, some are based on monetary value, others are not. For example, the price of a financial instrument may be the interest rate of a loan, the notification required to withdraw money from the account, the fee for soliciting advice, the commission paid to a broker, such as a broker.

Advertising and promotion of financial products.

Promotions serve a variety of functions, including providing information about individuals and groups, persuading and educating them, harmonizing them with other elements of the marketing mix, securing new customers, retaining existing customers and improving employee morale. Projection of the image of the company. There are several ways in which banks can connect with customers and prospects. A specific combination of promotional methods is called "Promotional Blend". Includes mixed ads, promotions, personal sales, promotions and promotions, direct mail and direct response ads.

Build and manage relationships with customers.

Relationship marketing involves attracting, maintaining and improving customer relationships with organizations. Establishing relationships with customers is more than just a marketing function. This is an organizational philosophy that affects operations and processes, employees, customer service and quality.

Analysis of data and results

The purpose of this document is to identify marketing strategies for financial products in private commercial banks in India, especially in the city of Kanpur. The private bank of India is a government-owned bank, like a public sector bank. Private banks in India can be listed publicly. They can also be traded on the stock exchange. The private bank of India owns 18.2% of the total assets of the Indian banking industry.

We selected eight local commercial banks (PCB) as a sample to identify marketing strategies for financial products. The survey was developed to identify strategies related to the commercialization of financial products. The questionnaire was administered through a personal interview process with the people involved.

The banks that we surveyed for the research are:

1. Axis Bank
2. HDFC Bank
3. ICICI Bank
4. Oriental Bank Of Commerce
5. Karur Vysya Bank
6. ING Vysya Bank
7. Canara Bank
8. Badradi Urban Bank

Analytical Part of the Questionnaire

Marketing strategy is an integration of large number of factors; the questionnaire was designed in such a way that it could cover as much variables as possible. The analyses of data from the questionnaire are mostly descriptive. The analysis and findings are given bellow:

a. Segmentation: Bases for segmenting financial product customer

Understanding customer and their needs and requirements are important for developing marketing strategy. By analyses of questionnaire, it has been found that the factors affecting in segmentation of corporate banking and consumer / personal banking are different. The factors that banks emphasize to identify the needs and requirements are as follows:

For corporate customer:

- Financial Strength and credit worthiness
- Market Positioning
- Reputation & Integrity
- Industries
- Listed Companies

For personal banking:

- Occupation
- Income and Propensity to save
- Attitude towards banking
- Market demand
- Geographic concentration

b. Measuring the Customer Needs & Satisfaction

Out of the eight banks only one bank has said they measure the satisfaction through a written questionnaire and other two banks measure it by a simple verbal process. Others responded that they follow up the customer and through their post service behavior, they measure the customer satisfaction.

c. Product Differentiation Strategies

Innovation of new products is a rare case for the local PCBs in India rather they modify their offerings from that of their competitors. They do this by analyzing the reports, brochure or with client interview, Central Bank's information & regulations, lending rate, deposit rate etc. The main criterion for differentiation is made by the pricing policy through lowering the

lending rate from their competitors. Other criteria for differentiation are: maturity of products, market demand, and geographic concentration. The major common criteria for differentiation of financial products in Private Commercial Banks:

1. Pricing Policy/Interest Rate
2. Maturity of Products
3. Market Demand/Trend
4. Geographic Concentration

d. Promotional Tools used for Marketing of Financial Products

From the survey it has been found that banks use advertising media in a greater extent, personal selling in a limited extent. Public relations for promotional purpose are used in medium extent. Analysis on promotional tools used by banks shows that advertising are widely used method of promotion than personal selling. The ranking on three mediums of promotion:

1. Advertising
2. Personal Selling
3. Public Relations

i. Advertising Media:

All banks use newspapers as the promotional campaign and it is used to communicate about the new offer or any new news about the existing product and service of the banks. TV commercials are now widely used communicating vehicle by the banks as the survey showed. Out-door advertising media like bill-board, brochures etc are being used by the banks in medium extent. The rate of using three advertising media:

1. Newspapers 100%
2. Outdoor Advertising 85%
3. TV Commercials 6

ii. Personal Selling:

Personal selling in the PCBs is not used in an extensive or structured form. The role of personal selling is taken by the relationship managers but mainly by the officers in branches. Only 35% of the banks use the personal selling strategy to market their products. Visiting corporate clients negotiating with them for the rate, presentation, attending client for both corporate and personal banking etc are some job done by personal selling.

iii. Public Relation:

The trend of using public relations in marketing is growing over time. 63% of sampled banks use public relations activities to promote the bank's image as well as their products.

e. Branding Image and Symbol

Brand image and symbol are used in the form of a name or symbol or a combination of both to differentiate their offerings from those of their competitors. All banks try to use the brand image through an attractive slogan and by providing the quality service. Only one of the sample banks has Brand Manager. Priority Banking, Wealth Management Counseling, etc. are some slogans used by the banks to create a brand image.

f. Pricing Policy

From the analysis of surveyed data it can be said that 75% of the banks use competitive pricing strategy, 13% follow a mark-up pricing policy and 12% follow brand-pricing strategies which lead to

higher prices (interest rates) compared to those of their competitors.

g. Spatial Convenience

Spatial convenience is provided by branch location and technology driven delivery services such as ATM. To create spatial convenience branches and ATM booths should be established near the target customers. But branches and ATM booths of local PCBs do not consider the customers' convenience, rather they emphasize on rent advantage.

ATM is used to provide convenience by placing them in locations like shopping mall, in some central place of areas. Other banks are yet to take initiative to provide to provide service through ATMs. 63% PCBs use ATM booths only in Kanpur City.

h. Database Marketing

Private Sector Commercial Banks recently have started customer database for marketing purpose. The research shows that all of the sample banks use database for marketing of their products.

i. Internet Banking

Almost all the private banks have their own website. Internet Banking has already been started. But the operation is not so much extended.
Following are the common features of Internet Banking:

- View account balances and transaction history
- Verify deposits
- Check loan balances
- Check loan payment information
- View interest information
- Various information regarding their products

j. Customer Relationship Management

The survey shows that customer relationship management (CRM) is not being practiced by most of the private banks. They have vague idea about CRM. However, they try to follow these important aspects of CRM. These are as follows:

❖ **Customer Retention:**

100% of the surveyed banks give emphasize on retaining customers on the basis of existing customers base. Customer retention can also be made by effectively managing customers' complaints. The survey found that customers are retained through:

- Focus on existing customers
- Superior products & quality service
- Providing new facility
- Technological innovation
- Loyalty building & Satisfaction
- Quick response to customer needs and problems

♦ **Managing Customer Complaints**:

Customer complaints are identified by a number of ways: such as customer complaint box, written form, verbal form. The interviews show that the customer complaint boxes are generally not used by the customers. They usually make complaint about their problems telling the

relevant person in the bank. Complaints are managed by taking quick actions.

♦ Relationship Managers (RMs)

The concept of Relationship Manager (RM) is being now used in the commercial banks but the job description of RMs is not well structured as they should. The job of RM is generally performed by the branch officers. The interviews revealed that the main job of Relationship Managers to reach out to the customers both corporate and personal, to make sure that the job is done in a systematic manner within the client's time frame. The relationship managers for corporate banking are very much important because during the relationship the bank attempts to solve the problems of client organization and satisfy its needs through a series of transactions.

k. Large Corporate Customers versus Small Business Customers:

The study reveals that banks understand the differences in needs between larger corporate customers and small business customers. Small business customers are more dependent on banks as a source of finance, compared to large corporations which usually have multiple banking relationships and can use the bargaining power to obtain better deals. As a result of this, small businesses tend to be more focused on price than larger corporations which favor quality of service and relationship development.

l. Societal Marketing: A Means of Publicity:

The survey shows that a good number of Private Sector Commercial Banks have already been engaged in societal marketing. They do this by engaging publicity through contribution to the charitable issues, creating public awareness on some important issues and sponsorship for many events, ideas and education, or charitable issues. Some of these activities are: donation to flood affected, anti dowry movement, stipends for students, rehabilitation for acid burned etc. Sport sponsorship is used by the banks in the live telecast of cricket and a few games and offers a large viewing figures and opportunity of targeting a wide audience. This broadcast sponsorship is intended to create popularity of the bank.

Conclusion

This paper is focused on the marketing strategies of financial products in Private Sector Commercial Banks (PCBs) in Kanpur city with a view to identify what they are now doing in this regard and what are the future prospects of marketing of financial products. Marketing is being practiced by the banks is not so much structured. The research shows that there is a great potential in marketing of financial products which will make the banking sector more effective. The PCBs are now feeling the greater importance of marketing because of increased competition, technological innovation and government regulations. They are trying to create a vision of marketing with a large number of promising issues like: Customer Relationship Management, Branding,

Electronic Banking, Tele-banking, product differentiation attributes, etc. Thus the changing environment is creating a changing demand for marketing strategies and by developing an effective marketing strategy banks can retain market shares and profitability as well as competitive advantages. Finally, it can be concluded that although financial product marketing of PCBs in India is in a growing stage, it has a good potential for development, as banks are now aware of its importance.

References

1. Cetorelli, Nicola (2004). "Bank Concentration and Competition in Europe", *Journal of Money, Credit and Banking*, 543-558.
2. Channon, Derek F., (1995). *Bank Strategic Management and Marketing*, John Willy & Sons Ltd., England.
3. Chowdhury, A. M., "Relative Performance of Nationalized Commercial Banks and Private Commercial Banks, 1971-1989: A Critical Analysis", *Journal of the Institute of Bankers, India*, Vol. 36-41, December – June 1995.
4. Cowel, Donald W.(1988). *The Marketing of Services, Heinemann Professional* Publishing Ltd. Oxford.
5. Coult, H., (1982), *Management in Banking*, London: Pitman Publishing.
6. Government of India (2005). *India Economic Review*, Ministry of Finance, Kanpur.
7. Harison, Tina. (2003). *Financial Products Marketing*, 2nd Edition, McGraw-Hill.
8. Kotler P. and Armstrong, G., (2000). *Principles of Marketing*, 10th Edition, New Delhi
9. Mishkin, Frederic, S. (2001). *The Economics of Money, Banking and Financial Markets*, 6th Edition. Pearson Education, Boston, U.S.A.
10. Prime Bank Limited, (2007), Consumer Credit Schemes, http:// www. primebank. com/ consumer_credit.htm.
11. Rose, Peter S., (2005). *Commercial Bank Management*, International Edition, McGraw-Hill Irwin.
12. Swamy, M. R. and Vasudevan, S. V., (1985).*A Text Book of Banking*, S. Chand & Company, New Delhi.
13. Varshney, P. N., *Banking Law and Practice*, 19th Edition. Sultan Chand & Sons, New Delhi, 2001.

14. Zeithmal, V. A., Bitner, M. J., and Gremler, D.D. (2004) "*Service Marketing: Integrating Focus Across the Firm"*, 4nd Edition. McGraw- Hill, New York.

15. Md. Shahidul Islam Zahid (2008) "*Marketing of Bank Services: A Comparative Study on Some Selected Private Sector Commercial Banks in Kanpur City*", Daffodil International University Journal of Business and Economics, Vol. 3, No. 1, January 2008.

Available online at http://www.nrjp.co.in

Journal of Management Science, Operation & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 02. 71-74p, Aug, 2018

National Research & Journal Publication

Review Article

Mathematical Model of Biomass Generator

Dr. Ramawatar Prasad* Pramendra Kumar**

*Associate Professor & Head, Deptt. of Mathematics, K.S. College, Laheriasarai, Darbhanga

**Research Scholar, Deptt. of Mathematics, L.N.M.U., Darbhanga

Abstract

As an energy resource, biomass is very versatile in terms of the variety of forms. To simplify our study, we will concentrate only on fuelwood in this paper.

Introduction

A biomass gasifier based electricity generation systemconsists of biomass preparation unit, biomass gasifier, gas cooling and cleaning system, internal combustion engine suitable for operation in dual fuel mode, and electric generator. The producer gas obtained from fuelwood can be used to generate power using a diesel engine with diesel as pilot fuel and producer gas as main fuel [1].

The annual delivered electricity output (E_{Annual}) of a biomass gasifier energy system with rated power output of electricity generator is dependent on its capacity utilization factor (CUF). Assuming 21% conversion efficiency from fuelwood to electricity, it can be modelled using the following expression : $E_{Annual} = P_{BMG}(8760 \sim CUF)$ (1)

and hourly energy output is given by $E_{BMG}(t) = P_{BMG}(t) \times N_{DFEG}$ (2) where P_{BMG} is the rated power of biomass generator, $E_{BMG}(t)$ hourly energy output of biomass generator, and N_{DFEG} is the efficiency of dual fuel engine generator.

Mathematical model of biogas generator

Biogas can be produced from livestock manure and human sewage. A biogas based electricity generation system consists of a digester, a biogas collection tank, internal combustion engine, a generator as well as the piping and controls required for successful operation, The biogas is produced in the anaerobic digester. This biogas can be used to generate power using a diesel engine with diesel as a pilot fuel and biogas as main fuel [2].

Assuming 27% conversion efficiency from biogas to electricity, it can be modelled using the following expression as explained above:

$E_{Annual} = P_{BGG}(8760 \times CUF)$ (3) and hourly energy output is given by

$E_{BGG}(t)=P_{BGG}(t)\times N_{DFEG}$ (4) where P_{BGG} is the rated power, and $E_{BGG}(t)$ is the hourly energy output of biogas generator.

Mathematical model of SPV generator

Solar photovoltaic (SPV) technology involves the direct conversion of sunlight into electricity through the use of photovoltaic array. The sunlight impinging on panels, i.e. irradiance (incoming solar radiation), is measured in units W/m^2. The PV system power output (DC) has approximately a linear relationship to the insolation. Using the solar radiation available on the tilted surface the hourly energy output of the PV generator, can be calculated according to the following equation [3]

$E_{PVG}(t) = G(t) \times A \times N_{PVG}$ (5) where G(t) is the hourly irradiance in kWh/m^2, A surface area of the PV modules in m^2, $E_{PVG}(t)$ hourly energy output from PV, and N_{PVG} is the efficiency of PV generator.

All the energy losses in a PV generator, including connection losses, wiring losses and other losses, are assumed to be zero. Eq. (5) assumes that PV generator has a tracking system and a maximum power point tracker (i.e. n = 1). It also assumes that the temperature effects (on PV cells) are ignored.

Mathematical model of diesel generator

Conventional generators are normally diesel engines coupled to generator. Diesel generators supply energy in one of two ways. Either they generate only the power needed by the load (load following), or they generate at nominal power and the surplus energy (if any), is used to charge the battery bank. In this study, a diesel generator of both kinds is considered. The generator model is designed in such away that the diesel generator is always operate between 80-- 100% of their kW rating, while operating in conjunction with the battery bank and other renewable generators [4]. Energy generated by diesel generator in an hour t is defined by the following expression:

$E_{DEG}(t) = P_{DEG}(t) \times N_{DEG}$ (6) where P_{DEG} is the rated power, $E_{DEG}(t)$ is the hourly energy output, and N_{DEG} is the efficiency of diesel generator.

Mathematical model of rectifier

The rectifier is used to transform the surplus AC power from the MHG, BGG, BMG, DEG to DC power of constant voltage (when the energy generated by the hybrid energy system exceeds the load demand). The rectifier model is given below:

$E_{REC\text{-}OUT}(t) = E_{REC\text{-}IN}(t) \times T_{REC}$ (7)

$E_{REC\text{-}IN}(t) = E_{SUR\text{-}AC}(t)$ (8) at any time t, $E_{SUR\text{-}AC}(t) = E_{MHG}(t))\ E_{BGG}(t) + E_{BMG}(t) +$

$E_{DEG}(t) - E_{Load}(t)$ (9)

where $E_{REC\text{-}OUT}(t)$, $E_{REC\text{-}IN}(t)$ is hourly energy output and input from rectifier respectively, $E_{SUR\text{-}AC}(t)$ amount of surplus energy from AC sources, and N_{REC} is the efficiency of rectifier.

Mathematical model of charge controller

To prevent overcharging of a battery, a charge controller is used to sense when the batteries are fully charged and to stop or decrease the amount of energy flowing from the energy source to the batteries. The model of the charge controller is presented below:

$E_{CC\text{-}OUT}(t)=E_{CC\text{-}IN}(t)\times N_{CC}$(10)

$E_{CC\text{-}IN}(t)=E_{REC\text{-}OUT}(t)E_{SUR\text{-}DC}(t)$(11)

where $E_{SUR\text{-}DC}(t)$ is the amount of surplus energy from DC sources, $E_{CC\text{-}OUT}(t)$, $E_{CC\text{-}IN}(t)$ is hourly energy output and input from charge controller respectively, and N_{CC} is charge controller efficiency.

Mathematical model of inverter

The photovoltaic generator and battery produce DC power and therefore when the hybrid energy system contains an AC load, a DC/AC conversion is required. The inverter model for photovoltaic generator and battery bank are given below:

$E_{PVG\text{-}INV}(t)=E_{PVG}(t)\times N_{INV}$(12)

$E_{BATT\text{-}INV}(t)=[(E_{BATT}(t\text{-}1)\text{-}E_{Load}(t)/(N_{INV}\times N_{DCHG})]$ (13)

where $E_{PVG\text{-}INV}(t)$ is the hourly energy output from inverter (in case of SPV), $E_{BATT\text{-}INV}(t)$ hourly energy output from inverter (in case of battery), and N_{INV} is the efficiency of inverter.

Mathematical model of battery Bank

At any hour t the state of battery is related to the previous state of charge and to the energy production and consumption situation of the system during the time charge from t-1 to t. During the charging process, controller when the total output of all generators is greater than the load demand, the available battery bank capacity at hour t can be described by or decrease the amount of energy flowing

$E_{BATT}(t) = E_{BATT}(t\text{-}1))\ E_{CC\text{-}OUT}(t) \times N_{CHG}$ (14) On the other hand, when the load demand is greater than the available energy generated, the battery bank is in discharging state. Therefore, the available battery bank capacity at hour t can be expressed as:

$E_{BATT}(t)=E_{BATT}(t\text{-}1\times E_{NEEDED}(t)$15 where ENeeded (t) is the hourly energy needed by the load side, Enetload (t) hourly energy of load demand, EBATT(t), EBATT(t-1)is energy stored in battery at hour t and t-1 respectively, and N_{CHG}, N_{DCHG} is the battery charging and

discharging efficiency respectively. Meanwhile, the charged quality of the battery is subject to the following constraints.

$SOCmin \leq SOC(t) \leq SOCmax$ (16)

The maximum value of SOC is 1, and the minimum SOC is determined by maximum depth of discharge (DOD), SOCmin = 1 - DOD (17)

Mathematical model of dump load

The dump energy is defined as the energy produced by the renewable generators or diesel generator but unused when the load does not need all the energy and the battery has reached its maximum capacity and can not store more energy [3]. In this study, a conventional electric water heater is assumed as dump load. The hourly dump energy is calculated as follows:

EDump(t)=ECC-OUT(t)-[(EBATMAX-EBATT(T-1)/NCHG] (18)

Negative results are assumed as zero dump energy. where EDUMP(t) is total dump energy at time t, and EBATMAX is maximum capacity of battery.

Mathematical model of load demand

The load demand determines the total energy demand, E_{Load}, requested by the load model of the system for each time step in the simulation. In this case, there are four types of electrical loads: Household load (Lighting load, T.V., Fan, and Ratio), Commercial load (small shops lighting and floor mill), Industrial load (saw mill/paddy huller), and Community load (Primary health centre lighting, street lighting, school lighting). Thus, the energy demand of the loads can be expressed as:

ELoad(t)= EHHL(t)+ ECOL(t)+ EINL(t)+ ECNL(t) (19)

EHHL(t)= ECOL(t)= EINL(t)= ECNL(t)= $\sum_{l=1}^{n}[Pi \times ti \times n]$ (20)

where $E_{Load}(t)$ is the total hourly load at time t, $E_{HHL}(t)$ hourly household load at time t, $E_{COL}(t)$ hourly commercial load at time t, $E_{INL}(t)$ hourly industrial load at time t, $E_{CNL}(t)$ hourly community load at time t, Pi power consumed by appliance i, t_i time of appliance usage, n number of devices, i type of device, and N is the number of electric appliance used.

Conclusions

The proposed model can be used in planning studies to determine the optimum design of an autonomous hybrid energy system.

References:

1. Nouni MR, Mullick SC, Kandpal TC. Biomass gasifier projects for decentralized power supply in India: a financial evaluation. Energy Policy 2007;35: 1373-85.
2. Singh KJ, Sooch SS. Comparative study of economics of different models of family size biogas plants for state of Punjab, India, Energy Conversion & Management 2004;45:1329-41.
3. Diaf S, Diaf D, Balhamel M, Haddadi M, Louche A. A methodology for optimal sizing of autonomous hybrid PV/wind system. Energy Policy 2007;35: 5708-18.
4. Lagunas J, Caratozzolo P, Ortega C, Gonzalez R. Model design of wind/pv/fossil-fuel hybrid systems. Proceedings of IEEE; 2004:403-8.

Available online at http://www.nrjp.co.in

Journal of Management Science, Operation & Strategies, e ISSN 2456-9305 Vol. 2, Issue, 01. 75-81p, Jan, 2018

National Research & Journal Publication

Review Article

Analytical study of the use of ICTs by library personnel in providing library services in different university libraries in Lucknow region

Mrs. Gausia Nayab

Assistant Professor-library

Government Girls P.G. College, Hamirpur

Abstract

The majority of respondents sampled in this study showed positive attitude towards use of ICTs. In this regards, 98% responded that ICTs are easy to use while about 87% feel comfortable working with ICTs.

Keywords: *implementation, positive attitude, feel comfortable working with ICTs.*

Introduction

According to Spacey et al., (2013), attitudes, chiefly positive attitudes, are assumed to be fundamental in the acceptance, implementation and success of new technologies. Literature relating to people's views of technology is expressed in terms of attitudes to technology or attitudes to change (Spacey et al., 2013). For ICT systems to be successful, it is suggested that staff need positive attitudes to ICT (Fine, 2006; Evald, 2006). Attitudes have been suggested to influence behaviour but the research in this area is varied in its conclusions. Social psychologists, Fishbein and Ajzen (2005) submitted in the Theory of Reasoned Action (TRA) that an individual's behaviour is determined by one's intention to perform the behaviour, and that this intention is influenced jointly by an individual's attitude and subjective norm (the latter is a measure of how people are influenced by their peer's opinions).

Applying this understanding to an individual's acceptance of management information systems, the Technology Acceptance Model (TAM) (Davis, 1989) suggested attitude influences behavioural intention to use, and subsequent actual use. TAM also includes the constructs of perceived usefulness and perceived ease of use. Perceived usefulness is the extent to which a person believes that using a system (or computer programme, for example) will enhance their performance, whilst perceived ease of use is the extent to which a person believes that use of the system will be free from effort. These two constructs have an important impact on a person's attitude toward using the system but, unlike the TRA, Davis found that

attitude did not completely mediate between beliefs and intentions (Mathieson, 2011). This suggests that an individual could hold negative attitudes to a system, but would still use it because it has high perceived usefulness (Dillon and Morris, 2006). The success of any initiatives to implement technology in an educational program depends strongly upon the support and attitudes of people involved. It has been suggested that if librarians believed or perceived proposed computer programs as fulfilling neither their own or their students' needs, they are not likely to attempt to introduce technology into their teaching and learning. Among the factors that affect the successful use of technology in library are librarians' attitudes towards computers (Huang & Liaw, 2005). Attitude, in turn, constitutes various dimensions.

Objectives of the Study

The general objective of this study was to survey librarians' attitudes towards ICTs in selected university libraries in Edo State. The specific objectives of this study are:

1. To find out librarians use available ICTs
2. To examine the frequency of ICT use by librarians.
3. To investigate the purpose of ICT use by librarians in the library.
4. To examine the attitude of librarians towards ICTs use for service delivery
5. To find out factors that influence the attitude of librarians towards ICT use service delivery

Data tabulation and result analysis

Table 1: Purpose of ICT Application in Libraries

S no	Purpose of ICT Application	Strongly Agree	Agree	Disagree	Strongly Disagree
1	Expand library Services rendered to users	65	15	8	-
2	Activities are together in one place (ease of control)	79	5	-	-
3	Ease of Library co-operation or connectivity	76	6	2	-
4	Improved Financial management & time-saving	65	11	8	-
5	Enhances daily routine activities basis very effective	68	13	2	-
6	Information resources are delivery easily and faster	71	13	-	-

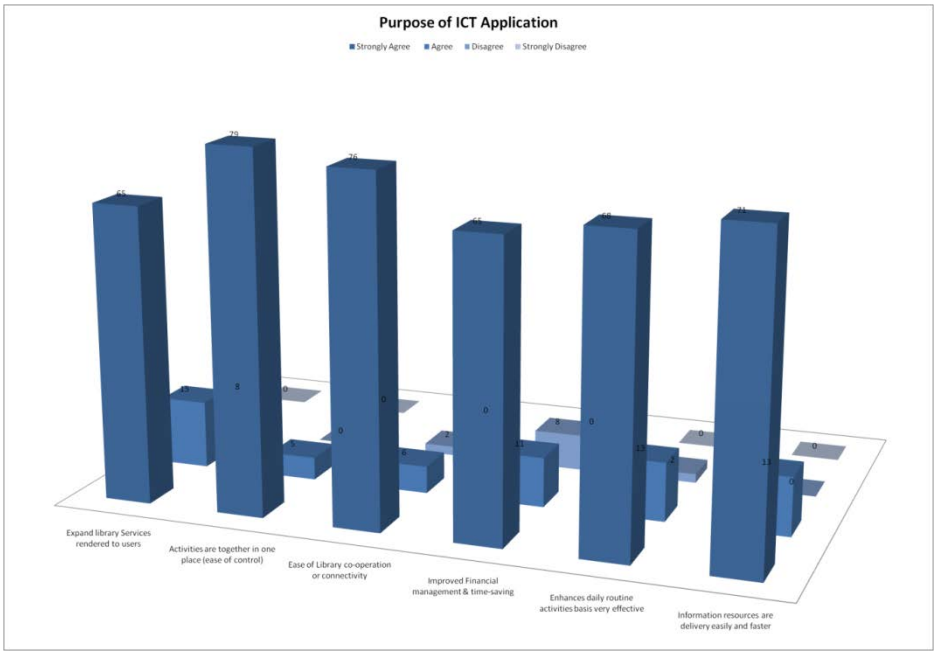
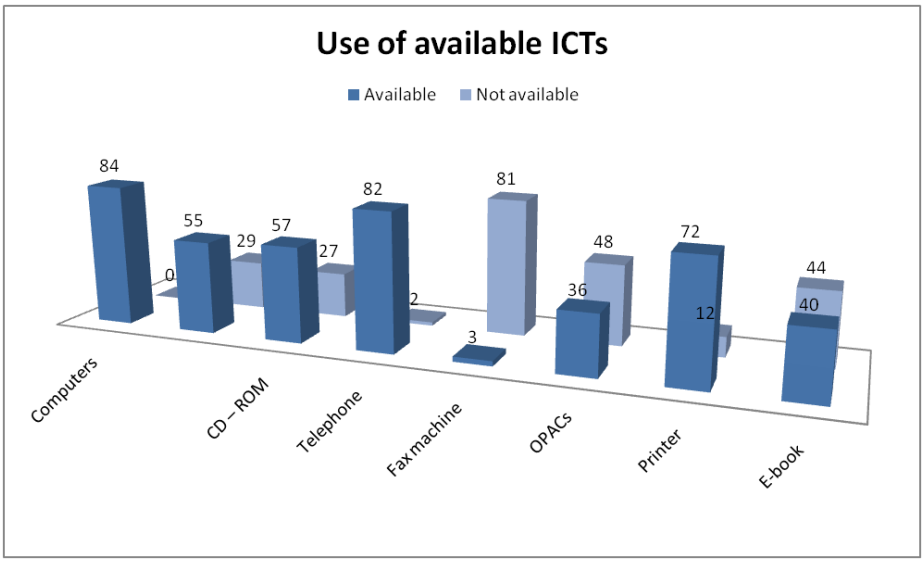


Table 2: Which of the following ICTs do you use for service delivery?

Use of available ICTs	Available	Not available
Computers	84	-
Computers connected to internet	55	29
CD – ROM	57	27
Telephone	82	2
Fax machine	3	81
OPACs	36	48
Printer	72	12
E-book	40	44



From Table 2 it can be seen that the respondents mostly used computers (100%), Telephone (97%) and Printers (85.7%) rendering services to users while the Fax machine was almost not used except by just 3.6% of the respondents.

Table 3: How often do you use the available ICTs

Frequency of use of available ICTs by librarians	Every day	Per week	Per month	never
Computers	82	-	2	-
Computers connected to internet	55	15	7	7
CD – ROM	49	24	6	5
Telephone	84	-	-	-
Fax machine	-	-	3	79
OPACs	10	19	7	28
Printer	54	19	9	2
E-book	20	39	15	10

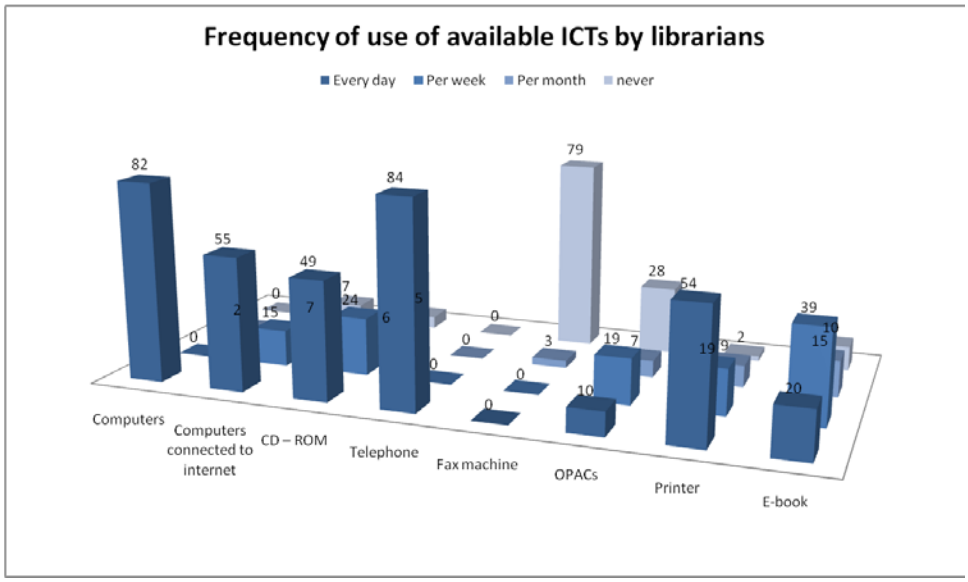


Table 3 reveals that the respondent used the computer and phones on daily basis in the process of service delivery while the fax is used on a monthly basis by a meagre minority (3.6%).

Table 4: For what purpose you use ICTs in thelibrary

Purpose of use of ICTs by librarians?	Strongly Agree	Agree	Disagree	Strongly Disagree
To help users doing research to find theinformation they need	52	31	1	-
Digitizing collections for online access	24	55	5	-

Answering incoming reference question via telephone, email, fax and chat	37	47	-	-
For collaboration interactivity	28	53	1	2

From Table 4 it can be deduced that the librarians have positive attitude towards ICTs use for information service delivery. This is obvious based on the fact the respondents generally refused the negative attitude scale while they completely accepted the positive attitude scale.

Table 5: Attitude of librarians towards the use of ICTs

Variables	Strongly Agree	Agree	Disagree	Strongly Disagree
ICTs will only put more work on the shoulder of librarians.	-	-	34	36
I can't think of any way that ICTs will enhance my career as a librarian.	-	1	34	35
ICTs are not exciting to use.	-	1	31	38
I avoid using ICTs whenever I can.	-	-	29	41
Capable librarians do not need ICTs to operate in the library efficiently.	-	4	27	39
Use of ICTs in libraries reduces the personal treatment of library users.	9	8	28	25
I think that ICTs are very easy to use.	42	27	1	-
I feel comfortable working with ICTs.	49	19	2	-
ICTs will create more jobs than they eliminate.	28	21	17	4
ICTs dehumanizes society by treating everyone as a number.	4	12	41	13
ICTs isolate people by inhibiting social interaction.	16	29	13	12

Table 5 shows that majority (98%) of the respondents primarily use the available ICTs to assist researchers while the 100% of the respondents use the ICTs answering user queries. And this follows from the responses on the use of telephone where the whole respondents also agreed to using it daily.

Conclusion

The findings show that there is considerable use of ICTs for service delivery in the libraries studied. However, crucial ICT tools such as OPACs, E-books and fax machines were rarely used. This is probably due to the fact that they are expensive and in most cases not available for librarians to use. The findings also show that tools like computers, telephone, printers and CDROM were used by librarians on daily and weekly basis. This suggests that rudiment ICT tools were used daily by the librarians.

The majority of respondents sampled in this study showed positive attitude towards use of ICTs. In this regards, 98% responded that ICTs are easy to use while about 87% feel comfortable working with ICTs. This finding is in variance to findings of Igberia, Johnson, & Chakrabarti (2012), who found that there is widespread fear and negative attitude that have slowed progress of ICT implementation. The reason for this variance could be due to the time lag and the widespread ICT training in the Nigerian library scene. This is perhaps why Shuva (2005) opined that librarians attitude to the use of the information communication technology in the library depends largely on the influence of the ever changing digital landscape. The findings equally revealed a host of factors influencing the librarian's positive attitudes towards ICTs. These include peer opinion /influence, knowledge of ICT, and possession of ICT literacy skills.

Recommendations

Based on the findings of this study the following has been recommended to drive increased use of ICTs for information service delivery:

- There should be procurement and training in the use of fax machine, provision of adequate computer facilities, purchase and servicing of official telephone
- Librarians should be exposed and trained on how to use emerging technologies for service delivery in the library
- The library work environment should encourage peer interaction and knowledge transfer by organizing regular in-house trainings and train-the- trainer seminars
- Librarians should be giving grants to tour libraries in foreign countries

References

1. Igberia, M. Johnson, B, & Chakrabarti, A. (2012).Computer anxiety and attitudes towards microcomputer use. Behaviour and Information Technology 9:3. pp. 229-241.
2. Ajzen .I. and Fishbein M. (1980).Technology Acceptance Model (TAM) International Journal of Manpower. 2 (11) 7.
3. Sadik K,L. (2006). Supporting Staff with new technologies in Twelve Ohio Academic Libraries. College & Research Libraries 54, no. 1 (Jan. 1993): 43–57;
4. Mathieson, C.K. (2011) Computer anxiety and attitudes towards microcomputer use. Behaviour and Information Technology. 9:3. pp. 229-241.
5. Omoniwa, M. A. (2001). The computerization of Kashim Ibrahim Library of Ahmadu Bello University, Naria, 1972-2001, Nigerian Libraries. Journal of Nigerian

Library Association, Vol. 35 NO. 1, 15-22.

6. Ramzan M. (2004) Does level of knowledge impact librarians' attitude toward Information Technology (IT) applications? 2nd International CALIBER- 2004, New Delhi, 11-13 February.
7. Shuva, N.Z. (2005). Implementing information and communication technology in public libraries in Bangladesh. The International Information and Library Review, 37,159-168.
8. Spacey, R., Goulding, A., & Murray, I. (2013). ICT and change in UK public libraries: Does training matter? Library Management. 24:1&2, pp. 61- 69.
9. Taiwo I.O. (2008) Information technology in public libraries. Program30: 2, pp. 121-31.
10. Tsitouridou, M. & Vryzas, K. (2003). Early childhood teachers' attitudes towards computer and information technology: The case of Greece. Information Technology in Childhood Education Annual, 1, 187-207
11. Walmiki, R.H., & Ramakrishnegowda (2009). ICT Infrastructure in university libraries in Karnataka. Annals of Library and Information Studies, 56:.236-241. .
12. Albert N,O. (2005). Training for IT, Library Training Guides. London: Library Association.
13. Evald, P. (12006). Information technology in public libraries. Program 30: 2, pp. 121-31.
14. Fishbein, M., & Ajzen, I. (2005). Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research. Boston, MA: Addison- Wesley.
15. Huang, H. M. & Liaw, S. S. (2005). Exploring user's attitudes and intentions toward the web as a survey tool. Computers in Human Behavior, 21(5), 729-743.
16. Martins, E.O. (2011). ICT in modern library. Journal of Nigerian Library Association, Vol. 35 NO. 1, 15-22.

Authors Guidelines

NRJP journals are the unit of the ***Swaranjali Publication*** which deals with the rapid publication of the journals based on commerce and management studies. **NRJP Journal** publishes Research Papers, Review Paper, Case study, Short article, Book reviews and Synopsis (Thesis). Publication frequency is **triannual** but the acceptance of the manuscript is continuous.

Steps for submitting a paper:

1. Click on the title of the Journal (Select Journal from www.nrjp.co.in)
2. Register as an **Author**
3. Create Username and Password
4. **Login** with the same Username and Password
5. **Submit your Paper** by filling the details

Paper format

Title page: Title of the paper, author details along with the affiliations, email ids of all the authors. Please
indicate the corresponding author and contact number.

Abstract: Minimum 150 to 200 words

Keywords: Minimum 3 to 5

INTRODUCTION

The introduction clearly states the objective of your work, its scope and the main advances you are reporting. It gives reference to relevant results of previously published work. A theoretical and experimental methods section gives sufficient information about the research carried out by the researcher.

The references in the paper should be cited according to the Vancouver/Numbered style. There should be minimum 10 references in article. Reference citation should be always in square brackets and before the punctuation [1]. The references should be arranged in proper numeral [2] sequence.

SECTION MAIN HEADINGS

Subheadings

The main headings or the first level headings should be written in all caps.

The subheadings or the second level headings should be in Title case.

Further Subsequent Headings: should me made run on with the text separated by a column.

FIGURES AND TABLES

Carefully chosen and well prepared figures, such as diagrams and photos, can greatly enhance the quality of the paper. We encourage you to prepare figures that are clear, easy to read, and of the best possible quality.

RESULTS AND DISCUSSION

The results and discussion section states your results and their potential implications. In the discussion you should state the impact of your results compared with recent work.

CONCLUSIONS

Conclusions summarize key results and may include any plans for relevant future work.

ACKNOWLEDGMENTS

Acknowledgments recognize the contribution of funding bodies and anyone who has assisted in the work.

REFERENCES

References list relevant papers referred to in the other sections, citing original works both historical and recent.

Referencing in the Manuscript

All the references should be well cited on the appropriated text. Kindly note, that the publication team of NRJP journal will re-evaluate the proper reference via ***Google Scholar Citation*** and finally cited in the final manuscript via ***Endnote Citation Process***, which follow the ***Vancouver style*** of formatting of the citation.

Here we will provide you guideline to author's referencing style, which will be:

Journal Article

Author(s) – Family name and initials. Title of article. *Title of journal (Abbreviated and italic)*; Volume (Issue): ages, Publication year.

Book

Author(s) – Family name and initials, Multiple authors separated by a comma. *Title of Book.* Edition of book if later than 1st ed. Place of Publication: Publisher Name; Year of Publication.

Conference Papers

Author(s) of paper – Family name and initials. Title of paper. In: Editor(s) Family name and initials, editor(s). *Title of Conference*; Date of conference; Place of conference. Place of publication: Publisher's name; Year of publication. Page numbers.

Newspaper and Magazine Articles

Author(s) – family name and initials. Article title. Newspaper title (edition of paper eg. Weekend edition). Date of publication – year month (3 letter abbreviation) day: Sect. Location eg. A:12 or Business 5 (5 is the page number) column number is applicable eg. col. 1)

Reports and other Government Publications

Author(s). Title of report. Place of publication: Publisher; Date of publication – year month if applicable. Total number of pages if applicable e.g. 24 p. Report No.: (if applicable)

Thesis

Printed Thesis: Author. Thesis title [type of thesis]. Place of publication: Publisher; Year.

Online Thesis: Author. Thesis title [type of thesis on the internet]. Place of publication: Publisher; Year [cited date – year month day]. Available from: Name of database/web address

For further queries mail us at **info@nrjp.co.in**

Pre-Submission Checklist

In order to reduce the chance of your manuscript being returned to you, please check:

• **Author information:** Have you provided details of all of your co-authors? Is the information that you have entered into Scholar One the same as the information on the manuscript title page?

• **Manuscript Length and Formatting:** Have you checked that your manuscript doesn't exceed the requirements for word count, number of tables and/or figures, and number of references? Have you provided your abstract in the correct format? Have you supplied any required additional information for your article type, such as key messages?

• **Tables:** Have you embedded any tables into the main text? Have they been cited in the text? Have you provided appropriate table legends? Have you uploaded any lengthy tables as supplementary files for online publication?

• **Figures:** Have you uploaded any figures separately from the text? Have they been supplied in an acceptable format and are they of sufficient quality? Are they suitable for black and white reproduction (unless you intend to pay any required fees for colour printing)? Have the files been labelled appropriately? Have the figures been cited in the text? Have you provided appropriate figure legends?

• **References:** Have all of the references been cited in the text?

• **Supplementary Files and Appendices:** Have you supplied these in an acceptable format? Have they been cited in the main text?

• **Statements:** Have you included the necessary statements relating to contributorship, competing interests, data sharing and ethical approval?

• **Research Reporting Checklists:** Have you either provided the appropriate statement for your study type, or explained why a checklist isn't required?

• **Permissions:** Have you obtained from the copyright holder to re-use any previously published material? Has the source been acknowledged?

• **Reviewers:** Have you provided the names of any preferred and non-preferred reviewers?

• **Revised manuscripts:** Have you supplied both a marked copy and a clean copy of your manuscript? Have you provided a point by point response to the reviewer and editor comments?

Editorial Information

NRJP journals on behalf of Swaranjali publications; cordially invite you as EDITOR in the respective journal of your expertise field, According to your area of interests and specialization; We are happy to know about you, your rich experience and the areas of interests/ scientific work, that encompass to a big extent. We shall really feel fortunate by having you as an Editor; your joining will certainly enhance our expert representation in the esteemed editorial board.

To Join The NRJP Editorial Team:

1. Click on the title of the Journal (Select Journal from www.nrjp.co.in)
2. Register as an **Editor** and **Author**
3. Create Username and Password
4. **Login** with the same Username and Password
5. **Submit your Paper** by filling the details or go with the paper assigned to your with editorial responsibility.

You may also join the editorial Board directly by mailing us your CV and short biography on info.nrjp@gmail.com .

In General standard on suitability of Manuscripts should be keep during reviewing the manuscripts:

- Originality- Novel that has potential to significantly add / support the research already published / known to us through available literature.
- Subject relevance and scientific reliability.
- Importance in terms of application or otherwise to scientific/ business community in particular and the society in general of the subject dealt.
- Adequacy of abstract, key words.
- Appropriateness of approach or experimental design, adequacy of experimental techniques (including statistics where appropriate, need for statistical assessment). Methods adequately described/ appropriate or not.
- Results relevant to the problem posed/ credible or not.
- Answers to questions- Soundness of conclusions and interpretation, interpretation and conclusions warranted by the data, reasonable speculation and clarity of the message.
- Relevance of citations and their up to date inclusion. Obvious omission(s) if any.
- Relevance of the figures and table, clarity of legends and titles.
- Presentation in entirety, considering writing style, clarity in expression.

PS: For your convenience we have done the plagiarism checking, proofreading of the manuscript and formatting at our end and yes free of cost. Your role as an editor is to go through the technicality and relevancy of the paper according with the journal criterions. We are subscription based Journals we does not cost from authors and we did not providing any reviewing fees, rather we are providing a ***letter of the Reviewing*** *for your academic add-ons which enlisted the number of paper reviewed by you.*

You are also requested to provide us with the latest version of your CV or the URL of your online CV, at your convenience and a formal acceptance email regarding accepting the editorial board membership of the journal.

Hope We Had a Great Journey with Your Experience and Our Hard Work.

NATIONAL RESEARCH & JOURNAL PUBLICATION

Peer Review Process

Every author's draft undergoes a Double blind review process at NRJP Journals. The process, involves a closed review of the manuscript by two peers concealing the identities of the author and the reviewers. The sole reason for blind review is to avoid any conscious or sub conscious bias. We strive for a quick but through review which generally takes 12-14 days.

1. PRELIMINARY SUBMISSION

Author submits the research paper (manuscript) through online submission form available on our website. Receipt of the paper is issued to author

2. INITIAL SCREENING OF THE PAPER

Forwarded to the sub editor of the respective journal to review the paper submitted to ensure it fits with the standard. Plagiarism tests are performed in accordance with zero-plagiarism policy.

3. BLIND REVIEW BY PEERS

The paper from the sub editor is forwarded to two peers for a critical analysis to:
Judge the relevance of literature studied, Study the Methodology defined and adopted, Check on the integrity of the scientific work, Evaluate the study's findings and their significance to the academia, Ensure the accuracy of References.
A weighted score (out of 10) is calculated on the basis of criteria mentioned above and is assigned to the manuscript as the "Peer 1 Assessment Score" "Peer 2 Assessment Score"
Paper evaluation by referees consumes approximately 12-14 days, henceforth the assessment scores, with the review comments are forwarded to the Chief Editor of the respective journal for a final evaluation.

4. FINAL ASSESSMENT BY CHIEF EDITOR

Assessment scores are then shared by the referees with the Chief Editor
A quality check for Grammar, Language, Layout & Format, Style and Graphic Quality of Illustrations and Peers' score is performed by Chief Editor, his final judgment of whether the manuscript be published or not

ACCEPT AS IT IS

Manuscript may be accepted with no needed modifications if it is flawless on all aspects
Processed article is shared with the Author for review, upon which the same is published.

ACCEPTED WITH CHANGES

Your paper might call for some alterations with respect to the referees' comments after being assessed through the review process. Suggestions are also entailed for better portrayal of ideas.
Comments from Peers and Chief Editor are shared with the Author to revise accordingly.

REJECT

Irrelevant subject, inappropriate or flawed analysis, existence of plagiarism or incorrect references might lead to rejection of your paper. Rejection Email is sent to the Author.

Note: The final decision regarding the publication of journal is taken by the Chief Editor whether the manuscript will be accepted, rejected or any changes are to be made in it.
If any discrepancy or plagiarism is founded in the submitted paper, the manuscript stands rejected (or subjected to revision by the author)

NATIONAL RESEARCH & JOURNAL PUBLICATION

LIBRARY RECOMMONDATION FORM

Please forward this form to your Librarian or Library Acquisition Committee

Dear Librarian:

I would like to recommend the NRJP Journals below:

- Journal of Retail Marketing & Distribution Management
- Journal of Business Management & Quality Assurance
- Journal of Public Policy & Environmental Management
- Journal of Accounting, Finance & Marketing Technology
- Journal of Commerce, Economics & Management
- Journal of Management Science, Operations & strategies
- Journal of HR, Organizational Behavior & Entrepreneurship Development
- Journal of Bank Management & Financial Strategies
- Journal of Social Sciences & Multi Disciplinary Management Studies
- Journal of Industrial Relationship, Corporate Governance & Management Explorer

I recommend the journals for the following reasons:

- **REFERENCE:** NRJP Journals is directly related to my field and is an important source of reference for my research. I need to refer to articles from NRJP Journals frequently in the course of my work.
- **STUDENT REFERRAL:** It is critical that students have access to this information to best facilitate their course work and academic pursuits. I will be referring my students to NRJP Journals regularly.
- **BENEFIT FOR LIBRARY**: NRJP Journals will be a valuable addition to the library's collection of scientific resources. Its acquisition will assist the library in fulfilling departmental, faculty and student needs.
- **OWN AFFILIATION:** I am a member of the editorial or advisory board and strongly support NRJP Journals as essential scientific resources. I regularly recommend articles to students and colleagues.

- **Additional Reasons**:.....

.....

Name: ..... Position:.....

Department: .....

Email: ..... Tel: .....

Signature: ..... Date: .....

To order NRJP Journals
National Research & Journal Publication
A Unit of Swaranjali Publication
FF1, Plot No1-B, Sector10 B, Vasundhara, Ghaziabad UP-201012.
Mobile: +91- 8700124880, 9560298789
E-mail: info.nrjp@gmail.com, info@nrjp.co.in
Website: www.nrjp.co.in

INFORMATION FOR LIBRARIANS

We support research librarians to catalog NRJP journal in the midst of their library's electronic journal assets. As well, it may be noting that NRJP journal's open source publishing system is suitable for libraries to host for their faculty members to use with journals they are involved in editing.

Subscription Details:
Online Mode:
Register with the NRJP journals as reader and pay using NEFT Transfer of Fund in NRJP account (Details provided in Subscription Form).

Offline mode:
Subscribers may download, print, fill out, and attach cheque or demand draft and duly filled Subscription form stating the name of NRJP Journals and duration of subscription to the postal address given below by a secured post.

To,

National Research & Journal Publication
A Unit of Swaranjali Publication
FF1, Plot No1-B, Sector 10 B, Vasundhara, Ghaziabad UP-201012.
Mobile: +91- 8700124880, 9560298789

Subscription and Access Norms General
Journal strives to bring- out its issues regularly, but we cannot guarantee on its uninterrupted publication. Journal is not liable for any loss or consequences that might occur owing to the delay or non- publication of a manuscript in a scheduled issue of this journal. The Director, NRJP Journals, who is also a chairman of the Publication Management Team of the NRJP Journals, is empowered to change the subscription rates of the Journals for an ensuing subscription year with or without a notice to the subscribers. NRJP Journals, reserves all rights for any change in policy without prior notice.

Individuals
NRJP Journals online access has been provided solely on individual basis, hence a user is not supposed to share log-in id and password with anyone. A user needs to ensure that logs-out after completing work, else access will be denied in the next session. In case your log-in id and password are compromised, please intimate us at the earliest.

NATIONAL RESEARCH & JOURNAL PUBLICATION

SUBSCRIPTION FORM 2019

Subscribe our Print Journal and One Year Online Subscription will be FREE

S. no.	Name of the Journal	Institutional/Yr (3 issue) in Rs.	Tick
1	Journal of Retail Marketing & Distribution Management	4000/-	
2	Journal of Business Management & Quality Assurance	4000/-	
3	Journal of Public Policy & Environmental Management	4000/-	
4	Journal of Accounting, Finance & Marketing Technology	4000/-	
5	Journal of Commerce, Economics & Management	4000/-	
6	Journal of Management Science, Operations & strategies	4000/-	
7	Journal of HR, Organizational Behaviour & Entrepreneurship Development	4000/-	
8	Journal of Bank Management & Financial Strategies	4000/-	
9	Journal of Social Sciences & Multi Disciplinary Management Studies	4000/-	
10	Journal of Industrial Relationship, Corporate Governance & Management Explorer	4000/-	

*__All subscriptions are payable in advance and all rates include postage and taxes__. Subscribers are requested to send payment with their order whenever possible. Issues will be sent on receipt of payment. Subscriptions are entered on an annual basis, i.e. January to December and are subject to renewal in subsequent years. Prices are subject to change without notice.

Please find our Banking details for making NEFT / RTGS:

Bank Name :	IDBI Bank
Bank Location :	IDBI Bank ltd, Sector-9, Vasundhara, U.P. India
Account Number :	1990102000001359
Account Name :	Swaranjali publication
IFSC Code :	IBKL0001990
Swift Code :	IBKLINBBA83

Please Send Demand Draft / Cheque to following address:

National Research & Journal Publication
A Unit of Swaranjali Publication
FF1, Plot No 1B, Sector10 B, Vasundhara, Ghaziabad UP-201012.
Mobile: +91- 8700124880, 9560298789

*NOTE: Cheques / Demand Draft should be in favor of **Swaranjali Publication**

After making the transfer, please send an email to: **info.nrjp@gmail.com** with the Following details:

- The NEFT UTR Number:
- Date of Transfer :
- Amount Transferred :
- Journals you wish to subscribe :
- Subscription Period :
- Your complete address for sending the journals (with pin code)

Key Features

- Subscription Period: January to December
- Annual Subscription for Print
- Frequency - 3 times a year

Terms and Conditions for Subscriptions:

- The Indian Rupee (INR) prices quoted are definitive and fix.
- Please contact our subscription address and department for details.
- All listed journals are available in print editions. For back volumes, contact our subscription department for pricing and availability.
- Each subscription or access right is personal to the subscriber, and is a non exclusive, non transferable right of access from the date of contract.
- NRJP Journal strives to bring- out its issues regularly, but we cannot guarantee for on its uninterrupted publication. The Journal cannot be held responsible for postal or customs delays.

- All subscription orders must be prepaid. Orders will be processed only upon the realization of full subscription amount
- These rates are only applicable for printed Journal sales in India.
- The subscription charges are for the print edition of the journal and are not linked to online access which is offered free of cost to the Indian subscribers
- Subscription rates for NRJP Journals are reviewed yearly and come into effect on 1st January for that year corresponding January to December subscription
- The right to amend/change access and subscription policies rests with NRJP Journals
- Change of address of dispatch should be intimated to NRJP Journals at least 2 months prior to the dispatch schedule as per the frequency by mentioning subscriber id and the subscription id
- If due to any reason a journal ceases its publication during the period of subscription, subscriber is given an option to select any other journal at no additional cost. Subscriber may also claim a refund for the said journal only.

To subscribe, please contact us at: **info@nrjp.co.in**

Write any query or send your orders

To,
National Research & Journal Publication
FF 1, Plot No 1B, Sector10 B
Vasundhara, Ghaziabad UP-201012.
Mobile: +91- 8700124880, 9560298789

Subscription Information

Particulars of Subscriber

Contact Person's Name: .....

Designation.....

Organization: .....

Mailing Address.....

.....Pin Code.....

Phone (Librarian):..... .....Mobile: .....

Phone (Principal): .....Mobile: .....

E-mail (librarian):.....

E-mail (principal).....

Website.....

Complete Dispatch Address: .....

.....

.....Pin Code.....

NEFT / RTGS Remittance Details

Bank Name: .....

Amount Rs.....

Dated.....

Subscription Period.....

To order NRJP Journals
National Research & Journal Publication
A Unit of Swaranjali Publication
FF1, Plot No1-B, Sector10 B, Vasundhara, Ghaziabad UP-201012.
Mobile: +91- 8700124880, 9560298789
E-mail: info.nrjp@gmail.com, info@nrjp.co.in
Website: www.nrjp.co.in

Publish your Book with ISBN

Swaranjali Publication; the sister company of NRJP Journals, invites you to publish your

Publish your **Thesis** in the form of book & get 20 API,
Publish your **Projects** in the form of book & get 15 API,
Publish your **Dissertation** in the form of book & get 15 API,
Publish your **Proceedings** in the form of book & get 15 API,
Publish your **Edited Book** in the form of book & get 20 API,
Publish your **Course Books** in the form of book & get 20 API,
Publish your **Reference Books** in the form of book & get 20 API,

Publish your books with ISBN to increase your academic API, with minimum processing charge. The service provided from our end is

- Cover Page Designing
- Formatting and Styling of the Book
- Certificate after Book Publication
- Maximum circulation of Books

For more details write us on

info.nrjp@gmail.com

or

info@nrjp.co.in

Swaranjali Publication

(In collaboration with NRJP JOURNALS)

LEADING PUBLICATION FOR HIGHER EDUCATION

(In consortium with Profoundly Educated And Highly Experts Team)

Services provided

CONFERENCE RELATED CONSULTANCY

- Preparation of Souvenir, Proceedings, and Edited Book with ISBN No.
- Online portal for Conference Web Advertising with highest visitors across India and World
- Visit **www.webinar.nrjp.co.in**
- Preparation of posters, banners, conference related accessories
- Assistance for momentum, medals, certificates
- Conference Edited Book Published online with Conference Series Association of NRJP Journals
- Visit **www.conference.nrjp.co.in**

NAAC ACCREDITATION RELATED CONSULTANCY

- Document preparation assistance for Accreditation for all cycle1, Cycle 2, Cycle 3.
- IIQA, AQAC, AQAR, SSR document preparation
- Online portal submission and upload assistance

BOOK CONSULTANCY

- Preparation of book With a profound and professional team
- Publish with ISBN No. Within 10 days
- High quality print material
- Cheapest Price ever
- E-book facility available
- Indexing of your books on Google search engine.
- Hindi to English transliteration

JOURNAL PUBLICATION (REFERED BY CSJM UNIVERSITY)

- FREE OF COST PAPER PUBLICATION
- Plagiarism free original articles, Papers across the globe
- Swift publication and ahead of print and online issue
- Highly qualified professional editorial board
- Automated author support and guidance
- Ethical professional publication practice
- Professional copyediting services
- Best quality journals with ISSN no and referred by CSJM university,
- Maximum citation, Highest circulation
- High citation rate, **ONLINE ACCESS FREE**
- Cheapest subscription price

THESIS CONSULTANCY

- Thesis /Dissertation Writing related consultancy
- High profound experts of STATISTICAL ANALYSIS
- Tabulation and graphical representation of the Research Data with OROGIN and other graphical software.
- ANOVA, Post ANOVA, Post HOC, Correlation and regression analysis by SPSS and other Statistical Software with full description analysis
- Compilation of thesis with profound and professional team
- Hindi to English transliteration
- Thesis published with ISBN No in book format
- Online circulation free of cost.
- Highly advance MONOGRAPH PRESS ONLINE PORTAL.
- **Visit www.monograph.nrjp.co.in**

ACADEMIC PERFORMANCE INDICATOR (API) CONSULTANCY

- How to increase you API worried? Contact us
- Paper publication Portal free of cost with NRJP Journals
- Visit **www.nrjp.co.in**
- How to write papers (research and Review papers)
- Compilation of Books And Book Chapters

CONTENT WRITING CONSULTANCY

- Highly skilled and proficient CONTENT WRITING team
- Compilation of Books And Book Chapters
- High profound experts of STATISTICAL ANALYSIS
- Tabulation and graphical representation of the Research Data with OROGIN and other graphical software.
- ANOVA, Post ANOVA, Post HOC, Correlation and regression analysis by SPSS and other Statistical Software with full description analysis
- Assistance providence for text / reference book writing
- Graphic designing
- Hindi to English transliteration

LIBRARY RELATED CONSULTANCY

- Purchase books at highest discount rate ever for your college library
- Purchase journals with best discount rates
- Purchase text book reference book for all subjects
- Purchase Computer Accessories and Peripherals

LAUNCH SOON ONLINE CERTIFICATION COURSES FOR VARIOUS JOB ORIENTED EDUCATIONS

For more information visit www.nrjp.co.in

Write us on info.nrjp@gmail.com

Contact us 8700124880, 9810749840