LSME RESEARCH BOOK

2021

PUBLICATION OF
RESEARCH PAPERS

PRESENTED AT THE
7TH LSME INTERNATIONAL
RESEARCH CONFERENCE ON

‘ROLE OF MANAGEMENT,
EDUCATION AND
SOCIAL SCIENCES IN RESPONSIBLE
RESEARCH AND INNOVATIONS:
CHALLENGES AND REALITIES’

Held on the 19 – 20 August 2020
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FOREWORD

Since 2015 the London School of Management Education (LSME) has taken great pride in organising and hosting a series of high profile and internationally renowned conferences around a central focus on Responsible Research and Innovation (RRI). These conferences have given an important platform to researchers at all stages of their research career, to share the results of their personal exploration of issues, problems and phenomena of significance across the globe. In August 2020, in common with many other events and activities previously delivered in person, the 7th Annual LSME International Conference was taken wholly online, and with great success. This year the event was delivered via a feature-rich interactive conference platform, attracting even greater participation from delegates and the research community alike than had been achieved in the successful conferences of previous years.

Under normal circumstances the challenges facing researchers in conducting their studies responsibly and for social good are considerable. Previous conferences have demonstrated an exceptional appetite within the RRI community not only for innovative, creative and socially responsible research endeavour, but a keen desire to share their results and their impact on a wider stage. Under the conditions imposed by the global pandemic, with its attendant social constraints on movement and access to research communities and resources, additional challenges were faced and overcome in creating the eclectic and inclusive research outputs explored and published here.

There is a special energy around this conference that sets it apart from others. This is partly due to the nature of RRI and its commitment to alignment of research and innovation with the needs of all stakeholders, proper consideration of social phenomena, the connection between the researcher and the researched and the imperative to disseminate results for the public good. But perhaps the most important and distinctive feature of the LSME conference series is that all researchers, whether just starting out or at the pinnacle of their research careers, are welcomed to participate on an equal footing and enjoying the same warm support and genuine interest throughout our research community. This bodes well for the continuing and growing prominence of RRI as an academic focus, and for the development of a supportive, collaborative and distinctive research community to guide and inform future generations of researchers.

The outputs from the 7th Annual LSME International Conference are, in common with those from previous conferences in the series, made available on an Open Access basis by LSME and our partner institutions across the globe.

On behalf of LSME, I wish to express my sincere thanks to the Organising Committee, the Peer Review Group and Editorial Board, staff and students at LSME, all researchers who sought to take part in the conference and all delegates and participants in the conference event. In reality the
event attracted far more demand for participation in all respects than we had the capacity or resource to accommodate, and so we are especially grateful for the good will of those who were unable to take a direct part. My special thanks go to dear colleagues Professor Stephen McKinney, Dr Ravi Kumar, Dr Peter Gray, and Martin McAreavey whose vision and drive are at the core of the LSME Conference series.

Dr Sarita Parhi
Principal, London School of Management Education
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INTRODUCTION

Welcome to the Conference Research Book publication arising from the LSME 7th Annual International Research Conference, held online in August 2020. A wide variety of contributors have combined to produce an exceptional record of what was a highly successful event. From the opening speakers drawn from carefully considered prominent positions in the public view, highly polished and professional delivery from the floor by eager and committed researchers, to the enthusiastic engagement of delegates, the conference exceeded expectations in every dimension. After the event, the proceedings have been further scrutinised and refined into the document you have before you which we hope will be of enduring interest and value to all who consider its contents.

The book begins with some background to the conference and guidance given to those who were selected to present their research papers. There is information about the hosting Institution (LSME) and the ‘behind the scenes’ contributors enabling the conference to take place and the proceedings to be published. You will find information about the papers presented at conference, and how conference themes were organised and streamed to enable a wide coverage of subject matter. Messages from key contributors and conference supporters provide some perspective on how the event is perceived in wider educational and social settings, and these provide a final mechanism for contextualising the research papers reproduced in full for each presenter.

OBJECTIVES OF THE CONFERENCE

London School of Management Education embarked on the mission to promote Responsible Research and Innovations to young emerging researchers under its Research Development Strategy and have organised seven international research conferences and several research workshops to that end. These conferences' major focus is to produce a breed of researchers who take responsible research seriously and aim to make a tangible positive impact on their society through their research work.

The LSME Seventh International Research Conference targeting to produce credible research on the Role of Management, Education and Social Sciences in Responsible Research and Innovations, mainly focussing on the Challenges and Realities, was convened with the following specific objectives:

• To encourage researchers, especially research degree students and early career researchers, to work on RRI.
• To help in building new thinking about dissemination and implementation of RRI to impact social responsibility.
• To provide examples of Responsible Research as an inspiration to others.
• To recognise participants as responsible and transformational researchers.
MISSION STATEMENT: RESPONSIBLE RESEARCH AND INNOVATIONS AT LSME

SCOPE OF RESEARCH PAPERS PRESENTED

RESPONSIBLE RESEARCH AND INNOVATIONS AT LSME

LSME promotes the concept of Responsible Research and Innovations (RRI) as part of its Research Agenda. This is a concept for better alignment of research and innovation with the values, needs, and expectations of key stakeholders, particularly the society in which research is conducted. This process implies close cooperation between all the key players during research formulation and education, the definition of research agendas, access to research results and the application of new knowledge in full compliance with gender and ethical considerations.

LSME supports this shift in the evolution of research for the simple reason that it is perceived as a system for inclusive and sustainable growth for its educational research agenda. The challenge for the interaction between educational research and society is the need to nurture and support the collaboration required to conduct RRI with and for society in a systemic and sustainable way. This requires open debates and learning from each other along the lines of RRI while adhering to the highest ethical standards.

With a view to propagate the research agenda both nationally and internationally, LSME initiated an annual International Research Conference series. The main objective of this series is create a credible platform for dissemination of RRI works of experts and emerging researchers from across the world. While it becomes an avenue for cross-fertilisation of ideas, it becomes a training ground for young researchers and gives them a boost to step up their research work aligned to RRI concept.
ABOUT LSME

London School of Management Education (LSME) is a Higher Education Institution based in the London Borough of Redbridge, United Kingdom.

VISION

To play a leading role in the delivery of global educational services in partnership through radical Lifelong Learning training, equipping managers, health and social care professionals, tutors, teachers and trainers, with modern and transformational standards.

MISSION

Our mission is to provide affordable and high-quality training for aspiring and practising managers, health & social care professionals and educationalists that is innovative and global in perspective and abides by the United Nation’s Principles of Responsible Management Education. Values The School seeks to nurture and sustain a creative and supportive academic environment based upon an ethos of respect and transparency.

COMMITMENT

We are committed to:

- High-quality learning experience
- Developing and sharing expertise to strengthen our capacity
- Professional relationships based on mutual respect and transparency
- Equality and diversity
- Financial robustness

The School's philosophy is enshrined in its slogan: “Transforming people with skills”. We aim to introduce our students to the innovative skills required for their careers in business, education or health and social care. LSME aims to achieve this by being a facilitator for encouraging scholarly inquiries that examine “education and the learning processes and human attributes, interactions, organisations, and institutions that shape education and its outcomes”.

CONFERENCE PROGRAMME

DAY 1: 19 AUGUST 2020 (WEDNESDAY)

09:30 - 09:35 | House Keeping Announcements
09:35 - 09:40 | Welcome Address by Dr Sarita Parhi, Principal of LSME
09:40 - 09:44 | Recognition of the VIP Guests by Hassan Shifau, Conference Vice Chairman
09:44 - 09:49 | Photo Presentation of LSME International Research Conference Series
09:49 - 09:54 | Introduction to LSME Online International Conference 2020 by Professor Stephen McKinney, Conference Chairman
09:54 - 09:58 | Remarks by Dr Amandeep Singh Marwaha, Conference Organising Secretary
09:58 - 10:03 | Special Remarks from the Conference President, Professor Suresh Kumar Sharma
10:03 - 10:07 | Special Remarks by Guest of Honour – Professor Rajan Welukar
10:07 - 10:12 | Special Remarks by Guest of Honour – Professor T C A Anant
10:12 - 10:27 | Inaugural Address by the Chief Guest – The Lord Sheikh
10:27 - 10:30 | Vote of Thanks by Ramaraj Ramasamy
10:30 | Inaugural Session Ends

PARALLEL SESSIONS - DAY 1: 19 AUGUST 2020 (WEDNESDAY)

10:30 - 11:00 | KEYNOTE SPEECH 1
Professor T C A Anant
Chair: Dr Peter Gray

11:00 - 11:30 | Break

11:30 - 14:00 | PARALLEL SESSION 1 A: SOCIAL SCIENCES
Chair: Dr Peter Gray

PRESENTATIONS

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<tr>
<th>Time</th>
<th>Name</th>
<th>Country</th>
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<tbody>
<tr>
<td>11:30</td>
<td>Dr Chandrima Goswami</td>
<td>India</td>
<td>The Global Change in Climate and its Societal Influence</td>
</tr>
<tr>
<td>11:45</td>
<td>Ms Sugyanta Priyadarshini</td>
<td>India</td>
<td>Psychosocial Struggles and Economic Lives of Transgender Community amid COVID-19 Pandemic</td>
</tr>
<tr>
<td>12:00</td>
<td>Ms Bushra Jabeen</td>
<td>India</td>
<td>Analysing Xenoglossophobia among the Indian Students</td>
</tr>
<tr>
<td>Time</td>
<td>Presenters</td>
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<tr>
<td>12:30 - 12:45</td>
<td>Dr Mayurakshe Gangopadhyay</td>
<td>India</td>
<td>Satisfaction with Life and Death Anxiety: Where Youth Matters</td>
</tr>
<tr>
<td>12:45 - 13:00</td>
<td>Mr Rexcel P. Abila</td>
<td>Philippines</td>
<td>The Relationship of Body Mass Index, Gender, and Self-Esteem Levels in Senior High School Students of Zamboanga Del Norte National High School</td>
</tr>
<tr>
<td>13:00 - 13:15</td>
<td>Mrs Anitha Sannakamaiah</td>
<td>India</td>
<td>A Study on Impact of COVID-19 on Migrant Families with Special Reference to Slums of Bangalore Metropolitan City: Prospects &amp; Possibilities</td>
</tr>
<tr>
<td>13:15 - 13:30</td>
<td>Dr Santwana G. Mishra</td>
<td>India</td>
<td>Emotional Intelligence in Adolescents - Present Scenario and Future Prospects</td>
</tr>
<tr>
<td>13:30 - 13:45</td>
<td>Ms Poonam Dhaliwal</td>
<td>India</td>
<td>Efficiency Evaluation of Airline Industry in India</td>
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**PARALLEL SESSION 1 B: LANGUAGES**

Chair: Dr Anita Sharma

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<th>Time</th>
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<tbody>
<tr>
<td>11:30 - 11:45</td>
<td>Ms Agnes Cathrine S</td>
<td>India</td>
<td>A Recreation of a Few Reformative Philosophies in Raatchasi</td>
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<tr>
<td>11:45 - 12:00</td>
<td>Dr K. Sasirekha</td>
<td>India</td>
<td>Usefulness and Popularity of Webinars During International Disaster with Reference to Corona Pandemic - A Comprehensive Study</td>
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<tr>
<td>12:00 - 12:15</td>
<td>Mr Sudhakar Gouda</td>
<td>India</td>
<td>Multidimensional Human Problems in English Speaking</td>
</tr>
<tr>
<td>12:15 - 12:30</td>
<td>Lt. S. Ravibalan</td>
<td>India</td>
<td>Pessimistic Fears to Optimistic Survival: Tracing Historically Notable Mishaps and the Ensuing New World Orders</td>
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<tr>
<td>12:30 - 12:45</td>
<td>Dr Malobika Routh</td>
<td>India</td>
<td>Ethnic and Cultural Diversities</td>
</tr>
<tr>
<td>12:45 - 13:00</td>
<td>Professor Sayantina Dutta</td>
<td>India</td>
<td>A Diversified Cultural Pool of Indigeneity in the Narrative of Mahasweta Devi</td>
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<tr>
<td>13:00 - 13:15</td>
<td>Dr R. Subhashini</td>
<td>India</td>
<td>A Brief Introduction on Effective Communication</td>
</tr>
<tr>
<td>13:15 - 13:30</td>
<td>Dr R. Rajesh</td>
<td>India</td>
<td>Effectiveness of Online English Language Teaching-Learning During COVID-19 Lockdown in the Rural Areas of Tamil Nadu: A Study</td>
</tr>
<tr>
<td>13:30 - 13:45</td>
<td>Ms Rasika V. Shende</td>
<td>India</td>
<td>Alcoholism - An Analytical Study of its Consequences as Seen in the Movie The Girl on the Train</td>
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<tr>
<td>11:30 - 11:45</td>
<td>Ms Sreedevi S</td>
<td>India</td>
<td>A Study on the Effects of Covid-19 Pandemic in the Field of Research and Innovation of India</td>
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<tr>
<td>11:45 - 12:00</td>
<td>Ms Zainab Asim</td>
<td>India</td>
<td>A Cost Optimization Fuzzy Multi-Level Decision Making Model for an Uncertain Closed-Loop Solid Waste Management System</td>
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<tr>
<td>12:15 - 12:30</td>
<td>Mr Abhay Deshpande</td>
<td>India</td>
<td>Selection of Candidate for a Post Using Agglomerative Hierarchical Cluster Analysis</td>
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<tr>
<td>12:30 - 12:45</td>
<td>Ms Lopita Das</td>
<td>India</td>
<td>Studying and Predicting the Population Growth, Sex Ratio and Literacy Rate of India</td>
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<tr>
<td>12:45 - 13:00</td>
<td>Mrs Rituparna Roy</td>
<td>India</td>
<td>Healthy Literate Working Life Table from the Perspective of Markov Process</td>
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<tr>
<td>13:00 - 13:15</td>
<td>Professor Sangeeta Arora</td>
<td>India</td>
<td>A Test of Goodness of Fit Based on Gini Index for J-Shaped Distribution</td>
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<tr>
<td>13:15 - 13:30</td>
<td>Ms Sumeeta Sundaralal Dwivedi</td>
<td>India</td>
<td>Effect of Lockdown on Time Management, Health and Learning</td>
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<tr>
<td>13:30 - 13:45</td>
<td>Dr Asha Angnamal Jindal</td>
<td>India</td>
<td>Deterministic Inventory Control: Obtaining Decision Variables Through Simple Approach in Production Lot Size Model with and Without Shortages</td>
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<tbody>
<tr>
<td>11:30 - 11:45</td>
<td>Mrs Antara Bose</td>
<td>India</td>
<td>The Dual Form of Malnutrition among Adolescents: An Overview</td>
</tr>
<tr>
<td>11:45 - 12:00</td>
<td>Dr Kanchi Ravi Padma</td>
<td>India</td>
<td>Immunity-Boosting and Balanced Diet Prevents Viral Infections with Special Emphasis on COVID-19</td>
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<td>12:00 - 12:15</td>
<td>Mrs Mangala K J</td>
<td>India</td>
<td>In-Silico Docking of Flavonoids From Cassia Occidentalis L. for their Inhibitory Activity Against DENV Serotype-1</td>
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<td>12:15 - 12:30</td>
<td>Madhuri Murlidhar Deshmukh</td>
<td>India</td>
<td>Biochemical and Antibacterial Studies of Hemidesmus Indicus Root Extracts Against Multi-Drug Resistance Human Pathogens</td>
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Research Papers Presented at the 7th LSME International Research Conference on
‘Role of Management, Education and Social Sciences in Responsible Research and Innovations: Challenges and Realities’
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<tr>
<td>12:30 - 12:45</td>
<td>Mr Suraj Kumar Dey</td>
<td>India</td>
<td>Modernization Leads to Pitfall of Traditional Culture and Ethno-Medicine in North-East India: A Few Observations</td>
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<tr>
<td>12:45 - 13:00</td>
<td>Dr Irfana Khan</td>
<td>India</td>
<td>Heritability and Genetic Advance Study for Grain Yield and Related Attributes in Husked Wheat (Triticum Aestivum)</td>
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<td>13:00 - 13:15</td>
<td>Dr Shalini Jaiswal</td>
<td>India</td>
<td>Microwave-Assisted Organic Synthesis: Working Methodology of Green Chemistry</td>
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<tr>
<td>13:15 - 13:30</td>
<td>Dr Chandan Vinay S</td>
<td>India</td>
<td>Determinants of Malnutrition and Associated Parameters in Subjects with Stable Chronic Obstructive Pulmonary Disease - A Cross-Sectional Study</td>
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<tr>
<td>13:30 - 13:45</td>
<td>Mr Jahangeer Mohd Reshi</td>
<td>India</td>
<td>Eutrophication and Conservation Status of Manasbal Lake of Kashmir Himalaya, India</td>
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**DAY 2: 20 AUGUST 2020 (THURSDAY)**

**08:00 - 09:30**  
**PARALLEL SESSION 2A: BUSINESS MANAGEMENT**  
**Chair: Dr Mohammad Khalil Ahmad**

**PRESENTATIONS**

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<th>Time</th>
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<tbody>
<tr>
<td>08:00 - 08:15</td>
<td>Dr Dhanonjoy Kumar</td>
<td>Bangladesh</td>
<td>Factors Influencing Cross-Border Medical Tourism from Bangladesh: An Empirical Study</td>
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<tr>
<td>08:15 - 08:30</td>
<td>Ms Anusree Bose</td>
<td>India</td>
<td>Conversion of Chalk-Talk to E-Talk to Combat COVID19 - A Study on Teachers’ Perception</td>
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<tr>
<td>08:30 - 08:45</td>
<td>Dr Anindita Gupta</td>
<td>India</td>
<td>Indic Perspective of Gender Difference and Depression - A Comparative Study on Levels of Depression of Elderly Men and Women; Widows and Widowers of Bengali Hindu Middle-Class Elderly Residents of Kolkata</td>
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<tr>
<td>08:45 - 09:00</td>
<td>Ms Navnidhi Kaur Khatri</td>
<td>India</td>
<td>Diversity and Gender Inclusivity</td>
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<tr>
<td>09:00 - 09:15</td>
<td>Ms Bhumika Sharma</td>
<td>India</td>
<td>Continual Abuse of Rights of Animals: Need for a Holistic Approach</td>
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<tr>
<td>08:00 - 08:15</td>
<td>Ms Kirti Prashar</td>
<td>India</td>
<td>Study on E-Governance: A Step Towards Modernized Digital India</td>
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<tr>
<td>08:15 - 08:30</td>
<td>Dr Anupam Bahri</td>
<td>India</td>
<td>Socio-Psychological Impact and Changing Perspective of Educational Institutions in COVID-19</td>
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<tr>
<td>08:30 - 08:45</td>
<td>Dr Samriti Mahajan</td>
<td>India</td>
<td>Green Conduct: Aspect of Price Consciousness and Ecological Concern in Indian Consumer Behaviour</td>
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<tr>
<td>08:45 - 09:00</td>
<td>Javid Majeed Pandith</td>
<td>India</td>
<td>Agrarian Distress in India: Deciphering the Prospects of Smart Agriculture in Bundelkhand Region</td>
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<tr>
<td>09:00 - 09:15</td>
<td>Mr Alok Kumar</td>
<td>India</td>
<td>Managing Indian Telecom Market: 'The Reliance Jio' Way</td>
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<tr>
<td>09:15 - 09:30</td>
<td>Dr Anupam Karmakar</td>
<td>India</td>
<td>A Comparative Study of the Influence Level of Working Wives and House Wives in Family Purchase Decision-Making Process in the City of Kolkata</td>
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<tr>
<td>08:00 - 08:15</td>
<td>Dr Mitu De</td>
<td>India</td>
<td>A Case Study on the Challenges and the Reasonable Accommodations for Students with Autism in the Mainstream Education System</td>
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<tr>
<td>08:15 - 08:30</td>
<td>Dr Amit Joshi</td>
<td>India</td>
<td>Attributes of High-Quality Teachers: An Interpretative Phenomenological Analysis</td>
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<tr>
<td>08:30 - 08:45</td>
<td>Ms Noora Khaleel</td>
<td>Maldives</td>
<td>The Characteristics of Teacher Preventing Misbehavior of Students in A Classroom in an Early Secondary Grade in Male’, Maldives</td>
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<tr>
<td>08:45 - 09:00</td>
<td>Chonilo S. Saldon</td>
<td>Philippines</td>
<td>Changing Patterns of High School Students' Attitudes Towards Research</td>
</tr>
<tr>
<td>09:00 - 09:15</td>
<td>Dr Shelly Aggarwal</td>
<td>India</td>
<td>Resurrecting Virtual Classrooms Responsibly amid Lockdown: Faculty Experiences and Challenges at Panjab University Chandigarh.</td>
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### PARALLEL SESSION 2D: EDUCATION
Chair: Dr Tapati Mukherjee

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<tr>
<td>08:00 - 08:15</td>
<td>Mr K S Praveenkumar</td>
<td>India</td>
<td>The Impact of Flipped Classroom in Teaching and Learning Environment</td>
</tr>
<tr>
<td>08:15 - 08:30</td>
<td>Ms Fathimath Mumthaz</td>
<td>Maldives</td>
<td>Mobile Learning Readiness: Lecturers’ Practice-Based Perception in the Higher Education Institutions of Maldives</td>
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<tr>
<td>08:30 - 08:45</td>
<td>Mr Jeovanny Alabata Marticion</td>
<td>Philippines</td>
<td>Feedback-Rich Environment in Enhancing Physics Learning</td>
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<tr>
<td>08:45 - 09:00</td>
<td>Ms Parminder</td>
<td>India</td>
<td>Role of Non-Governmental Support in Educational Development in India in Post COVID-19</td>
</tr>
<tr>
<td>09:00 - 09:15</td>
<td>Ms Piyasa Koley</td>
<td>India</td>
<td>Spatial Distribution of Literacy Rate of the Border Blocks in West Bengal</td>
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<tr>
<td>09:15 - 09:30</td>
<td>Dr Vinod Kumar Kanvaria</td>
<td>India</td>
<td>Reading Sincerity, Important Factors and Challenges in Online Sessions During COVID 19 Times: An Exploration</td>
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### PARALLEL SESSION 2E: PURE & LIFE SCIENCES
Chair: Professor Rajat Sandhir

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<tr>
<td>08:00 - 08:15</td>
<td>Ms Mounika Pandey</td>
<td>India</td>
<td>Body Composition: Segmental Analysis Using Bio Impedance among Young Adult Women</td>
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<tr>
<td>08:15 - 08:30</td>
<td>Ms Syeda Farha S</td>
<td>India</td>
<td>Urinary Iodine Concentration as an Indicator of Iodine Status and Correlation Between Iodine Nutrition and Thyroid Function During Pregnancy – An Exploratory Study</td>
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<tr>
<td>08:30 - 08:45</td>
<td>Ms Alka Sahrawat</td>
<td>India</td>
<td>Effect of Dactylotenium Aegyptium Weed Extract on Fungal Phytopathogens and Germination of on Green Gram</td>
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<tr>
<td>08:45 - 09:00</td>
<td>Dr Jasmine Sati</td>
<td>India</td>
<td>Mapping Responsible Research and Innovation Studies: A Bibliometric Analysis of Literature</td>
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<tr>
<td>09:00 - 09:15</td>
<td>Zeljka Ciganovic</td>
<td>India</td>
<td>Lockdown Yoga: Introducing International Students to Yoga amidst the COVID-19 Pandemic</td>
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</table>
09:15 - 09:30 Dr Jaspreet Kaur, India: Prediction of Potential Vaccine Candidate Proteins for Bacterial Vaginosis by in Silico Analysis Using Reverse Vaccinology Approach

09:30 - 09:55 KEYNOTE SPEECH 2
Professor Stephen McKinney

09:55 - 10:00 Q&A

10:00 - 10:30 Break

10:30 - 11:25 Special Lecture 2
Professor Rajat Sandhir

11:25 - 11:30 Q&A

11:00 - 12:30 PARALLEL SESSION 3A: BUSINESS MANAGEMENT
Chair: Professor S.K. Chadha

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<tr>
<td>11:00 - 11:15</td>
<td>Ms Aswini Priya S</td>
<td>India</td>
<td>An Empirical Investigation on E-Services in E-Commerce Segment</td>
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<tr>
<td>11:15 - 11:30</td>
<td>Mr Nitin Acharya</td>
<td>India</td>
<td>A Study on Impact of Corporate Social Responsibility and Campaign Marketing on the Mindset of Consumers</td>
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<tr>
<td>11:30 - 11:45</td>
<td>Dr Sk Md Nizamuddin</td>
<td>India</td>
<td>Why do Tourists Write Online Travel Reviews? An Empirical Investigation</td>
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<tr>
<td>11:45 - 12:00</td>
<td>Mr Chris C. Emeali</td>
<td>Nigeria</td>
<td>Afctfa Deal and the Nigerian Economy: Implications for the Nigerian Real Sector</td>
</tr>
<tr>
<td>12:00 - 12:15</td>
<td>Ms Dominique P. Alistado</td>
<td>Philippines</td>
<td>Generation X and Y Entrepreneurs: A Phenomenological Study on their Entrepreneurial Traits</td>
</tr>
<tr>
<td>12:15 - 12:30</td>
<td>Ms Angelesa A. Testa</td>
<td>Philippines</td>
<td>Organizational DNA: Its Effects to the Employees’ Occupational Stress and Innovation Performance</td>
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### PARALLEL SESSION 3B: BUSINESS MANAGEMENT
Chair: Martin McAreavey

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<tbody>
<tr>
<td>11:00 - 11:15</td>
<td>Mr Mohamed Naaim Nazim</td>
<td>Maldives</td>
<td>Exploring the Reasons why the Residents of Thaa Guraihoo are Hesitant to Participate in Community Based Tourism: A Qualitative Case Study</td>
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<tr>
<td>11:15 - 11:30</td>
<td>Muhammed Yazeed</td>
<td>Nigeria</td>
<td>Application of the Theory of Planned Behaviour in Entrepreneurship Domain: The Moderating Role of Perceived Behavioural Control</td>
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<tr>
<td>11:45 - 12:00</td>
<td>Ms Vyshnavi Konakalla</td>
<td>India</td>
<td>Breaking Boundaries: Towards Gender-Bender Marketing</td>
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<tr>
<td>12:00 - 12:15</td>
<td>Ms Priya Doris</td>
<td>India</td>
<td>Reverse Mentoring at Workplace</td>
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<tr>
<td>12:15 - 12:30</td>
<td>Dr Monika Chopra</td>
<td>India</td>
<td>Corporate Social Responsibility Initiatives During COVID-19</td>
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### PARALLEL SESSION 3C: EDUCATION
Chair: Professor Stephen McKinney

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<tr>
<td>11:00 - 11:15</td>
<td>Mrs Rossana Moura</td>
<td>Portugal</td>
<td>Empowering Women Through Information and Communication Technologies in the Fight Against Violence: Project Digital Angels</td>
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<tr>
<td>11:15 - 11:30</td>
<td>Dr Alexandra Okada</td>
<td>United Kingdom</td>
<td>OLAF - Online Learning and Fun to Enhance Enjoyment and Retention in Higher Education</td>
</tr>
<tr>
<td>11:30 - 11:45</td>
<td>Professor Alexandre Marino Costa</td>
<td>Brazil</td>
<td>Augmented Reality to Enhance Learning in Secondary Education</td>
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<td>11:45 - 12:00</td>
<td>Dr Pettala Ramakrishna</td>
<td>India</td>
<td>Effect of Multisensory Teaching Strategy in Learning Selected Mathematical Concepts Among Students with Hearing Impairment</td>
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<tr>
<td>12:00 - 12:15</td>
<td>Izabel Meister</td>
<td>Brazil</td>
<td>Knowledge in Social Networks to Promote Informal Education: Habitat of Collective Intelligences</td>
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<td>11:00 - 11:15</td>
<td>Ms Parinita Sinha</td>
<td>India</td>
<td>Creating an Inclusive World: Learners with Special Needs and Challenges Ahead</td>
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<tr>
<td>11:15 - 11:30</td>
<td>Ms Pinki Chatterjee</td>
<td>India</td>
<td>The Post Quarantine World: Management of Health in Schools</td>
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<tr>
<td>11:30 - 11:45</td>
<td>Dr Ana Karine Loula Torres Rocha</td>
<td>Brazil</td>
<td>Professional Education Policy: Work, Unemployment and Contributions of Responsible Research and Innovation - RRI Considering the New COVID-19 Pandemic Context</td>
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<tr>
<td>11:45 - 12:00</td>
<td>Dr Cíntia Regina Lacerda Rabello</td>
<td>Brazil</td>
<td>Teacher Education in Higher Education for Technology, Pedagogy and Content Knowledge Integration Beyond Pandemic Times</td>
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<tr>
<td>12:00 - 12:15</td>
<td>Professor Karine Pinheiro de Souza</td>
<td>Brazil</td>
<td>Inquiry-Based Education for RRI: Empowering Youth as Co-entrepreneurs and Social Digital Innovators During COVID-19</td>
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<tr>
<td>11:00 - 11:15</td>
<td>Dr Nchumthung Murry</td>
<td>India</td>
<td>Economic Analysis of Backyard Poultry Farming in Nagaland, India</td>
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<tr>
<td>11:15 - 11:30</td>
<td>Dr Rimjim Borah</td>
<td>India</td>
<td>Energy Scenario in North-East India: A SWOT Analysis</td>
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<tr>
<td>11:30 - 11:45</td>
<td>Dr Tapati Mukherjee</td>
<td>India</td>
<td>Coronavirus and Migrant Workers - How Coronavirus Turned into a Humanitarian Crisis for Migrant Workers in India? ‘Was the Crisis a Boon or a Curse?’ Mumbai - A Case Study</td>
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</table>
12:00 - 12:15  | Mr Imtiyaz Ahmad Shah  | India  | Carbon Dioxide Emission, Economic Growth, and Energy Consumption among Central Asian Countries

12:15 - 12:30 | Stesa Elsie Pereira  | India  | The Financial Turbulence of the Indian Aviation Industry: A Case Study of Jet Airways

**VALEDICTORY SESSION - DAY 2: 20 AUGUST 2020 (THURSDAY)**

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>13:00</td>
<td>Announcements &amp; Recognitions of the VIPs</td>
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<tr>
<td>13:05</td>
<td>Introduction to the Valedictory Session by Professor Suresh Kumar Sharma, Conference President</td>
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<tr>
<td>13:10</td>
<td>Overview of the LSME Online International Conference 2020 by Professor Stephen McKinney, Conference Chairman</td>
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<td>13:20</td>
<td>‘Beyond 2020’ by Dr Ravi Kumar, Conference Convener</td>
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<tr>
<td>13:23</td>
<td>Address by Guest of Honour – Dr Peter Gray, NTNU, Norway</td>
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<tr>
<td>13:35</td>
<td>Valedictory Speech by Chief Guest – Professor Rajan Welukar</td>
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<tr>
<td>13:55</td>
<td>A Few Words from a Conference Delegate</td>
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<tr>
<td>14:00</td>
<td>Vote of Thanks by Dr Dolly Jackson-Sillah</td>
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<td>Conference Ends</td>
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## DIGNITARIES AND FACILITATORS

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<tr>
<th>CHIEF GUESTS</th>
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<tr>
<td>The Lord Sheikh</td>
<td>House of Lords</td>
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<td>Lady Sheikh</td>
<td>Office of The Lord Sheikh</td>
<td>UK</td>
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<tr>
<td>Professor Rajan Welukar</td>
<td>Vice-Chancellor, Auro University</td>
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<th>GUESTS OF HONOUR</th>
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<td>H.E. Dr Durga Bahadur Subedi</td>
<td>Ambassador Extraordinary and Plenipotentiary of Nepal to the UK and the Republic of Ireland</td>
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<tr>
<td>Professor Rajan Welukar</td>
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<tr>
<td>Cllr. Zulfiqar Hussain</td>
<td>The Mayor of Redbridge</td>
<td>UK</td>
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<th>KEYNOTE SPEAKERS</th>
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<tr>
<td>Professor T C A Anant</td>
<td>Former Chief Statistician of India</td>
<td>India</td>
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<tr>
<td>Professor Stephen McKinney</td>
<td>University of Glasgow</td>
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<th>GUEST LECTURER</th>
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<tr>
<td>Professor Rajat Sandhir</td>
<td>Panjab University</td>
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<th>CHAIRPERSONS</th>
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<td>Dr Peter Gray</td>
<td>Norwegian University of Science &amp; Technology</td>
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<td>Dr Anita Sharma</td>
<td>Himachal Pradesh University</td>
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<td>Professor Mangey Ram</td>
<td>Graphic Era (Deemed to be University), Dehradun</td>
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<td>Dr Mohammad Khalil Ahmad</td>
<td>A E Kalsekar College, University of Mumbai</td>
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<td>Dr Amandeep S Marwaha</td>
<td>Panjab University</td>
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<td>Professor Mokgale Makgopa</td>
<td>University of Venda</td>
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<td>Dr Dolly Jackson-Sillah</td>
<td>London School of Management Education</td>
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<td>Dr Minakshi Kishore</td>
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<td>Dr Mabel Zvobgo</td>
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<td>O. Rume. A. Okandeji-Barry</td>
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<td>Adebayo King</td>
<td>London School of Management Education</td>
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<th>PAPER REVIEWERS</th>
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<td>Dr Mashkur Zafar</td>
<td>University of West London, Ras Al Khaimah Branch</td>
<td>UAE</td>
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<td>Dr Nitin Arora</td>
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<td>Dr Tejinderpal Singh</td>
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<td>Dr Anjum Ara Ahmad</td>
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<td>Er Rachita Sambyal</td>
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<td>Dr Asha Jindal</td>
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<td>Dr Santwana Mishra</td>
<td>Dr Babasaheb Ambedkar Marathwada University</td>
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<td>Dr Shajratul Dur Khan</td>
<td>Jamnalal Bajaj Institute of Management Studies</td>
<td>India</td>
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<td>Dr R K Srivastava</td>
<td>Government of Maharashtra's Sydenham Institute of Management Studies, University of Mumbai</td>
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MESSAGE FROM THE CONFERENCE CONVENER

In August 2020, LSME held its 7th Annual International Conference on Responsible Research and Innovations, focusing on the Role of Management, Education and Social Sciences. Being a virtual conference, it attracted more than 300 participants from different parts of the globe and promoted diversity in the nature and type of research presented. The success of the research is attributed to the contribution of all the enthusiastic delegates and participants who attended and shared their academic research work to promote a spirit of collaboration and networking.

The theme of this year’s conference, “Role of Management, Education and Social Sciences in Responsible Research and Innovations: Challenges and Realities” is timely and relevant to the current global conditions in which we live. With many research activities now taking on a global dimension, it is imperative to discuss positive approaches towards inculcating best research practices, including examining the role of research in education, management and human sciences in promoting social justice, inclusion and equity; and influence on policy and practice. The COVID-19 Pandemic has also presented unique opportunities for several research activities in our interested domains and it would be interesting to share the findings of the fantastic research projects presented during the annual conference.

This research book is a compilation of the research proceedings and the peer-reviewed full manuscripts of research projects presented at the conference. The book presents a unique opportunity for an extended dialogue among researchers and renowned and experienced academics from several countries. This year’s papers cover several disciplines including science, medicine, mathematics, management, economics, education and language. The discussions focus on how research can respond to the needs of society as a whole.
I would like to use this opportunity to express our sincere appreciation to all the Conference Committee members, the Peer Review team, the delegates and all those who contributed to the compilation of the research book in diverse ways. I hope you enjoy reading the book.

Best wishes!

Dr Ravi Kumar
Executive Director of LSME & Conference Convener
MESSAGE FROM THE LORD SHEIKH, HOUSE OF LORDS, UK

The Lord Sheikh

House of Lords
Westminster
London
SW1A 0PW

Tel: 020 7219 4542
E-mail: sheikhm@parliament.uk
Web-site: www.lordsheikh.com

1st March 2021

Dear Reader,

It is a great pleasure for me to acknowledge that the Seventh LSME International Research Conference was the second LSME international research conference that I have attended in succession and had the privilege of inaugurating. I am much delighted to have done that due to my personal interest in education and research. For the Conference 2020, however, I would have imagined that it would most likely be postponed for a time when we are in a post-Covid era. However, it was a pleasant surprise for me when LSME announced the Conference despite all the challenges, lockdowns, and disruptions around the world. Not only they succeeded in organising the event bigger, but they were also able to extend the invitations to a much wider audience and receive an overwhelming show of interest from over five thousand participants from different parts of the world.

I understand that considering the difficult circumstances worldwide, LSME waived off the conference registration fee as a goodwill gesture. Moreover, they had to toil even harder to screen the participants, review the papers, and prepare for the Conference of this magnitude. But I am sure the success of the Conference was the grand prize!

The Covid-19 pandemic has brought devastations and disparities around the world beyond our imagination. Some countries have been set behind decades in terms of the loss of their potential developmental gains, while even the most developed found themselves in a state of desperation in the face of this calamity. Attending this particular Conference was much of a delight for me, as it was a fresh opportunity to start looking at the solutions. I am so glad that a good number of the research papers produced at the forum focussed on some aspect of the Covid-19 pandemic and its implications.
This Conference, particularly meeting young researchers from different parts of the world, has given me a lot of hope for a brighter future in a post-Covid era. A good piece of responsible research would unearth the issues deep-rooted in the society, analyse them, evaluate the results through a prism of differing perspectives and provide recommendations that would be beneficial to society. The point that interests me most is that it would help policymakers frame policies that positively impact the people and the community.

Hence, I am confident that I am looking at several studies here, which would bring desirable changes to our world through this dreadful pandemic and long after it is gone. Thank you all for your contributions, and I look forward to reading more of your works in the future and seeing you at future conferences.

Kind regards,

Yours Sincerely,

[Signature]

The Lord Sheikh
MESSAGE FROM H.E. DR DURGA BAHADUR SUBEDI, AMBASSADOR EXTRAORDINARY AND PLENIPOTENTIARY OF NEPAL TO THE UNITED KINGDOM AND THE REPUBLIC OF IRELAND

1st February 2021

Once again, the London School of Management Education (LSME) has accomplished a great feat by organising an online research conference, amidst the COVID-19 Pandemic bringing together hundreds of young researchers and experts on the theme of Responsible Research and Innovations (RRI).

I am very pleased with the idea of LSME opening up the Conference to an international audience without charging registration fees, keeping in mind the COVID-19 Pandemic and the loss of earnings experienced by many around the world. Despite the fact, they had to sift through thousands of registrations to screen out the best papers, LSME took the challenge, for which I congratulate the College.

This year’s theme of the Role of Management, Education and Social Sciences in RRI and its Challenges and Realities, could not have been more relevant and current given the circumstances surrounding the new realities confronted by the Pandemic and the socio-economic disruptions across the world. It was interesting to learn that many of the researchers chose to study aspects of the implications of the COVID-19 in the daily lives of their communities. It is the need of the hour, and the responsible thing to do as our progress beyond the Pandemic will depend on how well we are prepared for it. Due to the unprecedented nature of the Pandemic, we have to depend on the research community to provide credible research-informed narratives for our approach towards dealing with life beyond the Pandemic.

Seeing the presenters and the participants' average age and their enthusiasm and passion, I hope this Conference has struck a chord with the young researcher community. I believe this platform will help hone many young researchers in the future. I look forward to these research outputs being disseminated widely, for the benefit of society.

I take the opportunity to congratulate LSME and all the researchers who were part of this fruitful Conference and wish you great success in your future endeavours.

H.E. Dr Durga Bahadur Subedi
Ambassador Extraordinary and Plenipotentiary of Nepal to the United Kingdom and The Republic of Ireland
MESSAGE FROM THE PROFESSOR STEPHEN MCKINNEY
CONFERENCE CHAIRMAN

This book contains a selection of the research papers that were delivered at the 7th LSME international research conference, held on the 19th and 20th of August 2020. At the time of writing this message, we are seeing promising signs that we may be beginning to emerge from the latest lockdown in the United Kingdom that was precipitated by the Covid-19 pandemic. This is a just cause for celebration and a timely reminder of the importance of research for society. The Governments throughout the world sought advice from teams of researchers who had ‘modelled’ the spread and impact of the pandemic. This advice informed decisions about national restrictions and lockdowns. The vaccines for Covid-19 were developed by scientists - trialled and tested and made available after an intense period of research. Researchers are estimating the long- and short-term economic effects of the period of the pandemic. Those of us who focus on research in education are concerned about the effects of the pandemic on the school education of the boys and girls throughout the world, especially those who are already disadvantaged. We have noted the many challenges that have been faced as teachers and pupils have switched to online teaching and learning, or other forms of remote teaching and learning. We have also noted the successes as many learners have demonstrated agility and flexibility in the new modes of learning. This will lead to some very interesting discussions and debates about the future of teaching and learning in schools.

There are also fascinating new opportunities opening up in Further and Higher Education. The pandemic has resulted in many academics upskilling in IT and exploring ways to communicate across the world and collaborate in new and innovative ways. Ironically the worldwide pandemic has possibly created a more effective opportunity for an authentic, global engagement between scholars and researchers. The LSME 2020 online conference is a very good example of this phenomenon. We welcomed scholars from around the world who shared their research and joined in discussion and academic exchanges. This has provided us with much to consider as we move forward with our research agenda.

It is my pleasure to thank all at LSME for the production of this research book and all those who have assisted in the process. I thank all those who contributed their papers for consideration and I thank those who dedicated time to reviewing the articles and providing feedback to the authors. I thank the internal and external design and production teams. The LSME has now created a very interesting suite of publications that highlight the work undertaken at the conferences and the College has provided opportunities for researchers, especially early career researchers, to publish
their work for an international audience. This is a great testament to the dedication of Dr Sarita Parhi, Dr Ravi Kumar, and Hassan Shifau and the strong team at the LSME. As I conclude this message, I am thinking ahead to the next LSME conference (2021) with great pleasure and joy. I hope you will be able to join us.

With very best wishes

**Professor Stephen McKinney**
University of Glasgow & Conference Chairman
MESSAGE FROM DR PETER GRAY

Dear Friends and Colleagues,

Once more, LSME has produced a significant publication, based on the papers presented to the annual Responsible Research and Innovation conference. Congratulations to all the authors who made it through the review process!

Writing this message provides an opportunity to revisit the principles of responsible research and innovation. Many academic articles and publications have been devoted to this topic, but it is very far from being an established concept. This is due partly to the inertia of the academic system. As all of us know, producing a competent academic article is hard work and represents a considerable investment in time and energy. This also applies to the editing and review process. Many academic jobs are dependent on publication points and citation indices.

Because of this, however, a literal and metaphorical mountain of publications now lies before us. Like Everest, many of us want to climb the mountain and be published in the so-called top journals and have thousands of citations. But as with mountain climbing, this is often a selfish pursuit that ignores the needs of others, those at the bottom of the mountain. Research results sometimes contribute to the public good, but not always. The freedom to climb and the freedom to do research are valuable, but these freedoms need to be exercised responsibly.

Researchers need to be able to admit that they are wrong, just as climbers sometimes need to admit that going back down is necessary for their own survival. In medical research, this is increasingly common, as researchers realise that their work is based on poor data or faulty analysis. We need to open up the possibility of admitting that some lines of research are simply not necessary, useful or desirable. Unfortunately, there is no easy way to gain credit or recognition for acting responsibly by coming down the mountain, clearing away the litter at base camp and going home to take care of loved ones.

This is not to say that publication, or mountain climbing, are inherently wrong. The function of the LSME conference, however, is to support researchers and educators in thinking about the ‘why’ of research, the ‘so what?’ question, which should be asked more often. As we prepare for the 2021 conference, we encourage the authors in this publication, and many other colleagues, to return, having reflected on this question. Please surprise us with your answers!

Dr Peter Gray
Norwegian University of Science & Technology (NTNU), Norway
MESSAGE FROM PROFESSOR RAJAN WELUKAR

First of all, let me congratulate all the researchers who managed to get their papers published in this compilation. You have not only lit a candle in the world of research that would keep guiding and showing path for many for generations to come, but also carved a space for yourself in the movement of building a research community around Responsible Research and Innovations, which is led by London School of Management Education (LSME).

It gives me great pleasure to associate myself with the LSME Seventh International Research Conference on the ‘Role of Management, Education and Social Sciences in Responsible Research and Innovations: Challenges and Realities’ more than a well-wisher by being a companion of LSME in this journey. I see a group of highly committed people working very hard with conviction and commitment to groom and launch young researchers into the world of RRI by providing an international avenue to work with researchers from diverse backgrounds and disseminate their studies.

Having seen the devastating impact of COVID-19 Pandemic, especially on the lives of poor and their communities, I feel research has an important role to play in rebuilding those communities. Research can also be a valuable practical tool that can show path through the rubbles and help put together society and the broken systems in a way that is socially, economically and environmentally more sustainable and robust than pre-COVID.

As a researcher and author, your journey has not ended here with this book, you should continue to revisit your research to keep expanding and deepening it as more and more, start giving it shape and life. I am confident that I will find a wealth of knowledge and new ideas in this Research Book, and it will stay with me for some time to come, giving me more wisdom and a better world-view.

It has always been a great pleasure for me to attend a number of LSME Research Conferences where I had the privilege of enriching and sharing from my knowledge and years of experience in the world of research and education.

I am sure LSME and the authors of the papers will take great pride in this significant publication conceived and delivered through the challenges of the COVID-19 Pandemic. This publication has made me even more hopeful and keen for the LSME Research Conference of 2021!

Professor Rajan Welukar
Vice Chancellor, Auro University, India
MESSAGE FROM MARTIN MCAREAVEY

Hello from the North West of the UK.

It was no surprise to me that, despite the massive impact of a global pandemic on many aspects of our lives, the 2020 LSME International RRI Conference should confound conventional wisdom and actually grow in stature, quality and prominence, rather than being constrained by the challenge of not being able to gather (physically) to share ideas. In fact, I was delighted that the event was a fantastic success, with more papers, more delegates and even greater contributions from internationally renowned speakers and prominent public figures.

I’ve been reflecting on the reasons for this positive outcome, some of which I would like to share with you now.

Since my first encounter our colleagues at LSME as a delegate at the 2016 International Conference on RRI in Education and Management, I have been made to feel welcome and part of the growing ‘family’ of stakeholders around this growing and internationally significant research community. In speaking with other delegates, old and new, I often hear the same story of feeling welcomed into and becoming part of a family.

There is also something very special at play here about the orientation towards research and the acknowledgement of the personal value each researcher brings to the process. The RRI message enshrines openness to new ideas, commits to enabling platform access for researchers at all stages of their career, and actively seeks to confound conventionally tolerated barriers to research participation, such as gender, age, cultural heritage, socio-economic origins or prior educational achievement. When these barriers are removed there is an explosion of creative ideas and a flood of new talent into the intellectual gene pool, which is to the clear benefit of wider society and the human race.

Then there is the sheer exuberance and positive energy that seems to flow through all aspects of preparation and organisation of the conference series – if ever a conference was delivered ‘with gusto’ then this is it!

I am delighted to have continued my association with everyone around the LSME International RRI Conference series since 2015, through which I have made many productive professional relationships and enduring friendships.
The collection of papers presented at the 2020 Conference and set out in this book are a remarkable record of achievement that I believe will continue to grow for many years to come. I do hope you enjoy connecting with the stories told by each research paper published in this book.

Martin McAreavey
The University of Bolton, UK.
SUMMARY

This research book is a compilation of the research proceedings and the peer-reviewed full manuscripts of research papers presented at the LSME’s 7th Annual International conference on Role of Management, Education and Social Sciences in Responsible Research and Innovations: Challenges and Realities. It presents a unique opportunity for an extended dialogue among researchers and renowned and experienced academics from several countries and covers several disciplines including Life Sciences, Medicine, Mathematics, Economics, Management, Education and Language.

The first part of the book takes a closer look at a prominent keynote speech delivered on the first day of the conference which commenced with a short introduction to Responsible Research and Innovations (RRI) and the role of RRI in supporting the aims and implementation of the Sustainable Development Goals. It then examined poverty and child poverty and food security and examined some of the effects of COVID-19 on child poverty, school education and food security for children. The speech concluded by arguing that RRI can make a significant contribution to research on these themes at this time.

The second part of the book examines the abstracts for thirty-one selected promising papers which were presented during the conference and features topics on Climate Change, the impact of COVID-19 Pandemic, Gender-related Issues, Mental Health, Emotional Intelligence, Alcoholism, Population Growth, Nutrition, Food Production, Ethnicity and Functional Diversity, Agriculture, Vaccine Development (for Bacterial Vaginosis), the spread of Dengue Virus Infections, Renewable Energy, Corporate Social Responsibility, Online Learning, Psychology in Business, Finance and Special Education Needs for Autistic individuals.

The final part of the book takes a detailed look at the peer-reviewed full manuscripts of the selected research papers presented during the conference including the author information and the names of the institution they are affiliated with.
RESPONSIBLE RESEARCH AND INNOVATION: COVID-19: FOOD INSECURITY, CHILD POVERTY AND EDUCATION

Professor Stephen J. McKinney, School of Education, University of Glasgow

INTRODUCTION

The rapid spread of the Covid-19 pandemic has had a major impact on the education of children and young people across the world. Schools throughout most of the world were closed as part of lockdown procedures. The percentage of children who were out of school rose to 91% which equalled 1.6 billion children. There were serious implications and consequences when the vast majority of children and young people were not attending school. There were concerns about the quality of home education and how well-equipped parents and guardians were for home education. There were serious issues about the impact of the digital divide, or digital exclusion, in the pre-Covid-19 world and that became increasingly highlighted in the lockdowns enforced by the Covid-19 pandemic (McKinney, 2020). There were erroneous assumptions that most children had access to computer equipment and the internet, certainly in the developed countries. Some families may have had internet access but did not have sufficient income to pay the bill for the internet. There were concerns about the physical and mental wellbeing of children. Vulnerable children became more susceptible to mental, physical and sexual abuse (United Nations, 2020a). The challenges of ensuring equal access to school, and to sufficient and nutritious food for children worldwide pre-Covid-19, became more problematic during the pandemic.

This paper will commence with a short introduction to Responsible Research and Innovation (RRI) and the role of RRI in supporting the aims and implementation of the Sustainable Development Goals. The paper will then examine poverty and child poverty and food security and examine some of the effects of Covid-19 on child poverty, school education and food security for children. The paper will conclude by arguing that RRI can make a significant contribution to research on these themes at this time.

RESPONSIBLE RESEARCH AND INNOVATION

Responsible Research and Innovation aims to include a wide group of stakeholders in the process of research to seek a better alignment between the process and outcomes of the research and the ‘values, needs and expectations of society’ (European Commission, 2020a). The promotion and advancement of RRI does not imply that previous research and concurrent research has not been, and is not, responsible. RRI seeks a greater degree of responsibility that is reflected in the inclusion of stakeholders at every stage of the research. This is effectively a strategy to ensure that the research and the results of the research will be of benefit to stakeholders and society. There is a commitment to open access to the results/findings of research and an aim to disseminate these results/findings to a wide audience.
RRI means being acutely aware of the following process requirements: Diversity and Inclusion; Anticipation and Reflection, Openness and Transparency and Responsiveness and Adaptive Change. (Klaassen et al., 2014). These four process requirements are described as follows:

**Diversity and Inclusion.** Be sensitive to research biases, include diverse voices and make results beneficial to a wider community.

**Anticipation and Reflection.** Think on the purposes and possible implications of your research and its outcomes and envisage all possible strategies and methods.

**Openness and Transparency.** Share objectives, methods and, whenever possible and appropriate, results, and inform about potential conflicts of interest.

**Responsiveness and Adaptive Change.** Be responsive to changes and external inputs, adapting your research plans to changing social values and expectations.

Some key issues should also be taken into account: Ethics, Gender Equality, Governance, Open Access, Public Engagement and Science Education.

The European Commission identified seven societal challenges in the Horizon 2020 funding programme for research (European Commission, 2020b). These were:

1. Health, Demographic Change, and wellbeing;
2. Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy;
3. Secure, clean and efficient energy;
4. Smart, green and integrated transport;
5. Climate action, environment, resource efficiency, and raw materials;
6. Europe in a changing world – inclusive, innovative and reflective societies;

RRI projects under Horizon 2020 sought solutions to these societal challenges. As horizon 2020 comes to completion, the societal challenges continue to require serious attention to create more inclusive, healthy, ecologically responsible and sustainable communities.

There is another set of challenges that have been set by the United Nations. In 2015, seventeen Sustainable Development Goals (SDGs) were accepted by the member states of the United Nations. These replaced the eight Millennium Development Goals (MDGs) that had aimed to improve the quality of lives around the world by, for example, halving poverty rates and providing universal primary education between 2000 and 2015 (United Nations, 2015). There are mixed views about the long-term impact of the MDGs. Sachs (2012) argues that the MDGs had no intermediate objectives and milestones and the available data was often out of date. There were some successes, but the achievement of the goals was more marked in the ‘developed’ countries.
rather than the ‘developing’ countries. The ‘developed’ countries were supposed to be supporting the developing countries.

The purpose of the SDGs is to continue and to improve on the work of the MDGs and to ‘end poverty, protect the planet and improve the lives and prospects of everyone, everywhere’ (United Nations 2020b). This is part of the 2030 Agenda for Sustainable Development. The Sustainable Development Goals are best understood to be interrelated rather than a series of single and discrete goals, and there is an increasing emphasis on ecological matters and the sustainability of the current use of the global natural resources. There are three main goals that will be featured in this paper: Goal number 1, No Poverty; Goal number 2, Zero Hunger and Goal number 4, Quality Education (United Nations, 2020b).

POVERTY AND CHILD POVERTY

Poverty is best understood as multidimensional as there are different ways to understand poverty and the effects of poverty (McKinney, 2014). Poverty is often caused by a lack of resource, usually financial, to meet the basic needs of the person (or the household). These basic needs are essential for the growth and development of the individual. There is some debate on the scope and quantification of basic needs (or basic human needs) (Economic Democracy Advocates, 2017, Quintavalla and Heine, 2019). There is also a very close connection with human rights (Office of the United Nations High Commissioner for Human Rights, 2008). There are physical needs such as food, water, sanitation facilities, shelter, clothing and medical support. These all need to be qualified as follows: regular access to nutritious food and safe, clean water; appropriate sanitation facilities; safe shelter; adequate clothing; available and good quality medical support (United Nations, 1995). The understanding of needs can be extended to cultural, social and spiritual needs (Stavenhagen, 2003). This includes education and this also needs to be qualified: an available, accessible, acceptable and adaptable and inclusive education (United Nations, 1999; United Nations, 2020c).

Some of the distinctions between different types of poverty such as absolute poverty (poverty where choices have to be made about basic needs), extreme poverty (poverty is measured in relation to a baseline income – currently, those living on less than $1.90 a day), relative poverty (poverty relative to the standard of living in a national context), and persistent poverty (poverty that is experienced over a period of time) are useful (The World Bank, 2020). The distinctions between developed and developing countries have some limited value as there are very high levels of poverty in some of the developing countries. However, the distinctions cannot be over stretched as there are many people who are poor in the developed countries and people who are not poor in developing countries.

Poverty can be triggered by external forces and events, including economic recession, warfare and the effects of warfare (internal and external migration) ecological disasters that ruin crops and livelihoods and, as we have experienced in 2020, a pandemic. The statistical figures for
poverty across the world, then, are subject to fluctuation at national and international levels. At the time of writing, the figures for global poverty in 2020 are being predicted to rise as a result of Covid-19 and economic recession (The World Bank, 2020). The number of people in extreme poverty could rise to 9% and the number of people living on less than $3.20 could rise to 23%. The number of people who live on less than $5.50 a day could rise to 42%. This is a volatile period of time and the figures will be higher or lower in different parts of the world.

The SDGs aim to address the levels of poverty at national and international levels. There is a strong relationship between poverty and unemployment for many people, but it cannot be assumed that employment is necessarily a viable route out of poverty (McKinney et al., 2012; Scottish Government, 2019). In the United Kingdom there has been a rise in people who are living in ‘working poverty’ (Bourquin et al., 2019). Many of the suggested strategies in the progress to alleviate poverty in the UK promote a greater degree of financial security in the household. These strategies include an increase in sustainable employment, improvement in earnings and security for those in low paid employment, an adequate benefits system and further provision of low-cost housing (McKinney et. al., 2020, Goulden, 2020).

As has been seen, the statistics on poverty vary at national levels and are subject to fluctuation; the statistics on child poverty also vary. Covid-19 will have a serious effect on the levels of poverty and child poverty worldwide. Pre-Covid-19, there were 663 million children throughout the world living in poverty (Unicef, 2020a). This means that one in three children were living in poverty. There were 385 million children living in severe poverty. The aim of SDG goal number 1 is to halve child poverty and to end severe child poverty by 2030. Children are dependents and their poverty and level of poverty is normally determined by the resource available to the household. Children in single parent families in the UK have high poverty rates. In the period 2018/2019, where a single parent was working full time, the figure was that 22% of children were living in poverty. (Joseph Rowntree Foundation, 2020). Where the single parent was working part time the child poverty figure was 41%. Where the child lived with a couple and one of the adults was working, the child poverty figure was 38%.

Child poverty can affect the education of children, especially in the early years of education (McKinney, Hall and Lowden, 2020). One of the ways to identify the effects of poverty on school education is to refer to an ‘Attainment Gap’ between children who are more advantaged and those who are less advantaged. This is a one-dimensional approach, often focussed on literacy and numeracy, and an alternative is a holistic approach that works across sectors and systems and addresses the needs of all children and young people, rather than solely focussed on attainment (McKinney et.al., 2013; Mowat, 2018).

FOOD INSECURITY

The aim of SDG Goal number 2 is to achieve zero hunger by 2030 (United Nations, 2020d). It is important to distinguish between hunger and food insecurity. Hunger is caused by a lack of
calories sufficient for the day and manifests itself in discomfort and pain (Food and Agriculture Organisation of the United Nations, 2020). If this is a regular occurrence, then the situation becomes chronic and leads to undernourishment and malnutrition. Food insecurity means a person does not have regular access to a sufficient amount of safe and nutritious food that will enable growth, development and a healthy life. Food insecurity is categorised by the Food and Agriculture Organisation of the United Nations as ‘moderate food insecurity’ and ‘severe food insecurity’. Moderate food insecurity means that there is inconsistent access to food that is required for a healthy diet. Severe food insecurity means that people may not have eaten for a number of days and will be experiencing hunger. There is also very serious issue about the nutritional value of the food that is eaten and there are major concerns about the rise in the levels of obesity and malnutrition often caused by regular consumption of processed foods that are insufficiently nutritious.

The aim is to achieve food security at individual, household, national, regional and global levels. Food security is defined as follows:

Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (World Food Summit, 1996).

The current United Nations figures that are referred to below were calculated pre-Covid-19. The current figures are that 750 million experienced severe levels of food insecurity and around 2 billion people were not able to access safe, nutritious and sufficient food in 2019. This figure had risen by 60 million in five years. The figures for hunger are lower and around 690 million people worldwide were hungry (8.9% of the world population). This figure is lower as would be expected from the distinction between moderate and severe food insecurity and the relation to hunger. The United Nations points out that the ambitious target of zero hunger by 2030 will not be met and, in fact, there will be a worldwide rise in hunger. In the pre-Covid-19 Calculations, the figure for people experiencing hunger will be 840 million by 2030 (9.8% of the world population).

THE EFFECTS OF COVID-19 ON CHILDREN, THEIR HEALTH AND EDUCATION

The effects of Covid-19 on children, their health and education, is a grave challenge for countries throughout the world. Previous to Covid-19, the United Nations reported that 260 million children worldwide (around one fifth of the children) were not in school. The effects of Covid-19 meant that many countries closed schools to avoid the spread of infection and this affected 91% of school children worldwide (United Nations, 2020a). The figure for April 2020 was that 1.6 billion children were out of school across the world. There were also very serious implications for the 369 million children across 143 countries who were reliant on school meals.

Covid-19 has exacerbated the pre-existing problems of food insecurity, hunger and malnutrition (The Lancet, 2020). There has been disruption to food supply chains in some parts of the world
because of lockdown restrictions. Farmers have been unable to access local markets to sell crops and livestock. Families in Afghanistan, for example, faced food shortages as the price of food escalated during Covid-19 (Save the children, 2020). This affected 7.3 million children. The figures indicate that approximately 2 million children below the age of 5 suffer from life-threatening extreme hunger on an annual basis. The scarcity of doctors means that they may not receive the medical treatment they require.

The position for children in other areas of conflict has become equally desperate. The conflict in Yemen has lasted five years and four out of five children (12.3 million) are in need of aid (Unicef, 2020b). The conflict has damaged the infrastructure of the country and the health services. The poor condition of the health service has created major obstacles to the treatment and containment of Covid-19. There are serious shortages of staff, equipment and medicines in the health service. The majority of children (10.2 million) do not have access to basic health children. There are two million children under five suffering from malnourishment. An increasing number of children face hunger and malnutrition as a result of Covid-19. Before Covid-19, two million children were not attending school in Yemen. The closure of schools as a result of Covid-19 meant that another 5.8 million children were not attending school. While this will have a detrimental effect on the education of the children, the closure of schools also means that children cannot access the school food programmes.

In Scotland almost 1 in 4 children live in poverty (Scottish Government, 2020). The figure for child poverty in the city of Glasgow, the largest city in Scotland, is one of the highest for the country: there are 1 in 3 children living in relative poverty. This equates to more than 37,000 children. (Glasgow City Council, 2019). In 2015, the Scottish Government introduced free school meals for all children between primary 1 (children aged 5) to primary 3 (children aged 7), irrespective of family income (mygov.scot, 2020). Glasgow City Council extended the provision of free school meals in the City of Glasgow to primary 4 (children aged 8) in 2018. After primary 3 free school meals become a means tested benefit (after primary 4 in Glasgow) (McKinney, Hall and Lowden, 2020). The free school meal programme was extended in the school summer holidays of 2020 during the period of lockdown and phased exit from lockdown in response to Covid-19 (Glasgow City Council, 2020; mygov.scot, 2020). This extension was available to any child that met the means test. The number of children eligible for free school meals in the pre-Covid-19 period was 122,000. This had risen to 175,000 during the pandemic, a rise of 53,000 (Beaton, 2020).

**CONCLUDING REMARKS**

The global rate of poverty and child poverty was alarming in the pre-Covid-19 period of time. There were signs that the levels of poverty and child poverty were increasing in parts of the world and this has now been accelerated by the effects of Covid-19. There is a pressing need for research on the impact of children being out of school around the world and the effects of their education and physical and mental health and wellbeing. The levels of food insecurity and hunger for children have risen for children across the world. There is also a pressing need for a more
sophisticated understanding of the sources of food for children and young people who suffer from the effects of poverty and the nutritional value of this food. It is not enough to succeed in tackling hunger, food security means access to ‘sufficient, safe and nutritious food’ that meets dietary needs to enable an active and healthy life (World Food Summit, 1996). These sources of food include free school meal programmes, foodbanks and the type of food available in local stores. There is also a pressing need in some parts of the world to understand the levels of intake of processed foods and the relation to levels of obesity.

Responsible Research conducted according to the aims, principles and practices of RRI includes a commitment to responsiveness and adaptive change. This means responding to the current situation and it also means finding ways to share the results/finding of research with a wide audience beyond the academic community. RRI can make a significant contribution to research on the pressing and urgent themes of child poverty, education and food insecurity. These themes are integral to the Sustainable Development Goals and the health and future of the children and young people throughout the world.
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ABSTRACT – 1

PANDEMICS AND SCHOOL CLOSURES IN THE TWENTIETH AND TWENTIETH FIRST CENTURIES

Stephen J. McKinney¹, Professor, Dr Sarita Parhi², Principal, Dr Ravi Kumar³, Executive Director, Mr Hassan Shifau⁴, Chief Research & Innovations Officer and Dr Peter Gray⁵

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The aim of this paper is to provide a survey of the impact of the pandemics of the twentieth and twenty-first centuries on school education, with particular focus on Covid-19. This research has been prompted by the mass school closures throughout the world in 2020 caused by the rapid spread of the highly infectious Covid-19 Influenza. The method used in the paper is a review of online literature and critical analysis of the rationale for school closures, the different modes of school closure and the impact of school closures on children and young people. The paper maps the five pandemics between the Spanish Flu of 1918-1919 to Covid-19 of 2020-2021. The paper contains an extended discussion of Covid-19 and the complexity of the educational response to lockdowns and school closures in many different parts of the world. The paper concludes with a projection of a ‘Responsible Research’ agenda for research into the short and long term effects of Covid-19 on school education.
ABSTRACT – 2

THE GLOBAL CHANGE IN CLIMATE AND ITS SOCIETAL INFLUENCE

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Development and industrialization has been an important part for a nation’s growth but at the same time, it may change the lifestyle of its people manifold. With development, follows in largescale overexploitation of resources often with generation of pollution. With the increasing need for energy, there has been largescale overuse of non-renewable resources like fossil-fuels leading to the emission of greenhouse gases into the environment. With the greenhouse gases and the aerosol particles increasing in concentration, there is alteration in energy balance of the climate system with warming or cooling effects on the atmosphere of the earth. Climate change is the newest and foremost environmental problem that got recognition over a period of three decades and is becoming a subject of mass debate. This is leading to adverse impacts and irreversible consequences on the earth. There are pathways being projected by government and policymakers on finding out reduction strategies to reduce emission of greenhouse gases and aerosols. Presently, greenhouse gases and aerosol particles are part of climate discussions with significant work to be done in the field of awareness generation and climate research. In the present research work, the major causes of climate change and their relationship with increase in temperature on the earth has been reviewed. Both greenhouse gases and aerosols have been found to hold an effective position in degrading the atmosphere and making it a matter of concern for the society.

Keywords: Aerosols, Climate Change, Global Warming, Impacts, Greenhouse Gases
ABSTRACT – 3

MAPPING WORLDWIDE RESEARCH ON WORKING WOMEN FROM 1989-2019: A SCIENTOMETRIC ANALYSIS

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Previously, women were confined at home to be a full-time housewife and their spouse were the only bread earners for the family. However, the time has changed now. Women are now actively involved in their professional lives, breaking the glass ceiling and proving their worth. They have gained tremendous confidence and are working shoulder to shoulder with their male counterparts. Empowerment of women is a global concern and this doesn’t mean that women are trying to overpower the opposite sex but instead their aim is to survive through the ever-growing competitive surroundings. Any kind of discrimination and inequality towards women must be stamped out in order to preserve their rights as well as unleash their concealed potentials. The paper is an attempt to explore the scientific global literature on “Working Women” indexed in the Web of Science (WOS) core collection during the period of 1989-2019. Mostly, a bibliometric analysis is done to evaluate both research trends as well as scholarly networks in different research disciplines. Such analysis provides guidance to the budding researchers and encourages them to conduct further researches. The scientometric study examines year-wise distribution of articles, document types, productive authors and editors, geographical distribution of articles, leading source titles, top funding agencies and the most trending linguistic pattern. During the study period, it was found that a total number of 84,395 articles were published on working women in the past 3 decades. The results indicate that the year 2019 has the highest publications (6,769 record count) and majority of these publications are in the form of journal articles with 75,848 record count which comprises of 89 percent of the total available records. Kivimaki M is the most prolific author with 209 publications and the leading source title being the Plos One with 799 record count. The top contributing country is found to be USA with 13,739 publications on working women and the most productive language being the English language with 34,723 publications i.e. comprising of 94 percent of the total scholarly publications on working women. Among the funding agencies, United States Department of Health Human Services is at the top with 3,372 publications.

Keywords: Bibliometrics, Research Productivity, Working Women, Scholarly Publications, Web of Science, Research Analysis
ABSTRACT – 4

SATISFACTION WITH LIFE AND DEATH ANXIETY: WHERE YOUTH MATTERS

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In the multidimensional facets of developing world people constantly search for a satisfied life. All they focus to do is to secure a healthy well-being. Parallel to life there exist a fine line of death which people ignore or give more importance than life. Thus there are chances of death anxiety among individuals either latently or prominently. This is interesting to understand that life and death are the two most unpredictable yet constant realities. Understanding this relationship is not easy. Therefore, the present study was conducted to find out the interrelationship between satisfaction with life and death anxiety among youth. For this purpose, a general information schedule, Satisfaction with Life scale by Diener (2006) and Death Anxiety Questionnaire by Conte, Weiner and Plutchik (1982) were administered on college students aged between 18 to 22 years based in Kolkata, India (N=200). The hypotheses were statistically tested by using measures of Descriptive Statistics (Mean), Measures of Variability (Standard Deviation), One-Way ANOVA, Correlation and Regression Analysis. The findings reveal that the satisfaction with life and death anxiety were significantly but negatively correlated with each other, i.e., the higher is the satisfaction the lower is the death anxiety. It also states that death anxiety can be predicted by satisfaction with life. If focus is given to the present pandemic scenario, entire world is suffering from mental health issues. The most crucial event of life is accepting death. But when every individual in this world is living at the edge of death then growing level of anxiety is obvious and therefore urgent attentions must be given to mental health and well-being issues. Professionals must constantly monitor the healthy well-being of individuals so that the minimum possible satisfaction may at least persist and may resist the unwanted phenomenon like suicide and other gruesome mental health issues.

Keywords: Satisfaction with Life, Well-Being, Death Anxiety, Youth
ABSTRACT – 5

A STUDY ON “IMPACT OF COVID-19 ON MIGRANT FAMILIES WITH SPECIAL REFERENCE TO SLUMS OF BANGALORE METROPOLITAN CITY”: PROSPECTS & POSSIBILITIES

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Bangalore is a hub of special economic zones of technology, educational institutions, commercial establishments and as a result of this many migrants migrating to the city for the sake of job, as they were unskilled they will easily get into the unorganized sector especially domestic work and construction work. Researcher has randomly taken 4 slums of Bangalore which will be undertaken by the BIRDS NGO. During the month of March 2020, migrant families of Hennur AK Colony, HRBR Layout, Byrathi Bunde and from Nagenahalli struggling for their livelihood as no work, some of them though work is there they were not allowed due to social distancing, they were daily wage workers. In addition to this, along with BIRDS staff researchers visited the migrant families for the study as well as to support their livelihood. Migrant families struggling for the survival of their children, elders, women, youths and adolescent girls as their socio-economic condition are worsening day by day. Objectives of the study is to Understand the Socio-economic and health issues concerned with migrant families due to Covid19 in slums. To know about the application of various social work strategies and methods to improve the livelihood of migrant families. Researcher used descriptive research study design for the current study. This paper is confined to understand the socio-economic and health issues of migrant families in slums and to find the various ways to overcome from the issues and improve the livelihood of the migrant families. During this pandemic period, there is a dire need of professional social workers to understand the issues concerned with migrant families in slums as they were more prone to the difficulty of survival. They use to earn and lead their daily life, due to pandemic outburst they couldn’t earn and not able to get their bread to survive. So, here the investigator along with the staff of NGO put an effort to study and support their livelihood through the application of Focused Group Discussions, counseling and provided referral services to overcome from their socio-economic and health issues. Investigator along with the field staff of BIRDS NGO made an effort to improve the livelihood and survival strategies of migrant families irrespective of Covid19.

Keywords: Migrant Families, COVID-19, Slums, Socio-economic Status, Livelihood
EMOTIONAL INTELLIGENCE IN ADOLESCENTS – PRESENT SCENARIO AND FUTURE PROSPECTS

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Living in harmony within oneself and with one’s natural and social environment is a basic human need. The National Curriculum Framework emphasizes the need of developing life skills in secondary school students which also includes emotional intelligence competencies. To adequately prepare children for future employment, we need to teach a broader range of skills and competencies than is currently addressed in schools. The different studies across the world are also reviewed to understand the construct of emotional intelligence and its development in adolescents. The paper assesses the emotional intelligence level of secondary school students in Aurangabad city. A total of 160 males and 130 females class-IX students were selected as sample from various secondary schools. The tool used for assessment of emotional intelligence was Emotional Intelligence Scale developed by Dr Arun Kumar Singh and Dr Shruti Narain. The scale has a high reliability and validity coefficient of 0.86. It was found that the level of emotional intelligence is average in the adolescents and there is a significant difference between the emotional intelligence levels of male and female students. The paper argues that there is need to uncover the diversity in the emotional intelligence training across varied population groups in India to promote training programs in secondary schools. Various models and constructs of emotional intelligence are used by researchers around the world to develop training programs to enhance the level of emotional intelligence. It is concluded that the studies on development programs for enhancing the level of emotional intelligence and its effectiveness are few and inconclusive.
ABSTRACT – 7

A RECREATION OF A FEW REFORMATIVE PHILOSOPHIES IN RAATCHASI

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The constitution of India in its “Article 21-A and the RTE Act, which came into effect on 1st April 2010” (Department of School Education & Literacy, MHRD, Govt of India, 2019) promises “free and compulsory education to children between 6 and 14 years”. In the year 2019, one of the reports on NDTV education section informs, that India’s literacy rate is 69.1. As a responsible citizen one tends to question, why in a country, where there is a fundamental right to free education, the progress in literacy rate is in such a snail’s speed? The search for an answer to this question will expose the lapses and corruption in the education sectors of the nation. Patrick Awuah, in one of his TED talks on educating leader’s remarks that every problem has three strong reasons: corruption, weak institutions and the people/leaders, who run them. The same finds reflected in the movie Raatchasi released in 2019, directed by Syed Gowthamraj. We live in a highly commercialized world, where corruption is rampant. The solution to it, is raising a new generation of thinkers, that can reform the society and not become mere imitators. Hence, the need of the hour is authorities like Geetharani (character name), the hero. The paper aims at bringing to forefront the multiple themes, which are interwoven so intricately in this movie. The movie in the researcher’s perspective expounds on major reformative philosophies like Feminism, Marxism, Periyarism and is a strong critique on classism and casteism. Interestingly, a movie released in 2019 covers these age-old problems, precisely for a reason, that these problems are more recent than we imagine them to be. Although, the movie reiterates certain stereotypes, to a greater extent it subverts many. In that light one can say, that the movie is a realistic portrayal of the society and thereby, proves it as a responsible research. The title of the movie and the book the hero reads, in the last scene are nuanced innovations in the movie, to drive home a strong social message. On the whole it suggests horizontal management system in the education sector as a solution. The paper shall use Transformative approach, qualitative design and interpretation method.

Keywords: Marxism, Feminism, Periyarism, Horizontal Management Style
ABSTRACT – 8

PESSIMISTIC FEARS TO OPTIMISTIC SURVIVAL: TRACING HISTORICALLY NOTABLE MISHAPS AND THE ENSUING NEW WORLD ORDERS

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In the yester centuries, History has documented that after every Great War, pandemic or political upheaval the world undergoes a drastic change and it remodifies itself towards the adaptability of a new order. Pandemics are not new to the world, only is the Covid-19. Hype about Covid-19 has been created by the sensational news through statistics and combating aspects. How has history recorded the pandemics or other great mishaps and the aftermath of it? Has the world retrograded and crashed down or it emerged anew creating new avenues and opportunities? How relevant is tracing history in the current scenario when the entire world is locked down due to the novel corona virus? When tracking is attempted one could witness that there is detailed description of pandemics in literature way back from the times of Homer. The Societies that had witnessed mammoth setbacks in the form of world wars or pandemics have always paved a way for a new way of living. For instance, the culture of wearing wigs in the English Society emerged after a pandemic. On the other hand, in the late 20th century technical gadgets like radios, transmitters came for public usage in the 1960’s and the 1970’s which was a period of bitter cold war among various countries. Now that in the 2020’s COVID-19 has brought in a major shift everywhere including the education sector, living patterns and ineffective human bonding. The novel corona virus has made viral the online learning and teaching practices across the globe. The technical gadgets which were banned in the education field has now become the elixir of imparting knowledge during this quarantine. Webinars, MOOCs, Virtual classes, online quizzes are not alien terms for the students anymore. From mere listening and writing the experience gained through online mode of learning has become vast. The 21st century is witnessing a new normal due to the ongoing pandemic. The paper tries to explore the various social, psychological and technical transitions that the Post Covid is to impinge the changes where human kind is made to adapt through adeptness.

Keywords: British Plague, Spanish Flu, World Wars, COVID-19, Inventions and Discoveries, Revolution
ETHNIC AND CULTURAL DIVERSITY

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Diversity is the embodiment of language, values, societal norms, beliefs and way of life on the other hand, ethnic epitomizes people who follow traditional norms and remain secluded from urban community, retaining a resilient influence on cultural characteristics. Further, cultural diversity personifies values, language, norms, beliefs and way of livelihood and each domain is encumbered with conventional norms. Apart from this, diversity is universal, pervading everywhere and culture imparts values about traditions, patterns, norms and beliefs. If the cosmos had designed a garden with different living entities, then why are we different in characteristics and for what reason the question remains dormant, when we know that universal consciousness pervades everywhere? We are no different from others, we have experienced living with tribe’s not in close proximity but in the environment. So is there a substantial difference in identity? If so in what way would identity influence characteristics? Secondly we have manifested to live in harmony influencing the cultural assortment enriched within and reject the narrow tamed toxic ideology. The tribes are distinct in socio cultural landscapes therefore festivals are unique, cushioned with traditions. They have emerged very significant as to preserve the ancient mythological traditions. The purpose of the study was to understand the psychology of the entrenched culture predominant in the tribes, who secluded from the mainstream to reside in the forests. The study would explore the Girasiya tribes who live in the forests of Abu Road, Rajasthan, India. The phenomenon of the study would examine the reasons of seclusion in spite of profound cultural appearances and interpret the essence of diversity, a journey beyond the catastrophe of better and bitter. The method selected for the study was Auto ethnography, qualitative research to narrate the underpinning motives in context to their socio-cultural characteristics. The findings would reveal that cultural diversity is all inclusive and cannot be separated since it is predominant and inseparable. Moreover, ethnic enriches the magnetism to follow the norms of the community and celebrations, portraying the embedded intense flavour of cultural diversity. The researcher felt it depends on the circumstantial situations life challenged, the culture cannot erase the traditions that the tribes shadowed with an extreme sense of living in diversity. The study would conclude to state that traditions build diversity and pave the way to a more secure, safe, surrounded culture, whether the community lived in the forests or floors.

Keywords: Ethnic, Cultural Diversity, Tribes, Characteristics, Traditions
ABSTRACT – 10

A DIVERSIFIED CULTURAL POOL OF INDIGENEITY IN THE NARRATIVE OF MAHASWETA DEVI

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Even after seventy-three years of independence, Indian society is still embedded with structural and communal inequality, resulting in oppression, exploitation and suppression of individuals or groups through misuse of power, status or authority. In such a situation, the oppressed is deprived of one’s basic right and freedom and is forced to live in a hapless state. The social exclusion, economic marginalization and cultural subjugation of Indigenous people are pervasive in all regions across the globe. Even today, indigenous people continue to struggle to protect their rights to culture, community, heritage and land. In India, tribals are mostly considered as the Indigenous people and their heritage, ways of life, stewardship of this planet, and cosmological insights are an invaluable treasure house for all. These indigenous people have traditionally enjoyed a close kinship with the forest providing them food, health, spirituality, and identity. Their land is both a critical resource that sustains life and a major cause of struggle and even death. Each indigenous culture is distinct and unique, tracing back to different histories, environments, and creative spirits. The tribal people have different culture, custom, tradition, languages and religions. They are dispersed and disconnected among themselves having different ancestral lineage. They are independent and autonomous, having their own set of rules and practices.

This paper explores the richness of the tribal culture and civilization in the text of Mahasweta Devi. In this respect the novel Aranyer Adhikar (The Rights of the forest) is taken into consideration revealing Mahasweta Devi’s concern for the human world and the ecological environment. Her love and responsibility for the protection of environment and the injustice and oppression inflicted on the tribals by the dominant class, especially the atrocities against tribal women are reflected through her narrative. Mahasweta’s narrative becomes a critical discourse on exploitation, survival and struggle, with police atrocities, bureaucratic crimes, striving of the poor and underprivileged for survival, identity and dignity. The struggle for their right to resources, culture, environment and self-governance and inching towards empowerment is still a far-fetched dream of these tribal and marginalized groups.

**Keywords:** Culture, Ecological Environment, Indigenous People, Struggle
ABSTRACT – 11

ALCOHOLISM- AN ANALYTICAL STUDY OF ITS EFFECTS ON AN INDIVIDUAL THROUGH THE MOVIE “THE GIRL ON THE TRAIN”

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The need to consume alcohol arises basically because of the want for deriving pleasure, out of peer pressure and as an escape route. The chemical composition of alcohol impacts the neurological responses on habitual consumption and ultimately results into addiction. The problem of alcoholism has affected human beings at a large scale but still the issue remains inadequately addressed in interdisciplinary research. There is vast presence of alcohol in popular culture especially in cinema, literature, advertisement and social media. All these mediums not just influence society but also act as a mirror. This paper analyses the multi-dimensional impacts of the psychosomatic disease-alcoholism on an individual with the help of the leading fictional character- Rachel.

Rachel in the movie “The Girl on the train” directed by Tate Taylor released in the year 2016 based on the novel “The Girl on the Train” by Paula Hawkins; is an alcoholic. She faces difficulty in remembering anything after drinking and is thus abused by her husband Tom. She goes through divorce, loses her job, fails to conceive a baby, is repelled by the society, is charged with child abduction and suspected for the murder of another character called Martha; all because of the drinking problem.

The movie is a crime thriller with Rachel struggling with drinking problem during most of the screen time. The depressive state of Rachael pushes her towards self-destruction and she drinks even more to forget her sorrows. There appears no end to her drinking. On the other hand, she attends counselling sessions to overcome the problem, but the influence of alcohol on her does not permit that. Gradually, she starts to fear her own self.

The paper thus, provides the analysis of how alcoholism is detrimental to socio-economic and psychological condition of an individual through Rachael from the movie “The Girl on the Train”.

Keywords: Alcoholism, Addiction, Movies, Fiction, Psychosomatic Disease, Sorrow
ABSTRACT – 12

STUDYING AND PREDICTING THE POPULATION GROWTH, SEX RATIO AND LITERACY RATE OF INDIA

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Population, in simpler terms, is the number of people in a city or town, region, country or world. Population is usually determined by a process called census. India is a developing country with second highest population in the world having 28 states and 9 union territory currently, previously it was 29 states and 7 union territories. For this project we have considered the previous data for the current predictions. This research project was carried out to find out the state-wise decadal growth of population from the year 1951 and to predict the growth in population for the upcoming year of 2021 in India. The reasons for increase or decrease of growth rate, increase or decrease of urban and rural population, the fluctuating sex-ratio and the reason behind it, literacy rate of India and unemployment rate of rural and urban males in between last five decades for all Indian States and Union Territories and the reasons behind them will be answered during this research project.

Secondary data was taken from the official website of Reserve Bank of India. Time series analysis of these helped us build model and get proper insights of the data. We have used statistical techniques – Interpolation, ARIMA, Population Projection, Geometric Mean Method, Linear Models, etc. to analyse the data.

Low female literacy rate has a dramatic negative impact on family planning and population stabilisation efforts in India. Few states have an increasing trend of population growth while few have a decreasing trend. We have studied and compared policies and schemes launched by governments, the measures taken to control population, increase in female count, increase in employment, etc and till what extent it proved to be successful.

Keywords: Time Series, Growth Rate, Population, Predictions. Population is in Simple Terms
EFFECT OF LOCKDOWN ON TIME MANAGEMENT, HEALTH AND LEARNING

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The pandemic has resulted in lockdowns across the world in many sectors [1]. This research analyzes the habits and time management of people during the lockdown. Time management is very important and it may affect an individual's overall performance, whether its education or health, and all these are related to how individuals spend their time during lockdown to match their daily living or to make it flow steadily with their routines [3]. The study aims to determine the effect of lockdown on time management, learning, and health. A questionnaire was designed for data collection and the data was collected through google forms. Statistical techniques like descriptive statistics, multiple logistic regression, paired t-test, fisher's test, Wilcoxon test, graphs were applied for analysis.

The study has 203 samples which consist of 117 females and 86 males, who are from different occupations including students. The result of our study related to time management revealed that the number of hours on average people slept in the day during lockdown is greater than before lockdown. The time spent by people on activities during lockdown has increased than before lockdown. The result related to health states that there is no significant difference between the people frequently affected on an average in a week due to ill condition before and after lockdown. There is no significant difference between time spent per day on an average for fitness during the lockdown and before lockdown. The time spent by people on mobile during lockdown is greater than the time spent by the people before lockdown. The study also shows that the number of hours spent on an average for office work/attending classes per day during lockdown is greater than the hours spent on an average for office work/attending classes per day before lockdown. It also shows that 51.6% of people prefer reading to keep themselves busy during lockdown followed by cooking, drawing, and others. The model accuracy is 0.62295. Activities are done for fitness & time spent for those activities, time spent for office work/lectures, activities to spend regular time & time spent on those activities have impacted the overall well-being and learning habits of people.

Keywords: Time Management, Health, Activities, Gender, Activities
ABSTRACT – 14

IMMUNITY BOOSTING AND BALANCED DIET PREVENTS VIRAL INFECTIONS WITH SPECIAL EMPHASIS ON COVID-19

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Background and aims: A balanced nutritional diet is essential in maintaining immunity and for deterrence as well as desisting of viral infections. Nevertheless, currently very less information is available online regarding nutrition consumption during the period of coronavirus infection i.e (COVID-19). In our systematic review article, we portrayed and aimed to evaluate evidence from various previous clinical trials which was based on nutritional interventions for viral diseases and given a concise overview.

Methods: A systematic search was carried out employing 3 key medical databases: PubMed®, Web of Science® and SciVerse Scopus®. Studies were performed and evaluated suitable if clinical trials in humans, appropriate immunological parameters on viral and respiratory infections need to perform. Basic Clinical trials on nutritional vitamins, minerals, nutraceuticals as well as probiotics were included.

Results: We have explored 10 review articles and extracted data for our study. A total >2000 participants were included and excluded several other trace elements as well as various vitamins but in inclusion criteria mainly concentrated on those which have shown propitious immune-modulatory effects against viral respiratory infections.

Conclusions: We have encapsulated the potential health benefits of some minerals, vitamins as well as certain designer foods, nutraceuticals and probiotics in viral infections. Based on this nutritional interventional strategy available from our present data, it could be promising to abstain and reduce the COVID-19 infection replication and boost our immunity to fight against the virus.

Keywords: COVID-19, Neutraceuticals, Clinical Trials, Immunity, Vitamins, Nutritional Intervention Strategy
ABSTRACT – 15

IN SILICO DOCKING OF FLAVONOIDS FROM CASSIA OCCIDENTALIS L. FOR THEIR INHIBITORY ACTIVITY AGAINST DENV SEROTYPE-1

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Dengue virus (DENV) belongs to the family Flaviviridae and is one of the most important emerging mosquito-borne disease in tropical and subtropical countries. According to the world health organization (WHO), two fifths of the world’s population is at risk of getting infected with DENV. The high burden on public health care and the limited options of therapy for dengue disease has led to great efforts to identify and characterize potential viral drug targets against NS2/NS3 serine proteases and to design and evaluate antiviral inhibitors that are equally effective against the four dengue virus serotypes and related members of the Flaviviridae. Phytochemical constituents have always been an alternate source for the chemical compounds. Cassia occidentalis L. has been used in traditional medicine to cure many diseases because it is a rich source of flavonoids but work has not been carried out to study its antiviral property on DENV protease.

Therefore, in the present study we have selected flavonoids from Cassia occidentalis L. to investigate its inhibitory property against dengue viral protease by molecular docking. Our study revealed potent inhibitory activity of chrysoobtustin as a lead molecule against DENV protease 3L6P of serotype 1 with the binding energy of -14.1 kcal/mol. Furthermore, the study indicated that the potent inhibitor can be subjected for chemical modification and tested for its cytotoxicity assay by in vitro studies.

Keywords- DENV, 3L6P, Cassia Occidentalis L, Potent Inhibitor
MODERNIZATION LEADS TO PITFALL OF TRADITIONAL CULTURE AND ETHNO-MEDICINE IN NORTH-EAST INDIA: A FEW OBSERVATIONS

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North-east India is home to a large numbers of tribal communities with rich culture and traditional knowledge, which have great significance for Humanity. North-East India sandwich between Eastern Himalayas and Indo-Burma biodiversity hotspots, is a treasure of medicinally and economically valuable plants. The depth of their traditional culture can be understood by the fact that many of the ethno-medicinal plants used by these tribes are yet to be explored. These plants are enriched with various valuable phytochemicals viz., saponins, alkaloids, sterols, flavanoids, glycosides, terpenoids; which have tremendous medicinal values, are used to produce drugs or medicine to cure a variety of infectious and non-infectious diseases. In the era of modernization, the newer generations are showing less interest to acquire their community culture and traditional knowledge of ethno-medicine due to western influence, which results in pitfall and disappearance of traditional education. This paper deals with the pitfall of ethno-medicinal plants and traditional culture of North-East India due to modernization. Through this paper, I want to make people socio-politically aware to take potential steps to conserve the traditional education and culture.

Keywords: Traditional Culture, Ethno-Medicine, North-East India
ABSTRACT – 17

HERITABILITY AND GENETIC ADVANCE STUDY FOR GRAIN YIELD AND RELATED ATTRIBUTES IN HUSKED WHEAT (TRITICUM AESTIVUM)

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Twelve husked wheat strains were intermated in diallel fashion, excluding reciprocal parents along with F1 and F2 generation were evaluated for plant height, days of reproductive phase, productive tillers per plant, length of spike, grains per spike, spikelets per spike, biological yield per plant, harvest index, grain yield per plant, grain weight per spike, and 1000-grain weight. The heritability and genetic advance were estimated for all the attributes in narrow sense using genetic components.

High heritability (more than 30%) was observed for plant height, days to of reproductive phase, grains per spike, spikelets per spike and harvest index in both the generation for grain yield per plant in F1 and biological yield per plant in F2 generation. Moderate heritability (10% to 30%) was noticed in productive tillers per plant, length of spike and 1000-grain weight in both the generation and grain weight per spike in F2 generation. Low heritability (less than 10%) was exhibited in grain weight per spike in F1 generation. An advancement of 6.98g based on F1 and 5.92g based on F2 were expected per cycle of selection for grain yield per plant. For 1000-grain weight, it was approximately 3g. The expectation for advancement in grain weight per spike and length of spike was quite meager. Considering comparative genetic advancement in percentage over mean, maximum advancement to the tune of approximately 42% was estimated for grains per spike, where as an approximation of 22.25% of mean was estimated for plant height, days to reproductive phase, harvest index and grain yield per plant. Genetic advance is conforming to the heritability estimates.

In order to achieve expected genetic advance, the attributes which are highly heritable (above 30%) maybe improved through progeny selection, whereas attributes like grain weight per spike for which the heritability estimates were moderate, bulk selection followed by progeny selection would be appropriate. Considering heritability estimates, the economic attributes like grain yield. It was moderate to high quantified the involvement of non-additive gene action in considerable proportion. Hence the improvement in grain yield, the progeny selection followed by biparental mating world be appropriate.

Keywords: Triticum Aestivum, Heritability, Genetic Advance, Grain Yield, F1 Generation, F2 Generation
ABSTRACT – 18

MICROWAVE ASSISTED ORGANIC SYNTHESIS: WORKING METHODOLOGY OF GREEN CHEMISTRY

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The most important sustainable development goal is to reduce the harmful consequences of the materials we use and produce. The role of chemistry is essential in ensuring that our next generation of chemicals, materials and energy will be more sustainable than the current generation. The global demand for environmentally friendly chemical processes and products requires the development of new and cost-effective approaches to prevent pollution. One of the most attractive concepts in chemistry for sustainability is green chemistry, which is the use of a set of principles that reduce or eliminate the use or generation of hazardous substances in the design, manufacture, and applications of chemical products. It should be noted that the rapid development of green chemistry is due to the recognition that long-term environmentally friendly products and processes will be economical.

The microwave field of the electromagnetic spectrum is located between infrared and radio frequency. Microwave-assisted organic synthesis is an enabling technique to accelerate drug discovery and development processes. Green chemistry is the design of chemical products and processes that reduce or eliminate the use and production of hazardous substances. One of the principles of green chemistry involves using microwaves radiation. The microwave assisted organic reaction has been proven to be environmentally friendly with higher controversy. Therefore, it is one of the accepted fields in green chemistry. Short reaction times, a wide range of reactions, minimal exposure to hazardous chemicals and maximum energy use; These features enable Microwave Assisted Synthesis as an effective and useful tool for industry as well as academic research. Microwave assisted synthesis are mainly used in three areas of pharmaceutical research: biological drug screening, peptide synthesis and DNA amplification.

Keywords: Conductive Heating, Green Chemistry, Microwave Heating, Solvent-Free, Sustainable Goal
ABSTRACT – 19

PREDICTION OF POTENTIAL VACCINE CANDIDATE PROTEINS FOR BACTERIAL VAGINOSIS BY IN SILICO ANALYSIS USING REVERSE VACCINOLOGY APPROACH

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Bacterial vaginosis (BV) is one of the highly prevalent vaginal disorders of women of reproductive age, causing serious health implications. The pathogenesis of BV is considered a polymicrobial infection, with *Gardnerella vaginalis* as the most predominant bacterial species that is responsible for the production of antibiotic-resistant biofilm on the vaginal epithelium. Since, there is no vaccine currently available against bacterial vaginosis, thus potent vaccine candidates against *G. vaginalis* have been predicted by *in silico* analysis using core proteome of three strains of *G. vaginalis* in this study. Extracellular proteins and proteins localized in cell wall and outer membrane with adhesion probability of 0.5 or more, number of trans-membrane helices ≤2 as well as no similarity with human, mouse and pig proteome were selected. Prediction of epitope peptides of the selected proteins found in core proteome of *G. vaginalis* that bind with class I MHC CD8+ and class II MHC CD4+ molecules was also done.

**Keywords:** Bacterial Vaginosis, Reverse Vaccinology, Epitopes, Adhesion Probability, MHC Alleles
ABSTRACT – 20

A CASE STUDY ON THE CHALLENGES AND THE REASONABLE ACCOMMODATIONS FOR STUDENTS WITH AUTISM IN THE MAINSTREAM EDUCATION SYSTEM

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Despite children with disabilities gaining access to higher education there are a number of exclusionary practices taking place as a result of lack of knowledge and awareness; more so in cases of invisible disabilities like Autism Spectrum Disorder (ASD). Inclusive education is fundamental for tapping the human resource potential of all students. There are many important stakeholders on who rests the success of Inclusive Education viz. teachers, peers, administrators and parents of students without disabilities. Autism Spectrum Disorder (ASD) manifests itself in various ways in different individuals and this fact must be kept in mind while teaching them. Given the complexity of the disorder, often the educational needs of persons with autism remain largely unmet. Students with autism require attitudinal and social support to be integrated into mainstream education for the maximum realisation of their human resource potential. Teachers work in complex situations and the success of inclusion is dependent on the class teacher accepting diversity, different learning styles and maintaining a flexible system. However, as disability awareness is often not a regular in depth component of teacher-training courses it makes most teachers ill-equipped to manage disability. This is not due to the lack of intent or understanding. In this case study students with ASD who are in mainstream education were interviewed using semi structured questionnaire. This paper highlights the challenges these students with autism face on a daily basis in mainstream education. There are several strategies which could reduce these challenges to a certain extent. Reasonable accommodations and support systems that must be in place for students with ASD in mainstream education are discussed. It is time to shift the focus away from talking about individual ‘deficits’, to looking at how we can develop environments, attitudes and curricula that are more enabling and empowering for these students with autism.

Keywords: Autism Spectrum Disorder (ASD), Reasonable Accommodations, Mainstream Education, Challenges
ABSTRACT – 21

MOBILE LEARNING READINESS: LECTURERS’ PRACTICE-BASED PERCEPTION IN THE HIGHER EDUCATION INSTITUTIONS OF MALDIVES

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The flexibility in the use of smart mobile devices had been an essential part of educators’ life such that it has a heavy role in the facilitation of higher education. The unique, as well as adaptable features of mobile learning, have been utilized in the higher education institutions of Maldives to facilitate learners in recent years. However, the archipelago of Maldives has been one major cause of several challenges in teaching and learning. This paper intends to explore the mobile learning readiness of the lecturers who facilitated distance learning programs in different higher education institutions of Maldives. The research also focuses on the readiness of basic and advanced mobile learning skills practiced by the lecturers in their facilitation. A sum of a hundred and fifty (n=150) lecturers who facilitated distance programs from three higher education institutions participated in the online survey questionnaire, who had shared their experience in practicing mobile learning skills. The data collected were analyzed using SPSS. The findings indicated that the majority of lectures acquired basic and advanced mobile skills required for mobile learning. Overall, the results confirmed that lecturers facilitating distance education programs at the higher education institution had a positive perception and were ready with mobile skills to facilitate mobile learners in the Maldives.

Keywords: Mobile Learning, Perception, Lecturer Readiness, Basic Mobile Skills, Advanced Mobile Skills, Higher Education Institutions, Maldives
Creating an Inclusive World: Learners with Special Needs and Challenges Ahead

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Education has functioned as a great equalizer among people of diverse backgrounds. New techniques and innovative ways of teaching add new solutions to old problems of the humanity.

The disabled people deserve better ways of learning, work culture and lifelong support. In the ongoing crucial time and age, we require more policymakers, parents, teachers, governments and stakeholders to come forward and create a world that is based on the values of equality, diversity and inclusiveness.

Many policy changes at the national and international level have been incremental in bridging the gap with specific tools, learning environment and assistive technologies. An interesting convergence has been forged between online learning and social media platforms and classroom studies. Measures to increase online accessibility and social media presence has transformed identity dynamics across the world. There is an opportunity for the disabled individuals to form virtual groups, pages and stories that transcend their own physical limitations and barriers. This has given them an impressive virtual realm of presence which has the capacity to cut through the unjust social, historical and cultural structures of assumptions that have labelled them as ‘disabled’.

It is in this context, that this paper intends to align itself with the needs and requirements of learners with Special Educational Needs. There are three major themes in this paper: the first one being an investigation of resources, methods and techniques which are available to create inclusive spaces with special reference to disabled learners. Secondly, there is an attempt to evaluate the impact of the developments and achievements made towards the betterment of quality of life, learning and identity of the disabled. Thirdly, there is a review of policies and frameworks which have supported the disabled people in achieving their goals. The author has attempted to give a comprehensive view of the effectivity of virtual educational environment with regard to the disabled learners, the issue of identity formation with online presence and the problems that are yet to be tackled at the higher levels of policymaking.

The current Covid-19 crisis has challenged previous notions of classroom, learning styles and management of education for all. It has also led to various changes in the relationship between teacher and students. Better decision making and policies aimed at delivering to the disabled population of the country could contribute to the upliftment and larger participation in society.

Keywords: Disability, Online learning, Accessibility, Responsible Research and Innovation (RRI)
EMPOWERING YOUTH THROUGH INQUIRY-BASED EDUCATION FOR RRI

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This study aims to examine the correlations between the principles and skills presented by these two RRI projects with the practices developed in Ceará State of Brazil to support science with and for society. This qualitative study centred on four RRI principles: respect, diversity, equity and inclusion. Understand the context that one of the main barriers to education during the pandemic period is connectivity, which includes approximately ⅓ of the population in Brazil who do not have access to the internet (CGI, 2018). Rural areas have been particularly negatively affected (Souza, 2020). Although 89% of young people have internet access (CGI, 2019), only 25% of them perform elementary learning tasks and 2% of students have some abilities to access reliable sources of information (Fraillon et al., 2020). The majority of youth have difficulties dealing with disinformation and developing critical thinking. Due to these issues, equipping youth as active learners, researchers, and co-entrepreneurs has become very relevant to being able to face contemporary issues affected by covid-19. Inquiry-based learning for Responsible Research and Innovation (RRI) has become very relevant in Europe with practices developed in Brazil through two European projects called we SPOT and ENGAGE. Both projects have offered pedagogical approaches and participatory technologies to engage researchers, youths and educators to bridge formal and informal learning with topical socio-scientific issues. The methodology is supported by digital ethnography and thematic analysis with a set of categories. These categories integrated the inquiry skills for RRI of the ENGAGE (Okada & Sherborne 2018), including Co-entrepreneurship skills: dream, conceive, develop, implement, evaluate. (Souza, 2014). The inquiry skills for RRI include devise questions, interrogate sources, analyse data, draw conclusions, justify opinions, use ethics, examine consequences, estimate risks, justify opinions and communicate ideas. These categories were used to analyse learning practices developed by young people from the Student Clubs course, in a class with 50 young people - Moodle / AVACED (2019/2020). The outcomes of this study revealed that youth were able to develop and show technical and proactive skills through the projects that they developed using the various technologies in the Moodle. However, some of their difficulties included: reflexive and scientific skills – particularly with regard to devising scientific questions, interrogating sources and communicating ideas based on evidence. This requires further investigation. The analysis based on the co-entrepreneurship skills of the majority were able to develop their projects cooperatively by setting meaningful goals, implementing collective procedures, and sharing information with a common purpose. The key issue was to be able to evaluate their own achievements. Some recommendations for educators are provided through Inquiry-based Education for RRI: harnessing local problems when
elaborating questions, planning projects with social issues, using, sharing, interacting in the digital world; provide guidance to explore new contexts, identify new creative opportunities, develop and evaluate actions in / with the network - all these recommendations will be useful for promoting scientific and digital thinking.

**Keywords:** Digital Technologies, ENGAGE, Co-entrepreneurship Skills, Higher Education, Technology and Pedagogy, Empowering Youth
ABSTRACT – 24

APPLICATION OF THE THEORY OF PLANNED BEHAVIOUR IN ENTREPRENEURSHIP DOMAİN: THE MODERATING ROLE OF PERCEIVED BEHAVIOURAL CONTROL

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Despite this significant breakthrough in the application of the theory of planned behaviour, little work has explored when or under what conditions attitude towards entrepreneurship (ATE) and subjective norms (SN) influences EI, particularly in the entrepreneurship domain. This study was set to examine the moderating role of perceived behavioural control (PBC) on the relationship between attitude towards entrepreneurship, subjective norms and entrepreneurial intention. Cross-sectional survey research designed was used to collect data from the research respondents using simple random sampling procedure. 441 useful responses were used to analyse the data using partial least square structural equation modeling PLS-SEM (World, 1982) with the aid of SmartPLS 3. The results revealed that PBC construct (i.e perceived autonomy) significantly moderate the relationship between ATE and SN while perceived capability only interacts with SN while no interaction was found with ATE. Since, this study is one of the few to conceptualize perceived behavioural control as a reflection of people’s capacity and autonomy over decision to perform a behaviour, the result of the study revealed that PBC interacts with attitudes and subjective norm to improve entrepreneurial intention. Based on the findings, it is recommended that educational initiatives to foster entrepreneurship could focus on improving PBC over the act of creating a new business, which in turn would raise the positive effects of attitudes and subjective norms on entrepreneurial intention.

Keywords: Entrepreneurial Intention, Perceived Behavioural Intention, Attitude Towards Entrepreneurship, Subjective Norms
ABSTRACT – 25

INNOVATION CAPABILITY AND SME PERFORMANCE: MEDIATION EFFECT OF MARKET INNOVATION

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SME in developing countries are compounded with inefficient capacity to withstand competitive pressure and achieve some level of performance improvement over time. The ability of the owner/manager to overcome or defy all challenges is daunted by the market innovation needs. Hence, this study explored the intervening process of market innovation in the relationship between innovation capability and SME performance. The aim was to examine how product creativity and innovation process predict market innovation and SME performance, and to assess how mediation effect of market innovation improve this relationship. Purposive sampling techniques was used to administer 382 questionnaires to SME owners/managers. After initial screening of the returned questionnaire, 289 was utilised for the final data analysis. PLS-SEM v 3.2 was used for data analysis for it robust and suitability to handle complex models to test the mediation process of the model. The findings showed that the mediating effect of market innovation exist between the two different types of innovation capability. The result revealed that product creativity has a significant relationship with SME performance, while product innovation process was not significant in its effect on the dependent variable. This prove that market innovation is one of the mechanism that explains the effect of innovation capability on SME performance largely, due to high intensity of the market. We argue that this study will lead way for further research on the mediation and interaction effect of market innovation in the relationships between innovation capability and SME performance.
ABSTRACT – 26

CORPORATE SOCIAL RESPONSIBILITY INITIATIVES DURING COVID-19

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India is the first nation in the world to make Corporate Social Responsibility mandatory for corporations after amending Companies Act, 2013 in April 2014. Corporate Social Responsibility is the commitment of business towards society by providing them affordable products and services especially enhancing the lives of underprivileged sections. Apart from focusing on financial health, CSR brings into consideration social, environmental and natural resources aiming to improve the welfare and solving various issues of the society. In the present times of COVID-19, the social economic status of the whole world has been disturbed. CSR has emerged as self-acting model by undertaking various measures to help their stakeholders and general public to overcome this pandemic situation. The Ministry of Corporate Affairs in March has announced that the spending of CSR funds for COVID-19 related activities will be considered as eligible CSR activity. Connecting people through Corporation Social Innovation measures, organisations are supporting mental well-being, financial security and stakeholder’s social and professional needs. In spite of slow economic activities and returns, corporations are supporting society by donating funds, offering medical, food and various relief measures during this unusual times. In future, it will help the corporations in building a good brand image, leaving good impact in the minds of people and earning employee’s loyalty.

The present paper attempts to cover the CSR initiatives undertaken by corporations during COVID-19 and challenges faced by them in undertaking CSR activities. Secondary information has been collected from various online sources and reports.

Keywords: Corporate Social Responsibility, COVID-19, Initiatives, Companies Act 2013, Challenges
GREEN CONDUCT: ASPECT OF PRICE CONSCIOUSNESS AND ECOLOGICAL CONCERN IN INDIAN CONSUMER BEHAVIOUR

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Green word: When an individual hears about green the mind frame starts to reflect automatically fresh, free from pesticides, no chemicals, healthy. Whereas the buyer also thinks about its significance in today’s era. Buyer’s has numerous factors which affects his/her buying behaviour for the green products. Based on these significantly progressed examinations of impact factors for green conduct we have studied the aspects of price consciousness and ecological concern.

Be that as it may, little examination has investigated the impact of buyers' ecological concern on green consumption and how this impact was mediated by ecological concern and moderated by price consciousness, particularly when purchasers at the same time give close consideration to green conduct and ecological concern.

This examination explores the aspects of ecological concern on green conduct and the aspects of price consciousness.

Data was collected from respondents via an online questionnaire. Then further analysis was done to get the outcome.

The results show that ecological concern positively affects on green conduct and has positive outcome on green consumption. Price consciousness shows a negative moderation role in relationship among ecological concern and green conduct.

The study concludes that buyers are still price conscious while buying green food products over conventional products. On the other hand, buyers show positive aspects on ecological concern while utilising green products.

The policymakers can improve buyer’s ecological obligations and ecological concern through numerous correspondence channels to show different ecological issues.
Findings also administers to create a green advertising methodology which targets the diminishing price for the buyers.

**Keywords:** Green Conduct, Price Consciousness, Ecological Concern, Green Marketing, Sustainability, Consumer Behaviour
ABSTRACT – 28

A COMPARATIVE STUDY OF THE INFLUENCE LEVEL OF WORKING WIVES AND HOUSE WIVES IN FAMILY PURCHASE DECISION-MAKING PROCESS IN THE CITY OF KOLKATA

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In the Kolkata city participation of women in the workforce has increased during the last few decades. This reduces gender inequality in the workforce. The reasons for such increased participation of women in labour force can be attributed to good infrastructure and flexibility in jobs, maternity leave, no longer holding the idea that women are meant for household works, expanding service sector, adequate family support etc. So a dominating role is played by Kolkata’s women in family purchase decision-making compared to her husband in many cases. They are joining in the workforce for financial independence and which gives them the required confidence to participate vigorously in the purchase decision-in the family. Similarly, housewives are also participating in the family purchase decision-making but their level of participation is different from the working wives as they are not financially independent. In this backdrop the study attempts to analyze the behaviour of working wives and housewives. The study is based on primary data where responses were collected from 300 working wives and 300 housewives from 141 wards of Kolkata on the basis of questionnaire. The two objectives of this paper are: (1) To examining whether working wives of kolkata exert more influence in family purchase decision-making than their nonworking counterparts, (2) To analyze how far working wives and housewives have assumed the role of decision makers beyond their traditional roles and to what extent such roles has been legitimized in the Indian family structure. The main contribution of this study is that marketers and marketing academicians can develop a better understanding of the behaviour of both working and non-working wives, their needs and motivations, influence level and attitude towards the family purchase decision-making.

Keywords: Decision-Making, Inclination, Likert Scale, Behaviour, Working Wives, Housewives
ABSTRACT – 29

ENERGY SCENARIO IN NORTH-EAST INDIA: A SWOT ANALYSIS

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In recent years, energy is considered as the basic needs as it affects education, income, environment, health, water, sanitation and other basic amenities of human life. It is an important mechanism for better provision of cooking, lighting, heating, cooling, entertainment, transport, agriculture, industrialization, urbanization, Information and Communication Technology (ICT) etc. Rural household energy consumption pattern plays a vital role in rural development process. Clean energy is vital for the existence of modern life. Energy access can improve the quality of life of rural people in many ways. The absence of modern energy sources affects the lives of rural people. The detrimental effects of energy poverty are mostly felt by rural women. Most of the women don’t get much more time for productive and income-generating activities due to biomass collection as they are considered as energy supplier of rural households. Energy poverty leads to income poverty, low education and threats to employment opportunities. The North Eastern Region comprises of eight states i.e. Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland, Sikkim and Tripura. This region is full of bio-geographic and ethno-geographic diversities. The energy status of the region is not so good as compared with other states of the country. The present study is an attempt to study the Energy scenario in North-East India: A SWOT Analysis. The data were collected from secondary sources. It was found that in North- East India, the energy sources for lighting are electricity, kerosene, solar energy and other oil. Some households also don’t have any lighting facility. In Arunachal Pradesh, the use of solar energy as source of lighting is highest i.e. 2.9 percent which is higher than all India average i.e. 0.4 percent. There are so many potentialities of development of energy in this region. Although access to improved energy has been an important component of development of a country, government has also taken various initiatives to reduce energy poverty; still rural people are deprived from so many facilities of modern energy. Energy access to every people will truly improve the lives of rural households which ultimately reduce income poverty.

Keywords: Energy, Energy Poverty, SWOT Analysis
ABSTRACT – 30

CORONAVIRUS AND MIGRANT WORKERS – HOW CORONAVIRUS TURNED INTO A HUMANITARIAN CRISIS FOR MIGRANT WORKERS IN INDIA? ‘WAS THE CRISIS A BOON OR A CURSE?’ MUMBAI – A CASE STUDY

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Covid 19 pandemic in India is part of a worldwide pandemic Coronavirus caused by SARS-COV2. The first case of Covid 19 was reported in India on January 30th ‘20, in Kerala which created a flutter amongst all but more in the category Migrant workers. Migration of workers started in India during the time of colonial rule. There was a huge of influx of workers coming in from neighbouring countries such as Bangladesh, Myanmar, and Nepal. Poverty and lack of opportunities led to these workers travelling from country to country in search of a living. While they began settling down in India due to better pay but unequal opportunities (Big city v/s Small city) prompted them to move within the country to the big cities namely, Mumbai, Delhi, Bangalore, Chennai, and Kolkata. There is an estimated 139 million migrant workers in the country according to the World Economic Forum (around 70% work in Mumbai). Additionally, there is no central registry of migrant workers, despite the existence of the Intra-State Migrant Workmen Act 1979. This makes them largely part of an unorganized sector. The Indian economy today is in need of huge infrastructure development to sustain its growth and has been working on several projects like special economic zone (SEZs) power plants, airports, railway corridor highways and bridges, real estate etc. These projects employ the services of migrant workers thereby leading to the migration of large number of daily wage workers. These huge numbers of migrant workers spiralled into an unmanageable state during the breakout of the pandemic that hit India in March 2020. Announcement of a nationwide lockdown to manage the spread of the disease gave rise to an unprecedented situation wherein millions of migrant workers trapped far away from home with no jobs or money, tried to defy the lockdown and gathered near railway stations in Mumbai city to demand a ride back home, thus jeopardizing all infrastructural projects in the city. This unexpected displacement of people led to a) the increase in the possibility of spreading the disease b) A humanitarian crisis c) A complete stall of infrastructure projects d) Drop in the availability of skilled workers and unskilled workers such as maids, plumbers, carpenters etc.). Mumbai the economic capital of India, on the path of massive infrastructural development employs the services of thousands of migrant labourers who come from decimated agricultural sectors, escaping from dire poverty, and diseases at home. This paper aims to evaluate the seriousness of this crisis. Was the displacement of people due to instigation or fear or anxiety? Was the crisis as blessing in disguise?

Keywords: Disease, Migrantworkers, Pre & Post COVID-19, Employment, Reasons of Migration, Infrastructure
ABSTRACT – 31

AN EMPIRICAL ANALYSIS OF THE FINANCIAL PERFORMANCE OF THE INDIAN AVIATION INDUSTRY

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The aviation industry is the business sector that caters to operating and manufacturing all types of aircrafts. Air transport is a vital component of transport infrastructure of a nation. It features a major contribution to the process of development by generating employment opportunities, improving productivity and providing more efficient transportation of products and services. The Indian aviation industry has proven to be one among the fastest growing industries within the country’s economy. India has become the third largest domestic aviation market in the world. Jet Airways Ltd. founded by Naresh Goyal which operates international airlines is currently a bankrupt and grounded Indian international airline.

The present study aims to analyse the financial performance of Jet Airways over a period of 5 years from 2013-14 to 2017-18. The study also examines the underlying problems faced by Jet Airways which led to its downfall and discontinuation of operations. The result of the study provides supplementary information about the years in which it operated with maximum efficiency and made maximum profit as well as the years in which it incurred maximum losses or operated poorly.

Keywords: Aviation Industry, Jet Airways, Financial Performance, Bankrupt
INTRODUCTION

Covid-19 has had a dramatic effect on daily life throughout the world and phrases such as the ‘new normal’ and ‘unprecedented times’ have become part of everyday conversations. While researching for this paper we found the following statement from the Centers for Disease Control and Prevention of the US Department of Health and Human Services (2020). This sums the current situation up well. With no reliable vaccines (at time of writing this paper) the worldwide efforts are focussed on:

non-pharmaceutical interventions such as isolation, quarantine, good personal hygiene, use of disinfectants, and limitations of public gatherings... applied unevenly.

The irony is that this quote does not actually refer to the Covid-19 pandemic but the incorrectly-named Spanish flu of 1918-1919 which killed between 20 to 50 million people worldwide, depending on which estimate is used. The 1918–1919 influenza pandemic resulted in more deaths than any other pandemic in recorded human history (Jester et.al., 2020). These may be ‘unprecedented times’ for us but not for our forebearers. We can trace the history of pandemics in the twentieth and twenty-first centuries through the pandemics of 1918-1919, to 1957-1958, to 1968-1969, to 2009-2010 and to 2020-2021 (WHO, 2009). The most recent pandemics have resulted in a greater recognition of the complexity of the effects of pandemics on the population. Pandemics are detrimental to physical and mental health and wellbeing and affect daily living in employment, social interaction and education. If the pandemic is extended over a period of time, it can have a significant effect on the economy of countries (Begley, 2013; Scobie and Whitehead, 2020).

Many of the pandemics listed above led to some form of school closures and these, especially the pandemics of 2009-2010 and Covid-19, provide insights into the rationale for school closures and effects on the education of children and young people and on society. The scope of this paper is a review of online literature focussed on the five pandemics of the twentieth and twenty first century and the impact on school education, especially school closures. This paper will commence
with a critical evaluation of school closures as contributing to strategies to reduce or limit the effects of a pandemic. The next sections examine the major pandemics of the twentieth and twenty-first centuries leading up to the Covid-19 pandemic. Each of these sections will provide a concise overview of the origin and impact of the pandemic and some of the effects of the pandemic on school education. The final section is devoted to Covid-19 and an examination of the global scale of restrictions and lockdowns and the consequences for schooling. This section will also highlight the detrimental effects of the pandemic for vulnerable families and the wide range of methods employed for learning and teaching in different parts of the world. The final section provides some concluding remarks and advocates the adoption of Responsible Research in future research studies on the educational activity during the pandemic and the long-term effects on children and young people and school education.

SCHOOL CLOSURES AS PART OF A STRATEGY TO REDUCE AND LIMIT THE EFFECTS OF A PANDEMIC

Influenza is a ‘contagious respiratory disease’ (Dickin et al., 2009). Influenza spreads through ‘contact with infected people or contaminated objects’. The virus is spread through the air when an infected person sneezes or coughs and infects others through their eyes, ears or mouth. An influenza pandemic commences when a new strain of influenza appears and there ‘is little or no immunity in the human population’ (Mummert et al., 2013). Strategies to tackle a pandemic usually involve the search for a vaccine and restrictions on social interaction. The responses to the Covid-19 influenza pandemic include the search for a vaccine and multiple forms of non-pharmaceutical intervention that include increased personal hygiene, lockdowns, social distancing, restricted movements, working from home and, at times, school closures.

Mass, compulsory state funded schools are perceived to be essential institutions in civil society in most parts of the world. School education is understood as a human right and a route to progress and social mobility (United Nations, 2020). School closures during a pandemic disrupt the accepted norms of daily public life and send powerful signals about the severity of the situation (Braunack-Mayer et al., 2013). Further, school closures have a ‘ripple effect’ on the lives of the pupils and teachers but also on the parents and the parents’ employers (Burr, 2012).

Research in the wake of the 2009 pandemic demonstrated that school closures are frequently predicted to be a method of reducing the levels of infection in a pandemic (Jackson et al., 2013a). This is dependent on the levels of risk of the spread of the infection in schools (it may be that the pandemic has a greater effect on adults). It is also dependent on how early the schools are closed in the progress of the pandemic and the duration of the closure. The school closure programmes may be limited to the dismissal of specific classes for a period of time (Halder et al., 2010). They may be more widespread and target specific schools or seek closures within larger demographic areas, such as towns and cities, or even countries. School closures are normally part of a larger strategy focussed on adults and young people to reduce infection (Jackson et al., 2013b). Part of
the recommended strategy, for example, can be that young people should be advised not to assemble in large groups when schools are closed. One of the challenges is that this advice on social distancing may or may not be observed by young people (Miller et al., 2010).

There are different nuances to school closures as outlined by Cauchemez et al. (2009). The first type is a school closure in which all staff and students are sent home. This can be a Proactive closure or a Reactive closure. A Proactive closure occurs when the staff and students, or a particular class, are sent home to prevent the spread of the infection. A Reactive closure occurs when a significant number of staff or pupils, or both, are ill and the school closes in response to the high level of illness. The Second type is Class Dismissal in which all pupils are sent home, but some staff (mainly administrative staff) may remain in the school. There is a further factor to take into account. Where schools are not closed during a pandemic, there can be many examples of voluntary absenteeism as pupils are withdrawn from school by their parents on a temporary basis. One recent development has been the sharp rise in home schooling in England in 2020 during the Covid-19 pandemic (ACDS, 2020). It can be noted, however, that many parents who have started home schooling because of the virus have commented that their children will return to school once they are satisfied that there is no risk.

School closures during pandemics can be quite sudden, with little time for staff, parents and pupils to prepare. Guidance from central government and local government about the measures to be adopted during school closures can be initially ad hoc and subject to change. In other words, the closure can be urgent but there can be a lack of clarity in the response to managing the situation. The ‘high social and economic costs’ of school closures makes this an expensive and controversial option (Cauchemez et al., 2008). One of the reasons for the high economic costs of school closures is that many parents will have to stay home from work to care for the children (Sadique, et al, 2008). This is doubly significant if the parent is a health care worker as many of these workers are women. There are anxieties that any ‘learning loss’ experienced during the pandemic will potentially lead to a longer-term skill loss which will affect the future of individuals and productivity in different countries (Schleicher, 2020). It is challenging, then, to balance school closures and the expected benefits for public health with the social and educational disruption caused by these closures (Stern et al., 2009).

SPANISH FLU 1918-1919

The so-called ‘Spanish flu’ pandemic began in 1918 and was identified as ‘Spanish flu’ because it was first reported in Spain (Efron and Efron, 2020). Soldiers returning home at the end of the First World War helped to spread the pandemic throughout the world. The Spanish Flu was the most deadly infection since the Black Plague of the mid fourteenth century (Phillips and Killingray, 2003). The estimations of the global mortality rate range from 20 million to 50 million and the pandemic killed more people than the First World war (Pettit, 1976; Trilla and Daer, 2008). Most of the deaths occurred in the later stages of 1918 (Saunders-Hastings and Krewski, 2016). One of the key differences between Spanish Flu and Covid-19 is that Spanish Flu resulted in many more
infant deaths, deaths of young adults and people in their prime working age (Carlo and Chung, 2009; Cohen-Kristiansen, 2020).

One of the most intriguing aspects about the Spanish Flu is the lack of ‘public memory’ of this pandemic, sometimes known as the ‘forgotten pandemic’ (Honigsbaum, 2013). The irony is that this pandemic was recorded in copious amounts of newspaper coverage yet remained the least known pandemic until possibly the present day (Phillips and Killingray, 2003). There are various theories as to why this was the case: this pandemic was in the wake of the terrible loss of life in the Great War and was overshadowed by that event or the destructive power of the pandemic was too catastrophic to record in words (Gordon et. al., 2020). There were three waves of the Spanish flu though it is sometimes understood to be a ‘single cataclysmic event’ (Honigsbaum, 2013). There were a series of measures introduced in parts of the industrial world: ports were quarantined, and cinemas and schools were closed. The closure of churches and bars was less common. People were required to use face masks and to avoid social interaction (Phillips and Killingray, 2003).

The response to the pandemic in educational settings pursued a number of paths: (1) school closures and (2) education on the prevention of the spread of influenza for the pupils. Many schools in America, for example, were closed for a period of time, some for as long as a period of fifteen weeks (Stern et. al., 2009). Three cities in America kept their public schools open throughout the period of the pandemic, New York, Chicago and New Haven (Stern et. al., 2010). The private schools and parochial schools in the three cities were under no obligation to close, though many chose to do so. The three cities had pre-existing, well-resourced hygiene programmes in public schools, and ensured that the regular medical inspections were maintained and, in some places, intensified. Chicago and New Haven did experience high levels of absenteeism at certain points in October 1918, ranging from 30% to 50% in Chicago and around 33% in New Haven.

The schools in Oklahoma City were closed in October 1918 and the teachers were sent home on full pay (Korth, 2020). Some teachers and pupils supported the work of the Health Service by constructing beds and making gowns and masks. Other teachers volunteered to help nurses or worked on switchboards. There were also educational programmes providing guidance on preventive measures. There were school closures in Ontario and also a concerted educational programme about the spread and the effects of the flu (Mlynaryk and Makovac, 2020). The children in the lower stages of schooling were taught about increased hygiene and children in later stages were taught about infectious diseases. This included how the flu could be spread through coughing and sneezing. The school summer exams were delayed for two weeks to provide the staff and pupils with more time for preparation.
ASIAN FLU 1957-1958

Between 1957 and 1958, the Asian Flu pandemic spread throughout the world. It was thought to have originated in Hong Kong and was responsible for around one to two million deaths. The pandemic began to have an initial impact on the UK in late June 1957 and by mid-September began to spread rapidly (Jackson, 2009). The Asian flu pandemic was highly infectious and was unusual in that it had a major effect on a younger age group of 5-39 years and, in particular, children of school age (Vynnycky and Edmunds, 2008; Honigsbaum, 2020). There was no national procedure developed to tackle the pandemic in the UK. Instead, local Medical Health Officers were responsible for their areas. This resulted in a variety of practices, most notably related to school closures. Some Officers closed schools, others banned assemblies and physical education. Interestingly, Ireland was initially not affected by the pandemic, but by the end of October 1957 seventeen schools were closed in Dublin in the heavily populated south side of the city (Mullally, 2020).

THE HONG KONG FLU 1968-1969

This Hong Kong Flu was responsible for around one million deaths. The pandemic was first detected in Hong Kong in early 1968. This pandemic affected the older population over 65 and especially those with pre-existing conditions, similar to Covid-19 (Fund, 2020). During this pandemic, there is very little evidence of school closures. There were school closures in parts of America, but these were the result of absenteeism (Jester et. al., 2020). The Ministries of Education and Health in Singapore decided not to close schools as the pandemic was mostly confined to August-September in 1968 and did not last very long (Lee et. al., 2007). This pandemic peaked during the school winter holidays of 1968 in some parts of the world and this meant schools did not have to close in term time (Rao, 2006).

SWINE FLU 2009-2010

The ‘Swine Flu’ of 2009 resulted in school closures in different parts of the world. The school closures were an important part of the strategy to reduce the spread of the infection. In America, more than 1,300 schools (public, charter and private) closed in 240 communities in the spring of 2019 (Navarro et al., 2016). This pandemic raised the issue of the use of technology and television to support learning during school closures (Trucano, 2014). This was highly relevant for places such as Mexico and China where large numbers of children were affected by school closures and not all families had access to the technology for online learning and teaching. Both Mexico and China had a track record in using television for educational purposes and were able to adapt to the new situation. The issue of the use of technology and television exposed the issue of the digital divide between and within developed and developing countries.

After the 2009 pandemic, there were calls for the development of ‘pandemic mitigation protocols’ (Cauchemez et. al., 2009). One of these protocols would be the formulation of a rationale for
school closures. This would encompass an understanding of the ‘trigger point’ or ‘thresholds’ for school closures – the evidence that would be required for a school closure and at what point in the progress of the pandemic would school closures be judged to be effective (Carlo and Chung, 2009). The closure of schools at an early period of the pandemic were considered to have more impact than closures at the peak of the pandemic (Vynnycky and Edmunds, 2008).

**COVID-19 2020-2021**

The term Covid-19 is an abbreviation of *coronavirus disease, 2019* (WHO, 2020a). Covid-19 originated in the Wuhan area of China and spread rapidly throughout the world (WHO, 2020b). The Director-General of the World Health Organisation publicly announced that Covid-19 could be characterised as a pandemic on March 11, 2020 (WHO, 2020c). At the time of writing, the pandemic is expected to continue into 2021. During the spread of Covid-19 there were many school closures throughout the world. Prior to Covid-19 there were 260 million children out of school in 2018. In April 2020 during Covid-19 lockdowns that figure had risen to 1.6 billion children in more than 190 countries (UNESCO, 2020a). As the pandemic progressed, it became clearer that children were more likely to have ‘mild or asymptomatic forms of the disease’ (Silverman et. al., 2020; Viner et.al., 2020). Nevertheless, the highly infectious nature of the pandemic and the limited information on the nature of the pandemic prompted the worldwide school closures in the spring of 2020.

Some of the school closures can be described as a mid-point between *school closures* and *class dismissal*. During the school closures prior to the summer holidays of 2020 in the UK, there was limited provision for the children of key workers. Typically, teachers in school clusters assembled in one of the larger schools and a rota of teachers provided continued school education for a small number of children of key workers. Later when schools remained opened under conditions of tiered restrictions in 2020, there were dismissals of particular class groupings for a period of quarantine if the teacher or one of the children tested positive with the virus.

The school closures during Covid-19 have highlighted the challenging effects on health and wellbeing, education and family life for families. There are serious issues concerning the mental health and well-being of families, especially children and young people during periods of school closure. School closures are particularly problematic for vulnerable families and children with special educational needs (Silverman et.al. 2020). Vulnerable families rely on schools for education but also additional support services and for free school meals. The United Nations reported that nearly 369 million of the 1.6 billion children out of school relied on free school meals in April 2020. Families on low incomes struggle when a parent or carer has to stay at home to care for children during school closures, and the family may be on a reduced income.

There are concerns about the number of children and young people who have experienced digital poverty (or digital exclusion). UNESCO has pointed out that around 826 million students who were not in school as a result of Covid-19 (50% of the total) had no access to a computer at home.
Around 706 million had no internet access and 56 million lived in places with no mobile network coverage (UNESCO, 2020b). Many countries have used online learning and teaching where possible and a surprisingly varied number of alternatives to online learning and teaching. These include the use of radio, television, mobile phones, printed learning packs and phone calls. Africa has used both radio and television quite extensively. Algeria, for example, has a strong focus on television courses while the Democratic Republic of the Congo and Rwanda have used radio programmes (Kuwonu, 2020). Other parts of the world have used television, notably Europe and North America. Iraq has used online learning, television and mobile phone technology (Zatat, 2020). In Mexico, a telephone support line called ‘Your Teacher Online’ offers pupils mentoring (Schleicher, 2020). There is little access to online technology for children in many refugee camps. They have been taught by other means, for example, teachers on the radio (Kenya), offline computer education (Uganda) and mobile classrooms (Bolivia) (UNHCR, 2020).

Where there is access to an online learning and teaching environment, there has been a pressing need for many teachers to adapt to this environment (Schleicher, 2020). Even when teachers have ICT skills, there has been a need to upskill and learn how to use different platforms. There have been some interesting successes. One example is small scale research in Norway that reported on the eight schools of a municipality in the Fjords (Bubb and Jones, 2020). The schools were able to respond well to learning and teaching online. This success is qualified by acknowledgments that Norway is the second highest spender per head on education in the OECD and is very well equipped in terms of technology. Around 93% of pupils attend a ‘digitalised’ schools compared to the EU average of 35%. Further, the municipality had invested in technology and training and had introduced some digital learning prior to Covid-19.

CONCLUDING REMARKS

The Covid-19 pandemic is the latest of a series of pandemics that have had a major global impact. As has been seen, all of the pandemics have resulted in school closures, albeit in different degrees and for varying periods of time. The response to the more recent pandemics has resulted in the construction of pandemic mitigation protocols and the criteria for school closures. There are lessons to be learned from this latest pandemic that can be added to the protocols and to the criteria for school closures. There are also many important areas for research. This is a prompt for research initiatives grounded in the concepts of responsible research to pursue research on the long-term effects of Covid-19 on health and wellbeing and school education.

One of the principles of responsible research is: Responsiveness and Adaptive Change. This means being responsive to changes and external inputs and adapting research plans to changing social values and expectations (Klaassen et al., 2014). Such research should produce societally relevant outcomes, in line with the Public Engagement pillar of responsible research and innovation (European Commission, 2020a). There are an increasing number of ‘immediate response’ studies on the Covid-19 pandemic and school closures that have been a consequence of the pandemic. These studies are often focussed on managing the disease and the public health benefits of the
school closures. These are important studies and address one of the societal challenges of the Europe 2020 strategy: Health, demographic change and wellbeing (European Commission, 2020b). UNESCO has produced a series of helpful Education Issue Notes that provide examples of good practice in education during Covid-19 (UNESCO, 2020c). There is also a pressing need for Responsible Research studies on the short-term and long-term effects of the pandemic on the school education of children and young people. This would enable more accurate projections for courses of action in future pandemics (Scobie and Whitehead, 2020).

There are issues about teachers and pupils adapting to an online learning and teaching environment. Teachers have had to upskill very quickly, and teachers may need further training and development in digital education on a regular basis (Elliott, 2020). There is a case for arguing that trainee teachers should be trained more extensively in online learning and teaching in case of further waves of Covid-19 and possible future pandemics. As has been seen, deeper research is required about the effects of digital exclusion and the alternative modes of educational provision that were used to counter the possibility of educational exclusion. Research can help to determine the effectiveness of these alternative initiatives. There are economic questions about future spending for school education that is equitable, in the context of funding being directed to health and social services and economies shrinking in the Post-Covid-19 world (Schleicher, 2020). There is research required to assess the longer-term effects of learning loss and the consequences of this for the future. There are serious concerns about the longer-term impact of the school closures on the physical and mental health and well-being of the children and the teachers. This is especially the case for children and young people who belong to vulnerable families and have faced serious challenges including a lack of educational resources at home and have experienced food insecurity.

REFERENCES


THE GLOBAL CHANGE IN CLIMATE AND ITS SOCIETAL INFLUENCE

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INTRODUCTION

There has been warming of the global climate with the beginning of 20th century, with many a factors been responsible for the same. Over the 20th century, with development in energy sector and its high consumption and demands (Latake et al., 2015), anthropogenic emission of greenhouse gases has been estimated to be a prominent factor apart from the aerosol particles’ formation on earth. The average cooling effect as well as the uncertainties caused by aerosols have been found to compensate the warming, although. Aerosols being of shorter life-span persist for lesser time and are mostly found with regional concentration. On the other hand, carbon dioxide is largely found to get absorbed down into the oceans over the centuries, with a significant fraction also remaining back into the atmosphere (Archer and Brovkin, 2008). Studies found that industrial byproducts got transported with air to far-off places and polluted the air accordingly. Earlier in 1960s, linkage was obtained between the pollution of air and global climate. In 1970s, a debate among scientists arose with the understanding about aerosol particles whether they actually had an adverse impact on global climate change or not. After 1990, the aerosol-climate interactive study became prime subject in the scientific field. Over the past few decades, the changing pattern of global climate has become much evident (Oreskes, 2007) with urgent need for several policy-making and their implementations. Scientific discussions were obtained with new links between the particles and the climate change. With the increase in temperature, broader changes were noticed with glacial melting, ice retreat, and widescale sealevel rise. The loss of aquatic biodiversity has been huge and there has been immense threat also to public health. The different aspects of global climate change and its causes have been reviewed in the present paper with their probable relationship with the climate system.

GLOBAL CLIMATE CHANGE

Climate change is the ‘change in climate over time’. It includes the ‘man-made changes or variation in temperature’, said by United Nations Framework Convention on Climate Change (UNFCCC). Natural processes affecting the earth’s temperature includes even minor changes in the solar output over a time period. Global warming is an example of climate change and includes increase in average temperature of the earth’s surface as well as the oceans, caused due to anthropogenic influences. The opposite effects like ‘global cooling’ has also been recorded to be experienced at places, either caused due to external factors like intensity of the sun and its variation together with man-made influences.
Climate change brings about different atmospheric changes like glacial retreat, ice melting in the polar region, together with rise in sea level. Unpredictable rainfall pattern often welcomes flood or drought at places with inundation of low-lying belts, coastal flooding, unstable ecological changes, difficulties in agricultural cultivation, loss of biodiversity, and increase in pests and vector-borne diseases. With melting of ice in the polar region and rapid change in temperature, fish population migration occurs leading to loss of biodiversity (Battin et al., 2007) and mass mortality of those depending upon fish food. Human health is also affected due to climate change, causing heat stress, respiratory distress, scarcity of food leading to loss of health and malnutrition, and other infectious diseases caused by heat-loving pathogens and their increase. With extreme weather events like heat stress, floods, droughts, etc, diarrhoeal diseases are much associated while vector-borne diseases like malaria, dengue are also of common occurrence.

MAJOR CAUSATIVE AGENTS

GREENHOUSE GASES

Greenhouse gases are gaseous constituents that may be both natural and man-made. Human activities like fossil-fuel consumption, burning wastes, deforestation etc increases the concentration of greenhouse gases in the atmosphere. Some of the primary greenhouse gases responsible for greenhouse effect are water vapour, carbon dioxide, methane, nitrous oxide and ozone. Greenhouse gases capture and trap heat and keep our earth warm and habitable for species and supports biodiversity. This effect is enhanced due to increase in concentration of greenhouse gases in the atmosphere leading to increased radiation as well as heat on the earth’s surface. The increase in greenhouse gases in the atmosphere has also led to enhancement of natural greenhouse effect, together with effects on overall climate system and the process is called ‘global warming’. The steady warming of the earth’s surface is caused due to a blanket of carbon dioxide specially, together with other greenhouse gases that hold on to infrared radiations and prevent them from evading out. Global warming, in turn, further imposes several other changes like change in cloud cover, wind patterns etc that cause further increase in warming together with several other adverse impacts on the environment. Since the beginning of industrial revolution, the concentration of atmospheric carbon dioxide has increased by more than 40 percent (EPA) with several negative consequences.

AEROSOLS

Aerosols or particulate matters are airborne particles with particle size between 0.1 and 10 mm that can be liquid, solid or of mixed phase (Boucher et al., 2013) and may be natural or anthropogenic. Aerosols are emitted directly into the atmosphere such that they originate from sea spray, mineral dust and volcanic eruptions naturally while anthropogenic activities like combustion, biomass burning, etc cause carbonaceous aerosol generation also. Carbonaceous aerosols include both organic carbon (OC) and solid black carbon (BC) among which BC is the major man-made constituent (Bond et al., 2013). The fossil fuel such as coal, oil combustion,
burning of biomass, wood, etc are some major man-made sources of black carbon (BC) aerosol particles and have a warming effect as they absorb solar radiations. Authors (Koelmans et al., 2006) also indicated that black carbon acts as an important atmospheric greenhouse gas component and is emitted immensely at developing nations like China (Zhang et al., 2009), creating an important area of investigation. Sulphate is a very dominant aerosol that originate from industrial activities and causes decrease in surface temperature (Baker et al., 2015). Once in the air, aerosol particles undergo different chemical reactions and may even change in size with growth. The emission pathways of different aerosol particles have been reported in IPCC 5th Assessment Report.

GREENHOUSE GASES AND THEIR RELATIONSHIP WITH CLIMATE

With human activities and increase in greenhouse gas emissions in the atmosphere, the net radiative balance of the Earth is changed. The atmosphere with increased concentration of greenhouse gases acts as a blanket that trap radiations of lower frequency from the sun and the phenomenon is much the same as a glass house in a cool region where trapping of some lower frequency radiations causes increase in temperature within the glass house. Also, the greenhouse gases absorb the longwave radiations emitted by the Earth While most of the observed increase in global temperature has been due to increased concentration of different greenhouse gases, carbon dioxide has a major influence in increase in global average surface temperature that has been projected to be 1.1 – 6.4 degree centigrade by end of 21st century (4th Report, IPCC).

AEROSOLS AND THEIR RELATIONSHIP WITH CLIMATE

Human activities create aerosols which have a major impact on climate. Aerosols are liquid, solid or mixed particles suspended with a variable chemical composition and size distribution (Putaud et a., 2010). The reason behind the variability of aerosol particles is the variation in the sources and the process of their formation. Presence of aerosol is highly inhomogeneous as obtained by remote sensing study of aerosol optical depth (AOD). As per IPCC (2007), aerosols have a huge impact on climate change with a series of complex processes still under investigation. One of the direct impact includes absorption and diffusion of solar radiation and longwave radiations from the earth’s ground surface by the aerosols. The direct effects depend upon both physical and chemical properties of aerosols, such as size of the particles, hygroscopicity (Sharma et al., 2013), etc. The black carbon (BC), together with mineral dust and some organic carbon (OC) of atmospheric aerosol are the solar radiation absorbers, as well as have the ability to scatter. With the scattering ability, aerosols have a capacity to create cooling effect with enhancement of total reflected radiation from the Earth. Absorbing aerosols also have a warming effect and therefore generates a net effect on energy budget of the Earth, and is found to be cloud and surface characteristics dependent. Absorbing aerosols when present above the cloud surface, act as the main contributor to reflect solar radiation back into space. Aerosols also play an ‘indirect effect’ with a vital role in cloud formation as they sometimes act as cloud condensation nuclei (CCN) and therefore their variation may change the micro and macro characteristics of the clouds. While
sulphate aerosols that are emitted by man-made activities reduce the solar radiation on earth and may have a cooling effect on the ground surface with decrease in overall temperature. This definitely helps to offset global warming. Atmospheric dust aerosol are emitted from different landuse, land cover change, and other human factors. These sand dust aerosols variation may influence the radiation balance on the earth and may also further affect the climate change.

The aerosols found to affect incoming shortwave energy as well as outgoing longwave energy and have major and significant impact on the entire climate system. They have immense ability to scatter or absorb incoming solar radiations. The degree of variation of the scattering is determined with the optical properties of the aerosols and that further determines the climatic pattern. Notable absorption of incoming shortwave radiations from the sun also recorded by aerosol species like the black carbon (BC). The solar heat heats the aerosol particles that in turn emit radiations of heat energy into the air. Hence, the effects of such radiations warm the climate and is very similar to the greenhouse effects caused by green house gases. The location of the aerosol particles is an important factor as when they are located on a reflective surface like ice, aerosols interact with the radiations and have a larger impact on the climate.

SOCIETAL INFLUENCES

Out of the different impacts of climate change like increasing warming of the globe and unpredictable weather patterns, warming may affect human health with increase in morbidity and mortality. Heat stress may enhance the occurrence of impairment of organ functions, risks of organ damage and death. Heat related morbidity also affects cardiovascular, respiratory and renal diseases. The change in climate with occurrence of more calamities like flood and storms are found to increase the rate of occurrence of infectious diseases like cholera, malaria, leptospirosis etc. The increase in forest fire and drought owing to heatwaves further causes drought-induced dust storms that cause increased release of dangerous particulate matters of 10 micron (PM10) and 2.5 micron (PM2.5), as well as particles of sulphur dioxide, nitrous oxide and other toxic substances leading to more occurrences of acid rain. This enhances increased risk of morbidity, more severe respiratory distress and chances of increased risk of development of asthma, skin irritations and diseases, and many different consequences. The effects of climate change although differs by country and time zone, it also adversely affects food security as global warming has a huge impact on physical infrastructure and abiotic factors in an ecosystem (IPCC, 2015). Water stress, drought and loss of crop productivity are few of the examples in this field. In Russia, severe droughts caused decrease in crop productivity by 33 and 25 percents in 2010 and 2012 respectively. Climate change also has impact on fresh water resources and their availability due to drought, less rainfall and less surface water availability. This affects the lifestyle and well-being of people and that shall require responsible management. Climate change also welcomes extreme weather events such as higher mean temperatures and changes in wind pattern, cloud cover, cold and heat (Ebinger et al., 2011), rainfall patterns etc that badly affects energy supply sector and increases the energy demands further.
CONCLUSION

Impacts of climate change are many a times irreparable and therefore shall require attentiveness to be managed better. Proper understanding and active participation is the need of the time. Emission reduction shall be the strategy to reduce the climate change on earth. With the advancement of technology further, the emission of greenhouse gases and aerosol particles release into the atmosphere need to be controlled. With decrease in emission of greenhouse gases and release of aerosol particles, air pollution and health-related distress among people shall definitely minimize as all are inter-related. Climate-change related issues are therefore to be dealt with much attention, such that awareness among people about climate-change related health problems are to be spread worldwide. In reducing the adverse impacts of climate change, different choices at personal level, such as less driving, public transport, less food wastage, composting at home etc may definitely have a larger impact on environment. Preparedness for disaster management has to be made ready with prior importance. Nations must come forward together with local, regional and global concerns to jointly build-up infrastructure and develop action plan.

REFERENCES


IPCC Fifth Assessment Report 2014.


INTRODUCTION & BACKGROUND

Traditionally, women have been looked upon only as care givers and nurturers. They have been assigned all the roles that are related to maintaining and managing a family. Men perceived themselves as the lone bread earners and society also expected them to perform work roles related to earning and thus support the family. However, the nature of work-force has been gradually changing and the percentage of men as wage earners and women as housewives has been swiftly declining. The stereotypical mind frame of the people that women should not be granted permission to work outside because their primary role is to carry out domestic chores and nurture their kids still exists (Woodward, et al. 1990). Yet we have seen tremendous changes in the past few years. In urban India, the percentage of dual-earner couples is rapidly increasing. For most men and women today, their work environment as well as family have become the two most important institutions in life. Such changes in the work force are usually accompanied by changes in the beliefs, values and thus, creating a new emphasis on the balance between family life and work life (Joshi, 1998). When a woman is seeking position of power within an organization or institution, she must at the same time consider the toll on the other facets of her life, including her personal relationships, hobbies, interests and the time spent with her family. As we are aware that most executive jobs require a significant amount of time as well as effort, which on the other hand working mother may not be able to devote due to family obligations (Kalaitzi, 2019). Women often find it very difficult to maintain equilibrium on account of the competing pressures and expectations of work and the demands at home. Therefore, they have to cautiously handle their personal life and skillfully blend these different roles, so as to enhance their potential in all quadrants of life. Certainly, working women are found to have improvised self-esteem and emotional health due to their multiple roles in the daily life. The culture of work is equally important and so all employees working in the organization should feel respected and that they assuredly have an equal opportunity to grow and advance. Still we have witnessed that women continue to be underrepresented at every level. We mostly talk about the “glass ceiling” that hinders working women from reaching their ultimate goals of senior leadership positions. Women’s right to life, to health care and to non-discrimination has been codified in multiple international covenants. Indeed, governments have committed themselves to promote the sexual
and reproductive health and rights of women in International agreements, plans and programmes of action (Freedman et al, 2005).

As we are mindful of the fact that scholars consider publishing their research works as a dominant activity because this is an obligatory part of their career. The important benefits of the scholarly publications are: spreading the scientific and innovative knowledge developed from the research findings, protecting intellectual property of the researchers and gaining admiration among peers as well. Since last few decades, there has been a tremendous growth of the journals which provides easy option for researchers and academicians for publishing their work. With the advent of open accessing of journals, the growth and advancement of journals triples every day (Sharma, 2012). Thus, for latest and qualitative information, the evaluation of scientific publications is need of the hour. Bibliometrics is the term used to measure and analyze the qualitative and quantitative impact of articles, books or any other media of intellectual communication. Meanwhile, its various indicators have been widely used in the academic community for enormous purposes. Researchers use bibliometric indices to evaluate the impact of their work on the wider intellectual community and on the other hand, organizations utilize them to appraise the researcher for either appointment or promotion decisions or even for the fund distribution for their research projects. It also enables them to measure the quality of the research work published by a particular researcher or the research group (Joshi, 2014). The various techniques involved in identifying the quality of research work has evolved over time to meet the forthcoming needs of researchers, institutions and funding organizations. Latest processes and technologies are now able to change the ways in which assurance and assessment is done. Recently, new opportunities are intensifying in the form of social tagging and recommender systems, through checks on plagiarism, providing facilities for online comments and ratings (Fishman, et al. 2017). With the development of a huge range of updated and sophisticated bibliometric measures, near future will provide valuable evidence to support quality control, assurance and assessment of research works. One of the challenging issues for the future will be how the new bibliometric tools and technologies paved a significant way towards the assessment of excellence and quality of research (Ahmad, et al. 2017).

Since we are aware that the publication of scientific articles is essential for all researchers, as it plays a crucial role in the process of career advancement. Besides inflexibility in career structures, gender differences and discrimination in the amount of time spent on domestic responsibilities (particularly during 21-35 years of age), gender inequalities in publishing are perhaps among the chief reasons why men still principally outnumber women in academic leadership positions (Long, et al. 2015).

OBJECTIVES

- To examine the year wise growth of literature on working women.
- To identify the foremost prolific authors throughout the period.
- To explore the geographical distribution of scholarly publications.
- To analyze the linguistic pattern of research output.
- To identify the document-wise distribution of research productivity.
To ascertain the productive funding agencies for publishing the research output.
To analyze and rank the source titles used for publishing the research output.

METHODOLOGY

The study is designed to investigate scientometric mapping of research publications on working women during the year 1989-2019. All the publications on “Working Women” in topic field were downloaded from Web of Science (WoS) database. Web of Science is a database which is an international multidisciplinary indexing and abstracting database. The data was exported and processed in Microsoft Excel to analyze the contribution of leading authors, source titles, language pattern, productive countries, document types and funding agencies. A total of 84,395 records were retrieved during the study period and later on data was analyzed as per the set objectives of the study.

DATA ANALYSIS AND INTERPRETATION

1: Year-wise Distribution of Articles:
Table 1 displays the total number of articles published on working women in three decades from 1989-2019. On the observation of Table 1, it was found that total of 84,395 articles are globally published on working women. The highest number of research papers (6,769) were published in the year 2019 followed by 5,903 research papers in 2018 and the lowest number of research articles (1,357) were published in 1995. Moreover, it was found that there is an increasing trend in the scholarly growth of articles on working women.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Publication Years</th>
<th>Record Count</th>
<th>Percentage</th>
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<tr>
<td>1</td>
<td>2019</td>
<td>6,769</td>
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<tr>
<td>2</td>
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<td>5,903</td>
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<tr>
<td>3</td>
<td>2017</td>
<td>5,226</td>
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</tr>
<tr>
<td>4</td>
<td>2016</td>
<td>5,206</td>
<td>6.169 %</td>
</tr>
<tr>
<td>5</td>
<td>2015</td>
<td>4,799</td>
<td>5.686 %</td>
</tr>
<tr>
<td>6</td>
<td>2014</td>
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<tr>
<td>7</td>
<td>2013</td>
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<tr>
<td>8</td>
<td>2012</td>
<td>4,161</td>
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</tr>
<tr>
<td>9</td>
<td>2011</td>
<td>3,926</td>
<td>4.652 %</td>
</tr>
<tr>
<td>Year</td>
<td>Year</td>
<td>Articles</td>
<td>Growth Rate</td>
</tr>
<tr>
<td>------</td>
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<td>----------</td>
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<tr>
<td>10</td>
<td>2010</td>
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<td>11</td>
<td>2009</td>
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<td>24</td>
<td>1996</td>
<td>1,490</td>
<td>1.766 %</td>
</tr>
<tr>
<td>25</td>
<td>1995</td>
<td>1,357</td>
<td>1.608 %</td>
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</tbody>
</table>

(6 publication years value(s) outside display options).

Fig: 1 Annual growth of articles
2: Document-wise Distribution of Articles:
Table 2 displays the top ten document-wise distribution of research output during the period 1989-2019. The most prevalent document type of publications is *Journals articles* with 75,848 records (89.87%) followed by *Review* (4,099; 4.857%) and *Proceedings paper* with 2,963 (3.511%) records. The document types including Meeting Abstract, Early Access, Note, Letter and Book Chapters constituted less than one percent of the total available records. It was observed from the study that most of the authors were interested in publishing their research papers in Journals.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Document Type</th>
<th>No. of Publications</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Article</td>
<td>75,848</td>
<td>89.87 %</td>
</tr>
<tr>
<td>2.</td>
<td>Review</td>
<td>4,099</td>
<td>4.857 %</td>
</tr>
<tr>
<td>3.</td>
<td>Proceedings Paper</td>
<td>2,963</td>
<td>3.511 %</td>
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<tr>
<td>4.</td>
<td>Book Review</td>
<td>2,467</td>
<td>2.923 %</td>
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<tr>
<td>5.</td>
<td>Editorial Material</td>
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<td>1.279 %</td>
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<td>6.</td>
<td>Meeting Abstract</td>
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<td>7.</td>
<td>Early Access</td>
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<td>8.</td>
<td>Note</td>
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<td>9.</td>
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<tr>
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<td>Book Chapter</td>
<td>109</td>
<td>0.129 %</td>
</tr>
</tbody>
</table>

3: Publication output of the most productive authors:
Table 3 exhibits the ranking of authors of scholarly publications. It was observed that the most productive authors during 1989-2019 include *Kivimaki, M* at rank 1st with 209 (0.244 %) publications followed by *Vahtera, J* with 163 articles (0.193 %) and *Lahelma, E* with 111 (0.132%) publications respectively. The other seven authors contributed less than 0.130 percent to the total global share of research output on working women.
Table 3: Top Ten Prolific Authors

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Authors</th>
<th>No. of Publications</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kivimaki M</td>
<td>209</td>
<td>0.244 %</td>
</tr>
<tr>
<td>2.</td>
<td>Vahtera J</td>
<td>163</td>
<td>0.193 %</td>
</tr>
<tr>
<td>3.</td>
<td>Lahelma E</td>
<td>111</td>
<td>0.132 %</td>
</tr>
<tr>
<td>4.</td>
<td>Virtanen M</td>
<td>107</td>
<td>0.127 %</td>
</tr>
<tr>
<td>5.</td>
<td>Theorell T</td>
<td>104</td>
<td>0.123 %</td>
</tr>
<tr>
<td>6.</td>
<td>Alexanderson K</td>
<td>89</td>
<td>0.105 %</td>
</tr>
<tr>
<td>7.</td>
<td>Pentti J</td>
<td>88</td>
<td>0.104 %</td>
</tr>
<tr>
<td>8.</td>
<td>Rahkonen O</td>
<td>87</td>
<td>0.103 %</td>
</tr>
<tr>
<td>9.</td>
<td>Goldberg M</td>
<td>85</td>
<td>0.101 %</td>
</tr>
<tr>
<td>10.</td>
<td>Cooper C</td>
<td>83</td>
<td>0.098 %</td>
</tr>
</tbody>
</table>

4: Distribution of publications among source titles:

Table 4 displays the top ten source titles that have been used for publishing the literature on working women. It was observed that PloS One acquired the 1st rank among the top ten journals under consideration with (799; 0.947%) publications. The journal that ranked 2nd spot was Social Science Medicine with (647; 0.767%) publications followed by BMC Public Health at 3rd spot with (559; 0.662%) publications respectively. The other journals that were ranked between 4th spot to 10th spot included Sex Roles, Women Studies International Forum, Gender Work and Organization, Gender Society, Occupational and Environmental Medicine, Affilia Journal of women and Social Work and Midwifery based on the number of research papers published.

Table 4: Leading Source Titles

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Source Titles</th>
<th>Record Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>PloS One</td>
<td>799</td>
<td>0.947 %</td>
</tr>
<tr>
<td>2.</td>
<td>Social Science Medicine</td>
<td>647</td>
<td>0.767 %</td>
</tr>
<tr>
<td>3.</td>
<td>BMC Public Health</td>
<td>559</td>
<td>0.662 %</td>
</tr>
<tr>
<td>4.</td>
<td>Sex Roles</td>
<td>515</td>
<td>0.610 %</td>
</tr>
</tbody>
</table>
5: Organization-Wise Distribution of Publications:

The top ten contributing organizations in the research field of working women have been displayed in the figure 2. As per the data, the 1st rank has been attributed to Harvard University with the highest record count (1,069; 1.267%) followed by University Toronto with 1,059 (1.255%) record count and the University Carolina at 3rd place with 1,027 (1.217%) record count respectively.

![Figure 2: Top Ten Organizations](image)

6: Geographical Distribution of Articles:

Table 5 reveals the list of leading countries that contributed maximum number of scholarly publications on working women. Among different countries, USA has the highest number of publications (13,739; 37.52 %) followed by UK with (4,482; 12.24%) record count, Canada with (2,187; 5.97%) record count and Australia with 2,032 (5.54%) publications respectively. The other
countries like France, Brazil, Sweden, India, South Africa and Netherlands contributed less than 4 percent to the total global share. It has been found that developed countries are showing more interest and desire in contributing towards the scholarly publications on working women.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Countries</th>
<th>No. of Publications</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>USA</td>
<td>13,739</td>
<td>37.52</td>
</tr>
<tr>
<td>2.</td>
<td>UK</td>
<td>4,482</td>
<td>12.24</td>
</tr>
<tr>
<td>3.</td>
<td>Canada</td>
<td>2,187</td>
<td>5.97</td>
</tr>
<tr>
<td>4.</td>
<td>Australia</td>
<td>2,032</td>
<td>5.54</td>
</tr>
<tr>
<td>5.</td>
<td>France</td>
<td>1,443</td>
<td>3.94</td>
</tr>
<tr>
<td>6.</td>
<td>Brazil</td>
<td>1,369</td>
<td>3.73</td>
</tr>
<tr>
<td>7.</td>
<td>Sweden</td>
<td>1,302</td>
<td>3.55</td>
</tr>
<tr>
<td>8.</td>
<td>India</td>
<td>1,299</td>
<td>3.54</td>
</tr>
<tr>
<td>9.</td>
<td>South Africa</td>
<td>1,243</td>
<td>3.39</td>
</tr>
<tr>
<td>10.</td>
<td>Netherlands</td>
<td>1,242</td>
<td>3.39</td>
</tr>
</tbody>
</table>

7: Language-Wise Distribution of Articles:

Table 6 displays the publication output of the top ten languages by the total number of published articles and it was found that English language acquired 1st rank among the top ten languages under consideration with 34,723 (94.83%) record count. In all 28 languages contributed in research on working women during 1989-2019, the language that contributed 1,365 (3.72%) publications were Spanish and ranked at 2nd place followed by 1,013 (2.81%) publications by French being at 3rd rank and unspecified language with 593 (1.61%) publications respectively. While the rest of the languages such as German, Russian, Arabic, Korean and Chinese constituted quite a little ratio to the overall share of the research literature in the field.
### Table 6: Linguistic Analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Language</th>
<th>No. of Publications</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>English</td>
<td>34,723</td>
<td>94.83</td>
</tr>
<tr>
<td>2.</td>
<td>Spanish</td>
<td>1,365</td>
<td>3.72</td>
</tr>
<tr>
<td>3.</td>
<td>French</td>
<td>1,013</td>
<td>2.81</td>
</tr>
<tr>
<td>4.</td>
<td>Unspecified</td>
<td>593</td>
<td>1.61</td>
</tr>
<tr>
<td>5.</td>
<td>Portuguese</td>
<td>574</td>
<td>1.56</td>
</tr>
<tr>
<td>6.</td>
<td>German</td>
<td>348</td>
<td>0.95</td>
</tr>
<tr>
<td>7.</td>
<td>Russian</td>
<td>315</td>
<td>0.86</td>
</tr>
<tr>
<td>8.</td>
<td>Arabic</td>
<td>146</td>
<td>0.39</td>
</tr>
<tr>
<td>9.</td>
<td>Korean</td>
<td>131</td>
<td>0.35</td>
</tr>
<tr>
<td>10.</td>
<td>Chinese</td>
<td>115</td>
<td>0.31</td>
</tr>
</tbody>
</table>

### 8: Publication Output of Top 10 Funding Agencies:

The individualities of 10 most productive funding agencies were analyzed. Table 7 summarizes the number of records and percentage of the publications of these funding agencies. The top most prolific funding agencies included United States Department of Health Human Services being at top with 3,372 (9.20%) publications followed by National Institute of Health (NIH), USA with 3,179 (8.68%) publications at 2nd rank and Eunice Kennedy Shriver National Institute of Child Health and Human Development USA with 1,485 (4.05%) publications at 3rd spot respectively. The rest of the agencies contributed less than 2 percent of the total research literature share available in the field.

### Table 7: Ranking of Funding Agencies

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Funding Agencies</th>
<th>Record Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>United States Department of Health Human Services</td>
<td>3,372</td>
<td>9.20</td>
</tr>
<tr>
<td>2.</td>
<td>National Institute of Health (NIH), USA</td>
<td>3,179</td>
<td>8.68</td>
</tr>
<tr>
<td>3.</td>
<td>Eunice Kennedy Shriver National Institute of Child</td>
<td>1,485</td>
<td>4.05</td>
</tr>
<tr>
<td></td>
<td>Health and Human Development (USA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Gates Foundation</td>
<td>719</td>
<td>1.96</td>
</tr>
<tr>
<td></td>
<td>United States Agency for International Development</td>
<td>600</td>
<td>1.63</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>6.</td>
<td>Welcome Trust</td>
<td>566</td>
<td>1.54</td>
</tr>
<tr>
<td>7.</td>
<td>Medical Research Council (MRC), UK</td>
<td>536</td>
<td>1.46</td>
</tr>
<tr>
<td>8.</td>
<td>World Health Organization (WHO)</td>
<td>531</td>
<td>1.45</td>
</tr>
<tr>
<td>9.</td>
<td>National Institute of Allergy Infectious Diseases</td>
<td>478</td>
<td>1.30</td>
</tr>
<tr>
<td>10.</td>
<td>Canadian Institute of Health Research (CIHR)</td>
<td>345</td>
<td>0.94</td>
</tr>
</tbody>
</table>

CONCLUSION

The socio-economic factors and prevalent patriarchal systems do not facilitate the entry of women into the workforce despite having tremendous potential. The stereotypical mind frame of the people that women should not be granted permission to work outside because their primary role is to carry out domestic chores and nurture their kids still exists. However, we have seen more women breaking the glass ceiling and entering into the fields with great struggle and dedication. They reflect immense enthusiasm and have bigger ambitions in life. They want to be self-independent and contribute towards improving their standards of living. Certainly, they do have to face a lot of hurdles in the process but what keeps them going is their strong will power. The present study explored the scientific global literature on “Working Women” indexed in the Web of Science (WoS) database during the period of 1989-2019. Mostly, a bibliometric analysis is done to evaluate both research trends as well as scholarly networks in different research disciplines. Such analysis provides guidance to the budding researchers and encourages them to conduct further researches. During the study period, it was found that a total number of 84,395 articles were published on working women in the past three decades. The results indicated that the year 2019 was found to be the most productive year as the highest publications (6,769 record count) were found in this year and majority of these publications were documented in the form of journal articles with 75,848 record count which comprised of 89 percent of the total scholarly publication in the field. Kivimaki M was found to be the most prolific author with 209 publications and the leading source title being the PloS One with 799 record count. The top contributing country being USA with 13,739 publications on working women and the most productive language being the English language with 34,723 publications i.e. comprising of 94 percent of the total research output on working women. Among the funding agencies, United States Department of Health Human Services was leading with 3,372 record count. Hence, the results of the study suggested an upward trend in the number of scholarly publications on working women. Indeed, more high-quality research needs to be done on these inspiring women so that further awareness can be generated especially among the female folks, breaking all the stereotypes and boosting their motivation levels to become the best version of themselves!
REFERENCES


SATISFACTION WITH LIFE AND DEATH ANXIETY: WHERE YOUTH MATTERS

Dr Mayurakshee Gangopadhyay, Assistant Professor
Department of Human Development, Dum Dum Motijheel College, Kolkata, India

INTRODUCTION

Being social animal every human being wants their society to accept and acknowledge his or her contributions. So does the youth. These acceptances pave the path for development of individual values to practice in social life. Often anxiety occurs from the conflict between what an individual is and what that individual wants to be. When a person could not find pleasure and satisfaction in life he or she thrives for his or her worth and value to gain self esteem as part of self evaluation. This fulfilment is directly connected to the satisfaction of one's life. But often conditions of being social are preoccupied by geopolitical variables which may have a negative effect on individual's living. The satisfaction of having a good life and the ability to accept uncertainties often falls in the discourse of individual's integrity versus despair. According to Erikson’s stages of psychosocial development the conflict between integrity and despair occurs during old age. But the developmental stages of human life go through unique conflicts arising in particular phase of life. The young adulthood is considered to be the most reproductive and contributing period of one’s life. But in this period the youth meets with conflicts of identity versus role confusion and intimacy versus isolation. Youth is a period of dependency, social isolation, emotional tension and a time of value change (Hurlock, 1981). So from this one can learn that under certain circumstances the formation of human identity falls in the fine line between anxiety and curiosity.

In the course of human achievements, losses, experiences in life and everything that is mortal will come to an end and this philosophical evaluation occurs in human mind much prior to old age. When life is full of expectations and capabilities the very basic nature of human beings specifically of youth is to question existing set of values and principles for the need of pleasure and satisfaction. These explorations may not be considered by society and may be rejected in social life which can push an individual towards depression, anxiety, social isolation and ultimately towards rejection to one's self. These senses of growing vulnerability can instigate psychological withdrawal from the necessity of adaption that may result in the inefficiency of personal accountability. In such cases youth may have tendencies to accept death as an opportunity to live a better life. Also this is a result of the question 'what lies beyond it;' that can comfort the expectations of the pleasure principles in congruence of specific 'religious beliefs and spiritual experiences' (Yameen and Iftikhar, 2018). Freud considered the possibility of desire to die without consciousness whereas Jung argued that there are possibilities to fear death as a result of reluctance to live (Yuksel et al. 2016). Like individuals who feel deserted can come to a conclusion...
of lack of meaning and absurdity of existence (Azarian et al., 2016). These emotions can lead towards unconventional state of mind that argues the preference of death over life.

Thus values of life if not properly judged or practiced might give insights of negative death images. Youth irrespective of gender often encounters loneliness, fear of suffering and extinction and begin to believe in the inevitability of death. To make this concept clear it can be said, the value of death lies under the value of life.

Assuming that every individual is associated with the society and has a significant participation; can be influenced by social life and his or her developmental manifestations can be manipulated. Sometimes these manipulations are the basic reason behind changes in human behaviour and mentality. And it is the human mind with its perceptual conception that always argues about facts and philosophical existence like death. In the previous studies researchers have showed the determinants of social variables which have prominent impact on human mind. This particular study aims to investigate whether the existential human ideas like gender has a significant impact on satisfaction with life and death anxiety. Also the present study aims to assess the interrelationship between satisfaction with life and death anxiety if any among youth.

MATERIALS AND METHODS

a. Hypotheses
   I. Gender has significant impact on satisfaction with life of youth.
   II. Gender has significant impact on death anxiety among youth.
   III. There is significant relationship between satisfaction with life and death anxiety among youth.
   IV. Death anxiety can be predicted by Satisfaction with Life.

b. Samples
   A total of 200 samples were chosen for data collection through simple random sampling technique from various colleges and universities of Kolkata, West Bengal, India. The age range of the samples was from 18 years to 22 years. The samples were divided in two groups based on gender i.e. male and female comprising 100 samples for each group.

c. Tools used
   For the purpose of the study a general information schedule, satisfaction with life scale by Diener (2006) and death anxiety questionnaire by Conte, Weiner and Plutchik (1982) were administered on the samples.

d. Data analysis
   Each of the hypotheses was statistically tested by using measures of Descriptive Statistics (Mean), Measures of Variability (Standard Deviation), One-Way ANOVA, Correlation and Regression Analysis. All the statistical analysis was carried out in “SPSS-20”.
RESULTS

Table 1: Mean and Standard Deviation of Satisfaction with life and Death anxiety

<table>
<thead>
<tr>
<th>Variables</th>
<th>Male (n=100)</th>
<th>Female (n=100)</th>
<th>Total (n=200)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Satisfaction with life</td>
<td>31.67</td>
<td>2.82</td>
<td>24.20</td>
</tr>
<tr>
<td>Death Anxiety</td>
<td>4.86</td>
<td>3.98</td>
<td>19.22</td>
</tr>
</tbody>
</table>

Table 1 clearly denotes that the mean value of satisfaction with life is higher among the male youth than that of the females and the mean value of death anxiety is higher among the females than that of males.

Table 2: Summarized Result of One-Way ANOVA for Satisfaction with Life with Respect to Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>df</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with Life</td>
<td>1,198</td>
<td>239.14**</td>
<td>.000</td>
</tr>
</tbody>
</table>

**p<0.01

Table 2 shows the findings of One Way ANOVA where it can be clearly seen that the impact of gender (male and female) on satisfaction with life has been found out to be largely significant. Therefore, the Hypothesis-I, i.e. gender has significant impact on satisfaction with life of youth is accepted.

Table 3: Summarized Result of One-Way ANOVA for Death Anxiety with Respect to Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Df</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death Anxiety</td>
<td>1,198</td>
<td>282.32**</td>
<td>.000</td>
</tr>
</tbody>
</table>

**p<0.01
Table 3 shows the findings of One Way ANOVA where it can be clearly seen that the impact of gender (male and female) on death anxiety has been found out to be largely significant. Therefore, the hypothesis-II, i.e. gender has significant impact on death anxiety of youth is accepted.

**Table 4: Correlation for Entire Sample (n=200) with Satisfaction with Life and Death Anxiety**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Death Anxiety</th>
<th>Pearson Correlation</th>
<th>n</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with Life</td>
<td></td>
<td>-.852**</td>
<td>200</td>
<td>.000</td>
</tr>
</tbody>
</table>

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

Table 4 shows the relationship between satisfaction with life and death anxiety where it is found out that satisfaction with life and death anxiety has significant negative correlation. That means with increase in the levels of satisfaction with life there will be decrease in the level of death anxiety. Therefore, hypothesis-III, i.e., there is significant relationship between satisfaction with life and death anxiety among youth is accepted.

**Table 5: Regression Coefficient between Death Anxiety with Satisfaction with Life**

<table>
<thead>
<tr>
<th>Satisfaction with Life (IV)</th>
<th>Death Anxiety</th>
<th>R</th>
<th>R²</th>
<th>df</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction with Life (IV)</td>
<td>Death Anxiety</td>
<td>.852</td>
<td>.725</td>
<td>1,198</td>
<td>523.31**</td>
<td>.000</td>
</tr>
</tbody>
</table>

**p< 0.01

**Table 5: Regression Coefficient between Death Anxiety with Satisfaction with Life**

<table>
<thead>
<tr>
<th>Satisfaction with Life (IV)</th>
<th>Unstandardized Coefficient</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death Anxiety</td>
<td>-1.58</td>
<td>-22.88**</td>
<td>.000</td>
</tr>
</tbody>
</table>

*p< 0.01
In Table-5 Regression equations have been generated for death anxiety as dependent variable and satisfaction with life as independent variable for the entire sample. The Regression Coefficient for the satisfaction with life accounts for 72.5% variability. The F value is found out to be significant for death anxiety. The Unstandardized Beta Coefficients indicates that satisfaction with life negatively predicts death anxiety. The above analysis of regression coefficients leads to acceptance of the hypothesis IV, i.e. death anxiety can be predicted by satisfaction with life.

**DISCUSSION**

From this study it can be observed that the satisfaction of life in the feminine gender belonging to the age group of 18 to 22 years is lower than the masculine gender of same age group. In youth gender plays a significant role in formation of identity and often it is fluid also (Koenig et al., 2001). The modern society with its patriarchal connotations still behaves in such a way that is biased towards masculinity. Here masculinity undermines several concepts of social liberty, equality, fraternity in its own way. On the other hand, gender stereotype and post colonial feminist approaches has not only acknowledged that early predominance but also has critically accepted that the purpose of feminine gender can be found between being reproductive and self isolated. A young girl's identity comes up with the basic insecurities about her sexuality, dreams and independence as she no more falls in the age of adolescence where her basic needs were taken care of by the guardians. Also some vulnerable reciprocation from the family and society like sexual harassment and abuse, patriarchal customs of marriage and married life, uncertainties about future, religious influence (Latha et al., 2013), cultural seclusion, misinterpreted motherhood and several health issues in the under-developing countries make her to choose a way of escape from life that she cannot apprehend any more. In discourse of time these provocations may have a significant impact for the reason of growing death anxiety more in female youth than male (Yuksel et al., 2016).

Despite of male dominated livelihood and rejoicing absolute freedom male young adults also suffer from death anxiety as being showed in this present study. Mostly these are the results of reluctance from set of values (Yameen and Iftikhar, 2018), parental dominance, social bullying, misinterpretation of the purpose of life and inability to adjust in society (Azarian et al., 2016) etc. These significant reasons and possibilities of more indicate that growing death anxiety in mind is a direct result of some kind of emotional atrocities a youth faces for living.

The study clearly has implied that satisfaction with life and death anxiety is interrelated and interdependent. An individual not having clear conception of what death is; how much pain can be associated with it; what would be the way of dying and what is waiting for them after death nurture the anxiety of death in their mind that constantly affects their healthy living.

The findings of the present study are in line with the previous research works of Yameen and Iftikhar (2018), Azarian et al. (2016), Yuksel et al. (2016), Latha et al. (2013), and Koeing et al. (2001).
IMPLICATIONS

Based on the findings of the study few steps can be taken to minimise the exposure of inflicting components of death anxiety. But to do that simultaneously ways of life satisfaction must be ensured. These two are not easy to do yet is very much needed to address in the present scenario of the world. There can be some strategic steps towards the protection and well-being of mental health of individuals irrespective of whether they complaint of mental health issues. That means every individual at certain point of their life has the chances of developing mental health issues that in most cases go unnoticed or neglected. These neglected issues trigger the level of anxiety in individuals because they gradually lack the ability to comprehend situations.

For example, in recent times people are anxious about death because of the pandemic outbreak due to covid-19. People are watching television or following news feeds to see the rise in death counts each day and they are getting anxious about death and naturally may also beginning to develop death anxiety. That is the reason why even after the pandemic gets over people may suffer from anxiety, depression, and post-traumatic stress disorder (PTSD) etc. serious mental health problems. Now just to survive individuals are following hygiene habits and healthy life style so that they overcome their chances of getting infected by the virus and mostly to stay alive. This proves how important satisfaction with life is to minimise death anxiety. But there are individuals too who are not willing to take any precaution. They are easily called ignorant. But there can be an underlying fact that they have lost interest in life and somehow are going through some trauma associated with the death tolls they are being exposed to.

Here comes the need of psychological interventions to understand what is lying beneath the anxious mind and why the satisfaction with life is unable to reach a satisfactory level. Counselling, proper guidance, and therapeutic interventions as and when required must be provided to every individual. These treatments are not harmful or risky as it does not require medications. Only a patience listening and non-judgemental talk can help a lot of people round the world to overcome the stresses of their life.

Now if the focus is solely given on the young population, they are really vulnerable to develop death anxiety because if again the pandemic scenario is given importance, young people are losing jobs, there is no such scope of employment, education system is not clear to many yet, future goals are hard to aim at and achieving the goals seem to be a far cry now. So the young population are developing more risk of mental health issues which must be addressed as soon as possible. They must be provided with psychological support to help them to sustain their healthy well-being so that the most productive section of the nation does not entirely drown into mental health disorders and also they can be saved from the impact of deteriorating satisfaction with life.
REFERENCES


A STUDY ON “IMPACT OF COVID-19 ON MIGRANT FAMILIES WITH SPECIAL REFERENCE TO SLUMS OF BANGALORE METROPOLITAN CITY.”: PROSPECTS & POSSIBILITIES

Mrs. Anitha Sannakamaiah
Department of Social Work, Ramanagara PG Centre, Bangalore University, Ramanagara, Karnataka, India

INTRODUCTION

Migrant families of slums were struggling for their daily livelihood with no work and no earnings. Their family members consist of elders, infants, kids, youths and women starving and not able to cope up with the current situation. According to official employment estimation, Indian industries had more than 100 million migrant workers.

Due to lockdown, migrant workers living in shelters, sleeping on footpaths, near sewerage or under flyovers, and tired of restrictions to be eased. But after the opening of lockdown, they were due to lack of work, savings running out; they decided to return to their village. But due to lack of bus or train facilities, many migrants started going back to their villages by walk or cycle with their luggages. But it was a great risk for infants, children, pregnant women and elderly people; few walked barefoot, and ended with big bubbles on their feet. They were down with mental stress, frustration, anxiety, having suicidal tendencies, along with physical pain of walking in hot sun, on roadside cooking; facing lots of difficulties during daily routines especially adolescent girls during their menstrual cycle period, elders were lacking medicine for their general illnesses. Their conditions will be horrible and in pathetic condition with all sorts of physiological, psychological health concerned issues.

Struggles of migrants continued till today in one or the other way, as they have returned to their native places, they were under quarantine without food, so they tried to escape from the quarantine place again faced problems from the concerned authorities or someone else concerned with. After the quarantine, they started going for work with the high-risk of getting Covid19 pandemic and it was a great time for their family members without using masks and sanitary hygiene.

Once they return to home, there are chances of spreading the covid19 to their family members. They were socially excluded from the people, without having any secured job, uncertainty about their future life, not able to balance their livelihood due to outburst of pandemic risking their life without financial support from their employers as their job is based on daily wages and moreover it was unorganized sector.
Keeping all these issues in mind, researcher made an effort to understand the problems of migrant families and find out the strategies and interventions of social work to improve the livelihood of migrant families.

**REVIEW OF LITERATURE**

Researcher has reviewed certain articles, studies related to the migrant workers’ situation during pandemic and review for the present study. Few such studies were illustrated here for clear understanding of Migrant Workers issues.

(R.B. Bhagat, 2020) Investigators coined about to avoid starvation of migrant workers through the Public Distribution System, government has provided food grains to all even who were holding just aadhar card instead of Ration card. And they also emphasize the Public health system at primary and territory level to provide preventive, precautionary and treatment measures for migrant workers too. Starting from making health insurance for migrant employees and effective inclusion of rural and urban migrants in official statistics and access for formulation and implementation of social policies.

(Randhwa, 2020) Investigator emphasis on during sudden lockdown due to Pandemic outburst in India, how migrant workers face issues during on the way to their home, how they spend time with government provided shelters, given food, drinking water facility and sanitation facilities provided on the roadsides was analyzed. In addition to this, he also quoted Finance Minister Mrs. Nirmala Sitharaman announced the relief measures for migrant workers.

(Siddharth Agarwal, 2016) Study emphases on Migrant adolescent girls who are married or unmarried in the context of slums in India are not decision makers in their migration experience. Recommendations made to address specific needs of adolescent girls’ policies and programs with regard to pregnant women or newly mothers, employment and education to overcome from the barriers they were facing. On the perspective of health, adolescent sex education, menstrual hygiene, prenatal and postnatal issues need to be addressed immediately by the primary health centers.

(Organisation, 2020) ILO policy brief on migrant worker’s protection during pandemic Covid19 recommends displaced migrant workers in country and outside country including refugees face many issues with regard to workplace, gender, race, region wise regarding health and pandemic impacts. So, it is must for all the nations across the globe to formulate a policy which will protect the rights and entitlements of migrant workers. In addition to this, emphasis on the decent work life and providing minimum or basic amenities to stay in the nation wherever they were residing now.
METHODOLOGY

Research Design: This study is based on a descriptive research design as it elaborately describes, analyze, evaluate and clearer way of depicting the research problem. In addition to this, adopted social work interventions to overcome from present pandemic circumstances.

Universe of the Study: Migrant families from 4 slums adopted by the BIRDS NGO in Bangalore metropolitan city as selected for the study. The population for the study consists only of migrant families in the slums of Bangalore city.

Objectives of the study

To understand the Socio-economic and health issues concerned with migrant families due to Covid19 in slums
To know about the application of various social work strategies, methods and interventions to improve the livelihood of migrant families

Sampling Design: The study was undertaken from the slums under BIRDS Organization, randomly selected 4 slums such as Hennur AK Colony, HRBR Layout, Byrathi Bunde and from Nagenahalli. From each slum 50 Migrant Families were selected, so overall 200 Migrant families were taken as a sample and applied census method for collection of data.

<table>
<thead>
<tr>
<th>Name of the Slum</th>
<th>Total Population of the selected slum(As per the survey of BIRDS NGO)</th>
<th>Size of the Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hennur AK Colony</td>
<td>849</td>
<td>50</td>
</tr>
<tr>
<td>HRBR Layout</td>
<td>634</td>
<td>50</td>
</tr>
<tr>
<td>Byrathi Bunde</td>
<td>765</td>
<td>50</td>
</tr>
<tr>
<td>Nagenahalli</td>
<td>987</td>
<td>50</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>3233</strong></td>
<td><strong>200</strong></td>
</tr>
</tbody>
</table>

Note: Total Migrant Families of the selected slum as taken by the survey conducted by BIRDS Animator staff during 2018, it might vary as they were migrant workers consisting of domestic workers and construction workers. Investigator visited only 50 migrant families along with the BIRDS Animator (Field Staff) after the lockdown opened in the month of April end and in the month of May 2020 for data collection and for the sake of Focused Group Discussion.
**Sources of Data:** The process of data was collected based on primary data and secondary data. Initially primary data were collected from Migrant families consisting of domestic and construction work through structured interview schedule and observation method. Secondary data were collected through BIRDS ngo, interaction with the field staff who works closely with these working women in the selected slums, through books, journals and previous studies in this regard.

**Tools of Data Collection:** Researcher used structured interview schedule and observation method, FGDs (Focused Group Discussion) used to collect the data. In addition to this, researcher interacted with BIRDS field staff to know more about migrant families' problems in the slums as they visit and interact with them on a regular basis.

**Procedure of Data Collection:** Researcher visited each Migrant Family in person accompanied by the animator of BIRDS ngo to gather data with wearing mask and frequent usage of sanitizer and also keenly observed the respondent during the research interview. Data entry and analysis done by the investigator manually by herself. Analysis of the data is presented through tables and graphical representation.

**OPERATIONAL DEFINITIONS**

**Migrant Family:** Migrant family is a family migrated from rural area to urban area for the sake of job security and education of their children totally for the sake of better livelihood.

**COVID-19:** COVID-19 is the infectious disease caused by the new strain of corona virus which initially spread in December 2019 at Wuhan city of China and spread as pandemic across the universe.

Encyclopedia of Britannica defines “**Slum** is a congested urban or suburban residential district characterized by deteriorating and insanitary housing, poverty and social disorganization.”

**Major Findings, Results and Discussion**

<table>
<thead>
<tr>
<th>Caste</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled Caste</td>
<td>105</td>
<td>52.5</td>
</tr>
<tr>
<td>Scheduled Tribe</td>
<td>45</td>
<td>22.5</td>
</tr>
<tr>
<td>Others</td>
<td>50</td>
<td>25.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Among all the 4 slums, scheduled caste consists of 52.5.5% Migrant Families which is more than half of the universe, 22.5% respondents belong to scheduled tribe and very less universe 25% consists other caste respondents. Through the analysis we can make out that lower caste people stay in slums as they were from lower socio-economic strata.

Table 2 – Age of the Respondents

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of Respondents</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25 years</td>
<td>85</td>
<td>42.5</td>
</tr>
<tr>
<td>25-40 years</td>
<td>65</td>
<td>32.5</td>
</tr>
<tr>
<td>40-65 years</td>
<td>50</td>
<td>25.0</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

With regard to age wise distribution of migrant families 18-25 years of age is 42.5% and 25-40 years will be 32.5% more compared to the age group of 40-65 years of age. As per the investigators observation most of the aged migrant workers in the slums will be taking care of the grandchildren and doing household works at their home as their sons and daughter in laws were away for domestic or construction work. In addition to this, a few aged will do some rag picking work early in the morning in their area, but they didn’t consider it as a work as they used to get fewer amounts for the work.

Table 3 Nature of Work and Daily wage of Migrant Families

<table>
<thead>
<tr>
<th>Nature of Work</th>
<th>Approximate Salary/Daily wage</th>
<th>No. of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Work</td>
<td>5000-8000</td>
<td>52</td>
<td>26</td>
</tr>
<tr>
<td>Construction Work</td>
<td>3000-6000</td>
<td>110</td>
<td>55</td>
</tr>
<tr>
<td>Other Work</td>
<td>5000-15000</td>
<td>38</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

Above Data depicts that most of the migrant workers were dependent on either domestic work 26% or construction work 55%, and remaining 19% will constitute other types of work. Their salary is not regular, sometimes they used to work for students who were staying in apartments. They will go back to native after their study completed or job got transferred. Sometimes some of the employers if they got any new migrant worker for a lesser salary they use to remove them. So
their job is inconsistent, their salary will vary from day to day basis. But most of them depend on domestic or construction work which has inconsistent income. They were used to suffering from job insecurity and economic inconsistency in this regard. As the outburst of Covid19, they were unemployed with very few employers paying for the basic amenities; it is very difficult for them to lead their daily life.

Table 4 Problems of Migrant Worker Families during Covid19

<table>
<thead>
<tr>
<th>Type of Problems</th>
<th>No.of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Violence</td>
<td>35</td>
<td>17.5</td>
</tr>
<tr>
<td>Physical Abuse</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Sexual Harassment</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Family Conflicts</td>
<td>15</td>
<td>7.5</td>
</tr>
<tr>
<td>Multiple Problems</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>Marital Conflicts</td>
<td>15</td>
<td>7.5</td>
</tr>
<tr>
<td>Alcohol/Drug Abuse</td>
<td>13</td>
<td>6.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Above data shows various problems faced by Migrant Families, along with their household management, unemployment, lacking livelihood, unable to support their family. There are many cases which were not reported due to respect and recognition in the community. As per the investigator observation, they found out that many working women suffer from multiple problems in the workplace which were not reported due to job security and construction workers at construction worksite.

Table 5 Health Problems of Migrant Families

<table>
<thead>
<tr>
<th>Type of Illness</th>
<th>No. of Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin related illness</td>
<td>70</td>
<td>35</td>
</tr>
<tr>
<td>Abortions</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Uterus Cysts</td>
<td>15</td>
<td>7.5</td>
</tr>
</tbody>
</table>
Health status of migrant workers is worse as many of them were suffering from one or the other sort of physiological or psychological illness. Due to work pressure they didn’t even consult the doctor at hospital. In addition to this, most of them have skin allergies as they work more with soap and water and many of them were suffering from uterus cysts due to lack of menstrual hygiene. Along with this outburst of Pandemic Covid19, as they were in search of jobs there were chances of becoming victimized for the disease. In addition to this they were lacking sanitary items, mask and gloves.

**DISCUSSION WITH BIRDS FIELD STAFF AND WORKING WOMEN AT SLUMS**

After Covid19 Lockdown has opened in Bangalore, as the NGOs initiated their Covid19 relief works with youth groups, adolescent girl groups, self help groups and elder’s meetings also gradually started at slums under BIRDS. NGO started issuing relief items in slum areas, during this period investigator accompanied the animator in the selected 4 slums to conduct focused group discussions and discussed their life situations during pandemic. Working women, elders, adolescent girls, pregnant and lactating mothers suffering during pre and post lockdown period of Covid19 in multiple ways such as lacking jobs, few women got Corona infection from returned NRIs homes where they were doing domestic work, struggling to get a day food for their family. Few of them were not able to pay their rent, electricity bill, scarcity of water, unemployment, health insecurity and a varied number of problems due to Covid19. Migrant families used to repay their loan amount on time, now no work, no payment to repay the loan amount of taxi or auto they bought. Their life will be very convoluted and hard to lead their life because of pandemic Covid19.

**Role of Social Workers during COVID-19 Pandemic Period:** During Pandemic social workers can play a crucial role to overcome from the above mentioned problems.

Creating awareness about Covid19 outburst and preventive measures to be taken to overcome from the illness with this regard they adopted role play and street play to sensitize the community.

Awareness about precautionary measures to weaker sections of the society such as children, aged, pregnant and lactating mothers to prevent them from Covid19.

<table>
<thead>
<tr>
<th>Health Status</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menstrual and Menopause related illness</td>
<td>50</td>
<td>25</td>
</tr>
<tr>
<td>Life threatening Illness</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>Psychological Illness</td>
<td>35</td>
<td>17.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>200</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Networking with government departments and NGO to provide Covid Relief Care Services and to provide food items, sanitary items to protect them from Pandemic.

Usage of Case Study method and counseling to protect the few clients who were having suicidal tendencies, depression, hypertension and also provided financial referral services from the charitable foundations.

Creating alternative jobs which can be done from home such as making agarbattis, sambar powder making, papad making and stitching masks through the usage of sanitary measures.

Provide tele counselling to overcome from the fear of pandemic or even suicidal tendencies and to those who will be alcohol or drug addicted.

Provide tele counselling and psychotherapies for the people with mental illnesses and for the people suspected or positive Covid19 patients.

Medical Social Workers, Community Social Workers and Women activists will play various roles based on the patient flow in the hospital settings and in the community during community outspread of Covid19.

**CONCLUSION**

To sum up Migrant Workers during pre and post Covid19 period or in the normal period, they were doing untiring physical work. During the lockdown period also, as all the family members were at home working women only needed to fulfill all the family member’s demands and manage household expenses with the less amount whatever they saved or through debt. So, the migrant workers' lives will be in pathetic condition if we see them in slums. Whatever we looked daily in the media, it was totally different than it depicted. So, multi professionals should play different roles to balance their work life and personal life of working women is much required at the pandemic situation. So, there is a dire need of multi professionals to act upon during the community outspread of the pandemic Covid19. Multidisciplinary approach can prevent community spread in slums of Bangalore is in need as how Dharavi Slum of Mumbai adopted for Mass testing and treatment for the slum migrant workers. As we all know Bangalore is a hub of slums on each corner of the city, mass testing is required and relief work for the starved migrants is the primary need for the Government and for volunteers too.

Migrant workers were lacking their livelihood due to lack of daily wage work, they tried to lookout for alternative work due to pandemic situation it was highly difficult to earn their livelihood. As few of the women domestic workers were taken loan from self help groups and through banks, repayment is the big problem. They stopped loan repayment; again taking debts for higher cost of interests totally their economic status was collapsed. They were completely struggling to earn...
their daily bread and seeking for support through any alternate jobs. In this perspective researcher had discuss with the BIRDS staff to provide alternate jobs, so we assisted them to make agarbattis, sambar powder making, papad making and stitching masks through the usage of sanitary measures. It made great impact on the livelihood improvement of migrant workers in the 4 selected slums and this pilot study result leads to extend this livelihood program to other slums under the NGO.

REFERENCES


EMOTIONAL INTELLIGENCE IN ADOLESCENTS – PRESENT SCENARIO AND FUTURE PROSPECTS

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Department of Education, Dr Babasaheb Ambedkar Marathwada University, Aurangabad, India

INTRODUCTION

Physical and emotional security is the correctness for all learning, right from the primary to the secondary school years, and even afterwards (National Council of Education Research and Training, 2005). Much evidence testifies that people who are emotionally adept – who know and manage their own feelings – are at an advantage in any domain of life, whether romance and intimate relationships or picking up the unspoken rules that govern success in life (Goleman, 1995). The fundamental principle of UNESCO (1972) states that, “Education should contribute to every person’s complete development - mind and body, intelligence, sensitivity, aesthetics, appreciation and spirituality”. The institutes of education should develop and implement programs for both academic and social development. Secondary school curriculum deals with the students belonging to adolescent stage. Adolescence is the period beginning with the onset of puberty and ending when individuals assume adult roles and responsibilities (Baron & Misra, 2014). Adolescence is a bridge between the childhood and adulthood. It is a period of rapid changes in almost all developmental dimensions. It is the age where the emotional disturbances, adjustment problem & confusions regarding their own self occur. This is the time when the students need guidance. Teachers and parents can play a very constructive role in helping adolescents through this identity versus confusion crisis (Mangal, 2008). Adolescent is the phase where the students have to focus only on academics; as these are the crucial years of their schooling and decision on future career options depend on it. Students experiencing transition from the elementary school to secondary and senior secondary are faced with challenges of the new environment as they adjust to middle school. These challenges are academic as well as interpersonal (Irvin & Richardson, 2002). Period of adolescence has been marked by emotional storm and stress. Their emotions are very intense. When one can regulate and manage their emotions; only then they can adjust themselves in the society and can contribute as a responsible member of the society (Mishra, 2019). Living in harmony within oneself and with one’s natural and social environment is a basic human need. Education must be able to promote values that foster peace, humanness and tolerance in a multicultural society. In our educational practice, the “future” of the child has taken center stage to the near exclusion of the child’s “present”, which is detrimental to the well-being of the child as well as the society (National Council of Education Research and Training, 2005). The present study assesses the level of emotional intelligence in adolescents and explores the models of emotional intelligence which are found to be effective in developing emotional intelligence.
ASSESSMENT OF EMOTIONAL INTELLIGENCE IN ADOLESCENTS

The present study is descriptive in nature and assesses the level of emotional intelligence in secondary school students in Aurangabad city of Maharashtra state in India. A total of 290 secondary Class-IX students were selected randomly from private secondary schools in Aurangabad city. There were 160 male and 130 female students in the selected sample. The tool used for assessment of emotional intelligence is the Emotional Intelligence Scale developed by Dr Arun Kumar Singh and Dr Shruti Narain. The scale assesses emotional intelligence on the following four dimensions; understanding emotions, understanding motivation, empathy and handling relations. This emotional intelligence scale is meant for children of 12 years and above. The scale has 31 items. The reliability and validity coefficients is 0.86 and is significant at 0.01 level. This scale was personally administered to the selected sample and clear instructions were given before-hand.

The sample for this study is 290 secondary school students. There were 160 male and 130 female students. The data was tested for normality using SPSS. A Shapiro-Wilk’s test (p > 0.05) and a visual inspection of their histograms, normal Q-Q plots and box-plots showed that the exam scores were approximately normally distributed for both males and females, with a skewness of -0.088 (SE=-0.458) and a kurtosis of -0.548 (SE=-1.438) for the males and a skewness of 0.078 (SE=0.367) and a kurtosis of 0.250 (SE= 0.592) for the females. The data was further subjected to t-test and the result is shown in table 1 below.

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Max</th>
<th>Min</th>
<th>Mean</th>
<th>Variance</th>
<th>t-stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>160</td>
<td>33</td>
<td>13</td>
<td>23.76</td>
<td>19.16</td>
<td>2.82*</td>
</tr>
<tr>
<td>Female</td>
<td>130</td>
<td>40</td>
<td>12</td>
<td>24.32</td>
<td>22.79</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.01 level of significance

The manual for the Emotional intelligence scale indicated that 20 or less score is the range for low emotional intelligence; 21-26 is the range for average emotional intelligence and 27 and above is the range for high emotional intelligence. As seen in table-1, the emotional intelligence scores are in a range of 13-33 for male students and 12-40 for female students. The mean emotional intelligence score for both male and female students falls in the range of average emotional intelligence level. Also, there is a significant difference in the level of emotional intelligence between the male and female students, with the female students having a significantly higher level of emotional intelligence. It is suggested that children make sense of things by correctly perceiving emotional information. If proper efforts are made for training the emotions and developing proper emotional intelligence potential among the people right from their childhood, then it will surely help in bringing mutual emotional understanding, empathy, accompanied with right actions and behavior on the part of the individuals and groups, to lead a better life in peace and cooperation (Mangal, 2008).
NURTURING EMOTIONAL INTELLIGENCE IN ADOLESCENTS

Emotional Intelligence is part nature and part nurture. There is a component that is genetically determined and there is a component that is learned. Mayer & Salovey, with their focus on how the brain processes emotions and emotional information, focus attention to what is probably mostly genetically determined and we refer to this as ‘nature’. The mixed model as given by Goleman and Bar-On are models of mostly learned skills. These skills answer the question of how we use our capacity for emotional intelligence that we possess as a result of our genetic make-up. A large and growing body of research demonstrates that emotional intelligence is correlated with positive outcomes in children beginning as early as preschool, as well as in adults, including business managers and leaders. Teaching emotional to children and adults also has proven to be effective. The approach developed at the Yale Center for Emotional Intelligence (called RULER) has demonstrated that children of all ages can be taught these skills - and that when they are, there are real benefits, such as more effective leadership skills, stronger friendships and connections to teachers, better conflict management skills, and greater academic achievement than children who do not receive the training (Brackett, Divecha & Stern, 2015).

Emotional intelligence consists of skills and competencies that can be easily and purposefully infused, embedded, taught, and learned in any classroom and learning format (Nelson et al. 2017). Emotional intelligence can be improved among young adults (Nelis et al. 2009, Viguer et al. 2017); adolescents (Motamedi et al. 2017); and teachers (Doleva and Leshema, 2017). Many of the elements outlined in any of the intervention program are important concepts in an emotional intelligence framework. Bar-On (2002) lists interpersonal skills as one of the main tenants of emotional intelligence, while Goleman (2001) stresses the importance of vigilance in one’s achievement drive and initiative competencies. The ability to read and interpret body language is a central tenant of emotional intelligence, reflected in the social awareness branch of Goleman’s (2001) model, in the interpersonal component of Bar-On’s model, and in the emotional understanding branch of the Mayer and Salovey model of emotional intelligence.

Nelson et al. (2017) reviewed more than sixty doctoral dissertations, colleague research, and institutional studies and concluded that transformative Emotional Intelligence is missing in the curriculum. They were trying to provide a research based learning model of emotional intelligence. Irvin & Richardson (2002) studied the importance of emotional intelligence during transition into middle school by reviewing and discussing various researches on this topic. They concluded that the students who are emotionally competent will manage their own feelings well, recognize and respond effectively to the feelings of others, tolerate frustration better, and be less impulsive and more focused. Schutte et al. (2013) studied various researches on emotional intelligence and found the construct to be associated with a variety of intrapersonal and interpersonal factors such as mental health, relationship satisfaction, and work performance.

Johnston (2003) and Garcia-Sancho et al. (2017) studied aggression in adolescents and found an overall negative correlation between emotional intelligence and aggression. The study by both
Johnston (2003) and Garcia-Sancho et al. (2017) were correlational in nature; but Garcia-Sancho et al. (2017) explored the relationship using cross-sectional and longitudinal design. Gomez-Baya (2017) also found negative correlation between Emotional Intelligence and depressive symptoms in his two years long longitudinal study on adolescents. The study observed that girls had lower emotional intelligence levels and higher depressive symptoms.

In a study on the adolescents, a positive correlation was found between Emotional Intelligence & Life adjustment by Chen, Lin & Tu (2006) and between Emotional Intelligence & psychological well-being by Ballureka et al. (2016). Antonanzas (2017) compared the relationship between psychopathology and emotional intelligence in adolescents and adults. He concluded that adults seem to better regulate their emotions as compared to adolescents. Ingle et al. (2017) highlighted the effect of Emotional Intelligence on Learning Strategies used by students and Maguire et al. (2017) emphasized the positive impact of Emotional Intelligence on student engagement. Zee, Thijs & Schakel (2002) studied emotional intelligence in relation to academic intelligence & Big five in adults (18-32 years). They found that Emotional Intelligence was able to predict both academic & social success.

Schutte et al. (2013) conducted a review of the literature focused on experimental studies with random assignment. They concluded that there is preliminary evidence to suggest that emotional intelligence training can be effective in increasing the competencies comprising emotional intelligence. Further, the results of several studies indicate that emotional intelligence training may have the potential to improve functioning in realms such as work, academic functioning, life satisfaction, mental health, physical health and personal relationships. Goleman (1998) has established an optimal process for developing emotional intelligence in organizations. This process consists of four phases: preparation for change, training, transfer and maintenance skills, and evaluation. Each phase has corresponding guidelines for achieving success.

The researchers tried to establish the effectiveness of the intervention programs to develop the emotional intelligence. These intervention programs were based on either ability model or mixed model. Other techniques and approaches like Enneagram was used to develop a three-month program by Romould (2006) for B. Ed student–teachers and a 15 session Emotional Intelligence program based on self-science curriculum was conducted for juvenile adolescents by Marar (2015) in his study. The structure of these intervention programs (irrespective of the model or approach it was based on) included the established methods such as storytelling, drama, theatre, and relaxation. Other complementary techniques used were film forum or group sculpture, group discussion, case studies, brainstorming, and music therapy. The duration of these intervention program was found to range between 10 days (short term) to two years (long term). Goleman (1998) argued that proper programs can help individuals change from, say, pessimists to optimists within weeks. Research has found that personality traits are strongly influenced by genes and persist from childhood to adulthood, remaining static over time. Although traits are pervasive and enduring, they do follow a developmental trajectory: between late adolescence and thirty years of age.
CONCLUSION

In light of review of related researches on development of emotional intelligence in children and adolescents, it is evident that though the current empirical study points out that the emotional intelligence of the sample is in the average range, the school can design programs and use techniques to develop emotional intelligence among adolescents. The present study also indicated that there existed a significant difference in the level of emotional intelligence of male and female students which cannot be generalized due to lack of conclusive research. Much research is needed in the area of nurturing emotional intelligence in Indian/Asian context. Goleman (1995) concluded that developing students’ emotional intelligence would result in a “caring community”, a place where students feel respected, cared about and bonded to classmates. Many educators and psychologists believe that students who receive an exclusively academic environment may be ill equipped for future challenges, both as individuals as well as members of the society. Certain instances come in our day to day life wherein the brightest students in a class did not succeed later in their lives as individuals having well rounded personalities as compared to their less intellectual counterparts. These examples are particularly evident in various fields like politics, business and administration (Singh, 2003).

Emotional intelligence can be nurtured in young adolescents by teaching them the coping skills, how to acquire and use information, how to work with others, and how to manage personal growth (Irvin and Richardson, 2002). National Curriculum Framework (2005) rightly pointed that learning to learn and willingness to unlearn and relearn are important as means of responding to new situations in a flexible and creative manner. Emotional incompetence is often due to deeply ingrained habits learned early on in life. These automatic habits are set in place as a normal part of living, as experience shapes the brain. It is being increasingly recognized the world over that with effective training, emotional learning can be mastered (Singh, 2003). National Curriculum Framework (2005) also emphasizes that adolescence is a critical period for the development of self-identity. The process of acquiring a sense of self is linked to physiological changes, and also learning to negotiate the social and psychological demands of being young adults. Responsible handling of issues like independence, intimacy, and peer group dependence are concerns that need to be recognized, and appropriate support be given to cope with them. These physiological changes have ramifications in the psychological and social aspects of an adolescent's life.

This research study clearly reinforces that fact that to adequately prepare children for future employment, we need to teach a broader range of skills and competencies than is currently addressed in schools. Schools are moving toward a preventative approach to promote student social and emotional development. Researchers seem to agree that the best approach is comprehensive so as to develop a broad range of social and emotional skills that can be generalized to many settings and to integrate programs into the curriculum, not as an instructional unit but as a caring learning context that is a comprehensive, multiyear program. In short, learning and applying emotional intelligence skills contribute to academic and career success (Malekar, S.S., 2009).
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RAATCHASI: A REVISIT TO A FEW REFORMATIVE PHILOSOPHIES

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Literature reflects society. It is culture expressed in language. In today’s world, we see that most works of art try to reflect the society as realistically as possible, so as to bring to the forefront the lynching issues, which hinders the development of the world. Through, these attempts it tries to find solutions to many problems, by educating the people. The umbrella of literature now, includes movies as texts, which can be read with the lens of literary/philosophical perspective. Although, movies are usually expected to entertain the mass, in the recent past we do notice, that a few directors and actors take due responsibility to use this forum to reform the society, which one lives in. The Tamil movie, Raatchasi, which was released in the year 2019 directed by Syed Gowthamraj is one such paragon. The director Gowthamraj hails from Puthukottai in Tamil Nadu, educated in Film studies at MGR Government Film and Television Institute. He made his directorial debut in Raatchasi: a tamil drama film. The movie won him JFW award for Best Director- women centric movie in 2020.

Puthukottai was considered to be one of the poorest districts in the state of Tamil Nadu. The director being born and brought up amidst poverty and in a patriarchal society, which was also seemingly highly caste ridden grows up to work out a solution to these problems. His way of doing it turned out to be through his writing and making it available to a larger audience so that the message reaches as many as possible. Hence, we find his movie: Raatchasi is a multi-layered story exposing caste, gender and classist attitudes, which cripple the Indian society.

The movie contains multiple themes as mentioned before. It can be read through the lenses of reformative philosophies such as Marxist approach to education, Periyarism, and Feminism. These movements in history tell us the path breaking reformation they brought in, in our societies. However, in the present times we find ourselves gone back in time and repeat the same errors, which were corrected. At a juncture like this, the movie comes as a reminder, reminding us the need to reform our societies from the clutches of these poisonous attitude of caste, gender and classism. The hero of the movie is Jyotika as Geetharani, the headmistress of a government school at a remote village (R Puthur) in the state of Tamil Nadu. On her arrival to the school, she finds it in deteriorating state. The dilapidated state of the school building is a loud symbolic telling comment on the state of affairs, in the school. In the first scene at the school, she is exposed to the lethargy of the staff and the corruption of the assistance headmaster. The incessant sound she makes by ringing the school bell, is both an announcement of the arrival of the new headmistress and the new changes her arrival will bring in. Paradoxically, the school bell disturbs and shocks the staff more than the students in the school.
India is still a developing country. Most parents are not able to afford world class education to their children. Hence, they resort to government schools to give an opportunity of education to their children. But one is also aware of the sub-standard education offered at most government schools in India. Although, the literacy rate seems progressing, one can say, that the number of educated mass is on the decline in the nation. We know that, to be a literate is to be able to read and write; but to be educated is to be able to use our skills, to think on own and to possess situational brilliance. It is a jarring fact, that not every literate is an educated person and vice versa. If this is the prevailing case, where is the gap if not in the educational systems? This, then takes us to one of the Ted Talks title of Sonam Wangchuk – “Education in India: Are students failing or the system?!” (Sonam Wangchuk, 2016) This is the same question the movie raises. In the movie Raatchasi, 82 students were detained in class 9, disheartened by this action of the school, either parents choose to stop or students, themselves become hopeless and dropout of the school. The protagonist of the movie notices this from the school records and seeks clarification from the teachers about the number of dropouts. It is then, she is exposed to the prejudices of the teachers in that school and she challenges them to prove it. But none of them were ready to take up the challenge. She then resorts to a few willing teachers and volunteers to bring back, those students, who dropped out and takes a bold decision of promoting them to class 10. She also takes the personal responsibility to prepare these students to perform well in the 10th standard board examination. The rest of the movie revolves around the challenges she faces and the loses she incurs.

The director has proposed through the character of Geetharani, a student-centric approach to education as yielding better results than the traditionally teacher-centric one. From this angle, one can say that the movie exemplifies Marxist approach to education. Marx emphasized activity, critique and collaboration over passive reception of knowledge and mere conformist attitude in adhering to the norms. The capitalist attitude of the teachers, is slowly diluted by this new headmistress by emphasizing student autonomy in the learning process.

The protagonist also breaks the hegemony of the private schools over these government schools. She strives and brings in the standard of education in the government school she heads on par with or even better than the education offered by the private school in the same vicinity, that on purpose bribes staff of this school to maintain the sub-standard education so as to attract students to their school. The classist attitude of the manager of the private school in the same village is challenged, after the arrival of the change maker- Geetharani.

The movie seems to have tried to incorporate one of the famous philosophies of the state formulated by Periyar, (one of the early leaders of the state of Tamil Nadu). Periyarism is a philosophical movement, which emphasizes rationality and self-reliance over theistic dependence. This element is expounded, when the new headmistress (Geetharani), calls for a general assembly of students every morning before the classes begin and instead of the conventional way of conducting a prayer service, she asks the students to dance for the music she would play. Students are sweetly stunned and begin in jump in joy. Rationally speaking, if prayer
is a part of the assembly to give peace of mind and emotional strength to students to start learning; dancing by activating the energy in the body makes the students enthusiastic learners and offers a peace of mind as well. This approach of the protagonist from the lens of Periyarism is an exemplification of this reformative philosophy.

Periyar also fought against casteism in Tamil Nadu. In this movie, one can see among the young students a string tied on their wrists was a sign of the caste they belonged to and there was constant rift among these young ones incited by casteist teachers in that school. Schools are supposed to be places, which decolonizes the mind of the educated of these baseless social evils but sadly the protagonist notices it being reiterated here. Angered by such fights incited among the students by teachers themselves, she cuts those threads from the students’ wrists, which was the sign of their caste and burns them in front of the entire school. This act of hers is another example of the Philosophy of Periyar against caste-based societies. It reestablishes the fact, that it is the responsibility of education and educationalists to undo such dangerous practices and blockages for development of the nation.

The movie also expounds the philosophy of Feminism. According to Elain Showalter’s three stages of feminism, the third stage is the female stage. In this stage, one can see the embracement of femininity or female experience as unique and independent. The director by choosing a woman as the hero of his story, making a lieutenant quit her high profiled profession to showing her embracing the conventional role of teacher for a woman, and highlighting subtly this sacrifice of the hero for her dead lover is celebrating the femininity of the character. The scene of realization, where the only dedicated staff of the school is the mother of the protagonist’s dead lover and for both these women the only left solace in the world is each to the other is the exemplification of the building of sisterhood aspect of the feminist movement. The director has chiseled not just an emotionally strong woman as the protagonist but also as a physically strong one.

The director seems to have worked the nitty-gritty of the movie well, as the fight scene exposes the protagonist herself fighting and no other saviours are brought in. Among the 82 dropouts she brought back and challenged to make them perform well, 79 of them pass their 10th standard board examination at the end of the movie, there is no special force to save her from a false case filed on her for promoting these 9th detained students without higher authorities’ consent it is the result her efforts yielded saves her from the false allegations against her. The inceptor, who comes to inspect her school is portrayed as an objective person and a few teachers ready to go extra miles to uplift the school are all microcosmic examples of the representative group in the education sector, who remain untainted by the power politics in the field of education.

The hegemony of the power structure in the academic circles is levelled by the protagonist. The hierarchical management structure in the academic circle creates a gap between management and the staff, students and the staff as well. The communication gaps this structure creates, is further widened by the self-centered persons in this field. This lack of communication is the reason for many problems. In the movie, the protagonist, Geetharani changes this structure of communication and work pattern. She brings in the horizontal management structure in the
school, where students could address their issues directly to the headmistress, they address the headmistress by name, which creates comfortability and confidentiality between the students and the headmistress. The absence of the third party here eases the procedure of communication/contact and solves many issues directly. She also changes the pattern of distribution of responsibilities, which reiterated the hegemony. She hands the responsibility of preparing students for the inter-school cultural activities to a teacher, who had never done anything about the cultural activities of the school. On receiving an opportunity to do this, this teacher takes personal interest to prove himself and excels exponentially in this task. Although, he regarded this responsibility as a burden and challenge initially, when he saw himself excelling in it, he felt respected and transformed from a non-cooperative staff to the torch bearer of students’ growth. Hence, one can witness, that horizontal management structure is proposed as one of the solutions to the prevailing issues in the education sector.

Some parts of the movie like the protagonist’s sacrifice to materialize her dead lover’s dream, the initially challenges of the protagonist in the school, the good-will of the money-minded private school manager about children’s safety and security in school, the choice of the professional the protagonist, the comment of the auto-driver, who represents the voice of the society so on and so forth are reinforcement of the conventions/ stereotypes. However, it is precisely these aspects of the movie, which make it a realistic portrayal of the societies we live in.

Although, the movie reinforces certain stereotypes, one can say there is no compromise on the innovations part of the movie. The title of the movie is a strong challenge to the conventional belief. It is always goddess Saraswathi, who is prayed to for knowledge and education. But the movie is titled Raatchasi, which in translation would mean demoness. This choice of the title, exposes the Dravidian cultural ethos of the director. The title post of the movie is another innovation, because conventionally we have always seen Raatchasi (Demoness) being portrayed as gory and violent; but the poster of this movie has a crown on the title ‘Raatchasi’ and whenever the protagonist is shown as Raatchasi, she has the wings of angels and a crown on her head. The book the father of the protagonist keeps reading and the one she picks up after his death, and is seen reading even when she is put behind bars is very symbolic to the theme of the movie. The name of the book is ‘Vithaithidu’, which in translation would mean plant. In the process of stimulating thinking and knowledge, this verb “plant” is very symbolic. When a person plants, he/she awaits the growth. The growth depends on the nature of the soil, the depth of the root, the manure it gets and the ability of the roots to absorb it. Likewise, in the mission of education planting should be the aim of educators. Further, to help the growth by watering and manuring it would mean a great deal in this process. When the plant grows well, the benefits it would yield at times would be limitless. Hence, the father of the protagonist has raised a good plant: his daughter, she in turn is helping the growth of many students in the school and by bringing reformation in the field of education. These positive changes give the audience the hope of a change in the society, in reality. Therefore, in this light one could say, that the movie Raatchasi by Syed Gowthamraj, does recreate reformative philosophies and thereby prove to be a Responsible Research and Innovation in the reformation of the societies.
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PESSIMISTIC FEARS TO OPTIMISTIC SURVIVAL: TRACING HISTORICALLY NOTABLE MISHAPS
AND THE ENSUING NEW World Orders

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History has documented that after every Great War, pandemic or political upheaval the world undergoes a drastic change and it remodifies itself towards the adaptability of a new order. Pandemics or epidemics are not new to the world, only is the Covid-19. How has history recorded the pandemics or other great mishaps and the aftermath of it? Has the world retrograded and crashed down or it emerged anew creating new avenues and opportunities? How relevant is tracing history in the current scenario when the entire world is locked down due to the novel corona virus? When tracking is attempted one could witness that there is detailed description of pandemics in literature way back from the times of Homer. The Societies that had witnessed mammoth setbacks in the form of world wars or pandemics have always paved a way for a new way of living.

The word” Change“ always by default is accepted in a negative tone. It may even be in an individual’s life- fatalism or to a society or even to the whole world-pandemic, Epidemics and Wars. End of dinosaurs paved way for a new world, Downfall of the Roman Empire where King had a demi- god status changed due to a pandemic and Christianity entered, Revolutions changed Monarchy to Democracy, Artisans changed to technicians through Industrial Revolution, World Wars deaths needed Industrializations to avenge, Post World War changed to digitalization, Guru Kula changed to only to the elite and later to all. Similar is this pandemic Covid 19.

The Hype and sensation has been projected by deaths and infections in the form of geospatial colored maps and whole of human kind is under the grip of fear of life. But that doesn’t mean we are not stopping or entering into a morbid state of inactivity. Human beings have to live and the world has to move on. The real principle of Darwin’s theory of Survival of the fittest through intra struggle, inter struggle and environment struggle has always created sense adaptability through adeptness. The fear of survival has changed the crisis into a positive note through various measures. To highlight a few are the precautionary measures to be taken, the challenges we have to face and optimal measures to be taken and eventually the need of Humanism. Freedom in the midst suffering is associated with religions, its norms and advocacy of them got legalized and became business centers. The freedom struggle in India with much causality was first projected by some sect in a negative note but charismatic leaders gave the change which India needed and now we are democratic. To quote Bernard Shaw: “Life is not about finding yourself it’s about creating yourself”
Human beings have accepted the change and have created a new environment worldwide and the world has progressed with a positive note.

Historic tolls:
14th century bubonic plague: one fourth of the European population got affected.
1918 – 1920: worldwide influenza had a major death toll
World Wars- whole world suffered in economic crisis and dislocations.
Besides we had chicken- gunya (Avian flu), pulmonary diseases, swine flu, and latest is the Covid 2019.

The Impinging effect of all the above said incidents was gruesome and horrid as the fear of life was needed for survival. But the adaptation techniques have made the world to progress in a positive note through advancement in Science, Technology with control on it by the world nations in the form of SALT, NATO, UN Council and WHO. They have regulated each and every abnormal situation to a new normal in the respective periods of calamities.

The Present Covid 2019 is spoken and brought to the limelight in such a way that it has gripped people with fear and hatred among nations. The word “Globalization “Gloculisation” has brought shame to nations. The Blame game is evident through all sorts of political measures. Awareness is projected through mortality rate. Media has taken an upper hand in sensational news through modern technology and even the race for the vaccine is sensitized. Humans from time immemorial knew how to survive and be humanistic. But the Present sensitization has made people to become flocks and even hometowns are barricaded. Announcements even in the remote areas-hinterlands over the entry of restriction to the migrant workers and their movements remind us of the Great Depressions of 1930. The fear of surviving and its related affairs have been hyped by the political, media and educational Gurus. But people are ready to adapt and accept the change in their living style. The positive Changes are plenty and the paper tries to explore the various social, psychological and technical transitions that the Post Covid is to impinge the changes where human kind is made to adapt through his adeptness.

**BUBONIC PLAGUE- BLACK DEATH- A NEW EUROPEAN EMPIRE**

Bubonic plague first made its appearance in the history books when an epidemic swept through the Byzantine Empire during the sixth century. The Plague of Justinian (named after Justinian I, the then-ruler of the Eastern Roman Empire), killed thousands of people and weakened the Byzantine Empire which is remembered by most people as the Roman Empire. It led to the fall of the Roman Empire and its paganism and paved way for Christianity. In 531, “Tritonian authored a regulation that required that before any trial or hearing could begin, everyone, including litigants and officials, was obliged to swear an oath of Christian faith while placing a hand on a copy of the Gospels...a requirement made easier by another regulation that ordered a copy of the Gospels placed in every courtroom. ”— William Rosen, *Justinian’s Flea: The First Great Plague and the End of the Roman Empire*. When Christianity emerged it paved way for a new world altogether.
It also led to two different Christian factions from the original Roman Catholic Church. They started to compete with power between medieval Europe and newly formed countries. The language confined to monasteries lost significance and even Latin language lost its relevance and paved way for more English from the Victorian era to the 21st century.

The second wave of the Bubonic plague swept through Europe between 1346 to 1353 killing an estimate of 25 million. While the Justinian plague reshaped the course of an empire, some historians believe the Black Death took a different course to history. It is believed to be "the most spectacular of biological warfare ever". Mongol army outside of Caffa - Present Crimea - as a part of their siege in 1346 catapulted the disease stricken decomposed bodies. In the words of Boccacio’s “Decameron”.

“How many valiant men, how many fair ladies, breakfast with their kinfolk and the same night supped with their ancestors in the next world! The condition of the people was pitiable to behold. They sickened by the thousands daily, and died unattended and without help...Consecrated churchyards did not suffice for the burial of the vast multitude of bodies, which were heaped by the hundreds in vast trenches, like goods in a ship's hold and covered with a little earth. “

When the plague hit in the mid-1300s, no one knew what caused this dreadful pestilence. Some took it as divine punishment for the world’s wicked ways, possibly the end of the world. Others blamed Jews, foreigners, travelers, and lepers, who were shunned and turned away where once they had been welcomed or at least accepted. Some towns barricaded themselves in, afraid to let anyone in who was not already there and equally afraid to let anyone out. Mothers abandoned husbands and children—and vice versa—for fear of catching the contagion. Few other than those in religious orders dared to nurse the sick. Ordinary parish burial grounds were insufficient to hold the massive numbers of dead, and new plague cemeteries were opened.

The social and economic havoc created by the plague was almost beyond imagining. Before the Black Death, Royalty and Nobility ruled the land and everyone and everything on it. Probably ninety percent of the population never traveled more than 20 miles from home—if that far. The lower classes needed permission to do nearly anything—except breathe. Then the Black Death arrived, and nearly everything changed. With so few hands to work on the land, men felt free to take their families and look for a “better” lord, or they went to the cities where labor was in demand. If they stayed in the countryside, they made it plain to the Nobility that they were to be paid for their labor or were to receive a greater share of what they produced. The extremely poor were able to find vacant (from Plague deaths) land, homes, animals, equipment, etc. and had a chance to improve their lives. The times following the first wave of the plague were turbulent as Royalty and Nobility fought desperately to maintain the status quo, while the common folk fought equally fiercely to improve their and their children's and future generations' lives. Though the after effects of the bubonic plague were cruel, one could very well witness the emergence of equality - if not complete equality at least to a greater extent in the English Societies. Gradually the lives of the underprivileged gained prominence which led to the formation of a proletarian...
England. Distrust in God and the church, already in poor standing due to recent Papal scandals, grew as people realized that religion could do nothing to stop the spread of the disease and their family's suffering. So many church services in many areas simply ceased. Jewish populations were frequently targeted as scapegoats. In some places, they were accused of poisoning the water which reduced the mortality rate. It was something historians have attributed to better hygiene - need of potable water.

**MASK AND THE EPIDEMIC**

One of the most common masks seen during the famous Carnival of Venice is in the shape of a long beak and now worn by actors in Italian theatre. Its name reveals its sinister roots. It’s called the mask of the Medico Delle Peste. Literally, means “the medic of the pest” or even more simply, the plague doctor. The beak is only a part of a very elaborate costume that was designed by French doctor Charles de Lorme (famous for treating Louis XIII) in 1619. He designed the costume, which was inspired by a soldier’s armour, to be worn by doctors treating patients of the deadly bubonic plague. The costume comprised a long leather coat covered in wax that went from neck to ankle, but it was the headgear that stood out. Apart from the beak, which was half a foot long, there were also spectacles and a hat made of leather. The beak was not for dramatic effect – it was filled with herbs that many hoped would filter out any poison or vapours in the air (at that time, it was believed that plague was spread by poisons in the air – germs were unknown!). The costume itself was not very effective but it is believed to be the dawn of virology.

England's "Great Charter" of 1215 was the first document to challenge the authority of the king. The basic rules of Habeaus corpse paved way for the modern democracy. The English Civil War of the 17th-century made many Englishmen to set off for the American colonies. The New World (England) colonies had first-generation new Americans highly educated in English law, such as Thomas Jefferson and John Adams and was used for the change from the colonization to the Constitution of America.

**WORLD WAR 1**

It is 100 years since the end of one of the most significant wars in modern history - World War I. It was known as the Great War because it affected people all over the world and was the biggest war anyone had ever known. It even came to be known as 'the war to end all wars'. People wanted to believe that nobody would ever want to go to war again after it. Millions of people - both soldiers and ordinary citizens - lost their lives and many were injured physically or struggled mentally as a result of what they had experienced.

One of the most significant impacts of World War One was huge advances in technology, which would transform the way that people all around the world travelled and communicated, in particular, in the years after the conflict.
New weapons and technologies were developed and used that led to more destruction than any war had seen in the past. Wounds inflicted on soldiers were like nothing medical professionals had to deal with before - not least in terms of the numbers of people injured. So, the war meant that medicine- development of vaccines and antibiotics- had to catch up to be able to deal with these problems. Donating and giving blood started during World War One, when a US army doctor called Captain Oswald Robertson realized that blood needed to be stockpiled so it was there ready and waiting when casualties arrived. It eventually led to the evolving of Blood Banks. Up until the war, women role was traditionally to stay in the home. Issues like politics and war were very much seen as things for men to deal with. In the UK, laws were being changed to improve women's standing in society. “It doesn't matter now that they lived and died, but rather did they make a difference?” — D. Dauphinee, “Highlanders Without Kilts” When war broke out and the men went off to fight, it was women who took on their jobs and kept things running back in Britain. Across the country, by late 1918, nine in every ten workers in the munitions industry were female - jobs which traditionally would have been done by men. Women also worked as conductors on trams and buses, as typists and secretaries, and on farms. It paved way for emancipation and empowerment of women.

WORLD WAR II

The Second World War began in 1939 when Germany conquered Poland countries like the United Kingdom and France also declared war on Germany. This resulted in development of hostilities between nations that led to one of the devastating wars in entire human history. The war continued till 1945 AD and almost all the nations in the world took part in it. The World War II, led nations to become bankrupt. It led to an extreme high federal deficit in the US as the outcome of the war. It has led to the disparity in the economies of the Britain and the US. Due to World War II, different economic and political effects were observed in the world. World War II decimated half of the Europe and potatoes were rationed- a new crop. The consequence of World WarII led to the delay in the essential food supplies. This also resulted in the eruption of famine. Both Japan and Germany suffered from poverty to a significant extent. On the other hand, the world war II never failed to bring a revolutionary optimistic survival in societies across the world. This war motivated nations to come out of clutches of tyranny, and strive to become independent nations. Many of the nations, including India got their freedom post culmination of the war. World War II led to several advancements in fields such as botany, physics, medicine and chemistry. All these areas got revolutionized during the period. Several inventions took place during this period, a few of the noteworthy discoveries being radar, space travel, computers etc. As the demand for ammunition and armed forces got increased, the US government hired several firms to deal with the logistics. It also resulted in various major job opportunities. Several youths got regular job and better employment opportunities at the end of the Second World War. When more and more economies in the world got mobilized for the war, along with men, millions of women came out of their domestic roles, to assist in the war effort.
COVID-19

It is an ongoing global pandemic of coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The outbreak was first identified in December 2019 in Wuhan, China. The outbreak is a major destabilizing threat to the global economy. “Agathe Demaraïs of the Economist Intelligence Unit has forecasted that markets will remain volatile until a clearer image emerges on potential outcomes. One estimate from an expert at Washington University in St. Louis gave a $300+ billion impact on the world’s supply chain that could last up to two years.” “Global stock markets fell on 24 February due to a significant rise in the number of COVID-19 cases outside China”. “Stocks plunged again due to coronavirus fears, the largest fall being on 16 March.” Many consider an economic recession likely. The performing arts and cultural heritage sectors have been profoundly affected by the pandemic, impacting organizations’ operations as well as individuals—both employed and independent—globally. Arts and culture sector organizations attempted to uphold their (often publicly funded) mission to provide access to cultural heritage to the community, maintain the safety of their employees and the public, and support artists where possible. By March 2020, across the world and to varying degrees, museums, libraries, performance venues, and other cultural institutions had been indefinitely closed with their exhibitions, events and performances cancelled or postponed.

Now that in the 2020’s COVID-19 has brought in a major shift everywhere including the education sector, living patterns and ineffective human bonding through unwanted hype.

The novel corona virus has made viral the online learning and teaching practices across the globe. The technical gadgets which were banned in the education field of India has now become the elixir of imparting knowledge during this quarantine. Webinars, MOOCs, Virtual classes, online quizzes are not alien terms for the students anymore. From mere listening and writing the experience gained through online mode of learning has become vast. The 21st century is witnessing a new normal due to the ongoing pandemic. Tele medicines have started to kick off. Teleconsultations in India are on the rise. Even election commission has planned to start remote voting. Parents have asked their children to develop friendship by using technology in order to avoid loneliness. As per Professor Lars Anderson definition of loneliness, “the mental health of person triggers feelings of alienation, hopelessness and frustration”. But in a country like India with 1.3 billion population alienation or isolation is assailed by identity politics, gender, caste, status, behavior and finance. The othering of people is not done only because of the pandemic, epidemic or wars but also by the mental health of people. The Humanistic approach is found at a certain level and it is extended with compassion and empathy. Simultaneously discrimination is also in the spurt. It may be because of fear of life, bullying or even law enforcement in excess. The negative vibes are at galore and hyped through the technologically improvised media but humility has failed to been exposed. Media is now a place to be used for talking about one’s personal life or even politicizing an issue. Hospitality is now a rare phenomenon but hospitals are in full swings. This negativity has created a furor only with the middle-class people alone. Most of the rich are self-sufficient and “History repeats itself.” (Arnold Toynbee). Monarchy is now in a different form.
and is using a different platform. The poor and daily wagers who constitute about 78% of India’s population are the people who know how to survive. Despite the instructions by law makers, the rural community knew how to survive through difficult situations such as famines, natural calamities and even in politicized riots. They are the people who practice hospitality, togetherness and form a survival method to a society. They have made us to understand that even in desperate situations, the possibility of surviving is possible in a humanistic way.

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INTRODUCTION

Culture emulates colours, beauty, fragrance and diversity is like a traveller passing by high terrain in search for a destination. Culture is enjoyment for the people and the place. Culture cultivates the notion of knowing the facets of a particular diversity. There are dimensions of culture with customs the traditions are nurtured ultimately towards wellbeing of the society. Since childhood we know India is a land of seekers and because of this culture is cemented like a carpet deep dark depth and the ultimate path to evolve. Diversity is the vast land growing traditions, values and the intensity of involvement explodes human consciousness. Cultural diversity appears to be an interaction between cultural diversity, knowledge diversity and knowledge regime wherein a community interacts and exchange their views among themselves. When we utter the word ethnic the focus drives near an inherited class of people who share cultural heritage, ancestry, homeland, language, rituals, attires and appearances depicting the membership of particular section of people. Our social construction allows us to shift adopt language to transfer from one group to the other so can we say that the culture of India is all encompassing and evolves a person into its ultimate nature. Absolutely because we reside in the land wherein ultimate liberation of life and death has been the highest goal. When we say Ethnic a deep sense of identity acknowledges the basis of language, colour, history, race and social treatment.

Culture is the foundation laid for every bedrock of human diversity and it is our notion here that the process of the modification of communities involving behaviour is an essential part of the human evolutionary story. Organised reasonably invariant, culture provides strength to adapt also often lie at the heart of human conflict. To question the thought why there are so many cultures and why are we different? The answer is living life within a community strengthens to work closely instead of going solitary could lose sight of goals and leave disillusionment, so it is imperative to build strong relationships like how the Girasiya tribes of Aburoad Rajasthan lives. The population of the tribes is exceptional when it comes to experience the profoundness of quality values ingrained in them with a strong network symbolising social system consisting overall livelihood, food habits, beliefs, language and attires. They are a kin based community, reproduced to preserve the future generations and have a unique cognitive capacity to generate transmissible behaviour to blend the boundary of their culture. This specifies the intersection of cognitive capacity and demographic conditions of themselves since the past hundred years. The ethnics are a part of us, at the time when India took oath to envisage and experience independence launching industrial projects to reduce the import of consumables and increase the quantum of export to
gain dollars. At this point a sense to serve and share with responsibility becomes imperative to contribute for the noble cause at this juncture we cannot afford to say neither think to discard human existence who are created from the same creation from where we have come. So giving due respect is important. Responsibility is not a share of one shoulder rather a collaboration including the local people, the institutions, the government schemes and business partnerships. This way blending and merging the two cultures envelops the scope to lead a quality living. Since the topic is broad like the vast ocean it was narrowed down and narrate the experiences of the Girasiya tribes considering they are part of us, yet distant.

a. **Objectives of the Study**
The objectives of the study were to verify the issues the tribes face stating valid reasons and suggest remedies to provide better livelihood through exchange culture schemes and erase the dark circles encapsulating the mind-set.

b. **Purpose of the Study**
The purpose of the study was to realise the psychology and examine the challenges and difficulties faced by the tribes residing in Aburoad. Further a deep sense of involvement grew stronger to educate them to understand the reasons behind seclusion and create bridges wherein culture can be exchanged to raise the standard for a better future.

**STATEMENT OF THE PROBLEM**

The phenomenon of the study was to examine the difficulties faced by the tribes and a measure was taken to educate and provide support for a better way to live. The primary source of the data was the researcher’s experience who have spent time and lived in proximity to observe the tribes closely and drew perception of their culture that was ingrained in the social nexus. The context of the situation like education, equality and differences had created blockages therefore a level of awareness with alertness had to be mortgaged to stretch the appropriate exposure to the real world and a realisation of acceptance of their community deeper.

**METHOD**

The method selected for the study was Auto-ethnography qualitative research since the researcher wanted to understand and experience the difficulties and challenges the tribes were challenged with. The topic of the research took us to the concept to comprehend the reasons why the tribes preferred to live in secluded forests and does not allow other communities to interfere in their environment. The method was selected because the researcher wanted to narrate the experiences of the tribes that were observed during the stay in Aburoad Rajasthan, India. The researcher wanted to ensure to keep prejudice at bay and keep personal bias at a distance so that it does not interfere and create grudges rather a positive outlook was adopted following the need of the hour.
Literature review indicates studies have shown that one of the determinants diagnosed that drinking is a regular feature irrespective of gender and age this paves the difference in experiencing attitudes and values \(^1\). Another study suggested that in countries like Australia, Canada and the USA the concept of ethnic origin does not exist but seclusion can exist when people migrate \(^2\). Yet another study examined if ethnic and cultural diversity carry sameness of culture? The paper disclose an agreement was observed in terms of identity and collectivism from the two ethnic groups that were selected for the study \(^3\).

**ANALYSIS**

The phenomenon of the study demarcates a clear perception regarding the difficulties and challenges that the tribes face, they are unable to find out ways to take fruitful measures to understand the depth of their problems. The culture is stringent, conventional, rigid and restricted to limitations. How to improvise and bring them closer to manufacture the quality of their approach and attitude towards reviving cultural consciousness? The underpinning factors selected for the study are discussed to empower an understanding about the Girasiya tribes who live in the forests of Aburoad in Rajasthan, India. The community sheltered within the cobweb of the shell portraying cultural fragrance of love, laughter and joy through the essence of community feelings. Festivals, attires laden with ornaments symbolises the warrior genes. The surprising thing to observe was the community does not lead with patriarchy, the woman takes the prime to manage livelihood accounts. She is respected and voices her concerns, depicting the aroma of culture India treasures. The researcher feels that the tribes should not be neglected and bring them to the mainstream of social ambience. As one unit of existence culture reflects values, tastes, acceptance, language, freedom, nurtures habits and influences other native culture as well. A question triggers how many times did we experience isolation from other natives during migrating from one place to the other? It is a process to exchange the richness of the units as one needs to immerse into it to understand and respect the power of belongingness. On the other hand, the researcher feels culture impacts on behaviour and attitude as well. If the driving force is handled well then relationships will automatically redefine a new perspective. Further culture cannot be taught or learnt experiences harvests culture to garnish diversity. Taking the analysis to examine the factors we understand that tribal culture is complex regardless of the cultural background, a common notion suggests experiences, past knowledge and willingness can break the shackles of stereotypes opening the gateway to impact conscious perspective.

We should not fail to forget that environment dominates the aroma of existence therefore building culture competence can lessen the distance of communication. The time has come to give shape to treasure the primitive culture without damaging the basis of existence so there are ways to bring the seclusion to prominence through medium of interactions and openness because there are many things that are common and distinctive, the exchange between borders needs to be ascertained. At the age of digitalization cultural diversity and ethnic cannot create distinction of superiority rather a consensus to understand life from a greater height needs introspection. None is bigger than the other culture is the colour that covers the differences of inequalities.
DISCUSSION

The purpose of the study was to appreciate the psychology of the Girasiya Tribes and examine the challenges faced by the tribes. The study examined the factors obstructing to experience freedom since rigid ideologies cannot be changed overnight; time heals and fills the cracks to heal the wounds affecting community collaborations.

![Figure 1](image-url)

Figure 1 tabulates the concept on the factors responsible to understand the reasons behind the seclusion of the tribes from the mainstream. The first concept is language. What is language? An utterance symbolising sounds, words, expressions, culture representing the way of life. Language displays unique traditions of rituals and festivals a style followed during the primitive times. Every language is a dialect of identity and a recognition of richness in terms of values. We know language differs from lexical and phonological aspects. Due to advancements and digitalization language is not restricted to one domain of community rather amalgamate the mainstream of national consciousness. The speed, tone, accent expresses the existence as we know the root origination of language is Sanskrit therefore the essence to experience language is similar. Additionally, language emanates experience, knowledge and develops a sense of ownership and pride in one’s own culture. Efforts are needed to educate the elders of the tribal community so that a strong base is cultivated and children automatically get motivated to learn the language.
The second concept education is important. Government launched policies and programmes to initiate development of the tribal communities so that progression to educate and raise level of livelihood were intended instead the tribes remained to live in the forests as it was a belief forests is the only resource of livelihood. Moreover, inconvenience to adopt and adapt the national culture was a measure to ensure they benefit to strengthen and mitigate challenges that came on way. So setting up schools to educate the community could enhance the growth and also a measure to preserve the community since they are the primitive inhabitants of our ancient history. Education does not mortgage cultural differences, it is the culture to educate and help the community to grow from all corners.

The third concept was equality. As a nation it is the responsibility to treat everyone equal. We learnt in childhood equality is our birth right then why differences of narrow walls obstruct to consider all are one? Equality symbols unity in diversity that means irrespective of colour, caste, gender and identity all are equal. No discrimination can be entertained when it comes to national integrity. Equality emits respect values and traditions enabling to share with each other because we are the creations from the same creator who created us. The motto of equality we are all one without any difference.

The next concept was social mobility an opportunity to balance equilibrium in the interface of stability. Diversity is inclusive and broadens the borders to expose the traditions and culture eradicating the imbalances of mind. The purpose of the study states understanding the psychology of the community. Life is short and if the perception of who we are is not recognised then the entire definition of existence fails. Sense of understanding does not work at a basic level it is to nurture the root of the culture an embodiment of identity.

When we look at the concepts it drives the researcher to understand each concept is intertwined a different unit echoing its right to live. The question that trigger why seclusion the answer is introspection. If one side of a community is ethnic the larger part is culturally diverse the fabric of nation is one of national consciousness. If the phenomenon of the study detected difficulties in the same way support and guidance is a part of the exercise. The nation is like the tree with multiple branches, twigs and bark signifying its strength and power to hold everyone together. This bond of oneness is devotion intense feeling for the other to grow and help the nation to prosper. The underlying premise of the paper was to ascertain the impact of ethnic and cultural diversity on opportunities and diversify the competencies amongst the tribal community. With the onset of globalisation, there are pressures to preserve and keep the traditions intact. Technology is transcending the geographical boundaries to reshape relationships between communities. With information’s distributed easily cultural significance, values and taste are at risk to be homogenised. It is difficult to quantify cultural diversity with the number of languages spoken in India we need to ensure to keep the flow of language alive because a precipitous decline of language has been noticed. The researcher feels a balance is needed to protect the ethnic and promote actions in favour of their cultural diversity. Measures to protect and preserve is imperative since the minority is endangered. Protecting a culture is safeguarding the cultural
essence of the community. As one nation we cannot afford to discard or overpower the tribes to become the slaves of the land. The motto of India - the land is one, we are one and culture is one, so what and where is the difference.

CONCLUSION

The study revolved around to understand why the tribes live secluded in the remote areas of the cities. We know the tribes are the inhabitants of the primitive generations and ensure they are not extinct. Tribes have an inherited status in the society they live. They defined themselves as through shared cultural heritage, dialect from generations they portrayed a system of their rituals, dress, appearance and style. They continued to speak their native language in their social constructed unit. The researcher recalls the contribution of the Indian English Poets incessantly worked to revive the glory of India through empowering patriotism and nationalist feelings. The task was difficult because it was the question of the nation a challenge to adopt and adapt the English Language from the primary stage in schools. Henry Vivian Derozio, Toru Dutt, Raja Ram Mohan Roy took the lead to establish English education for the people of the nation. The renaissance invited reformations to be redefined and invigorate the spirit of culture rooted in traditions and conventional lifestyle. The study took us to the journey to describe the essence of the Girasiya Tribes who are unique and follow strict culture in their premises a replica of their true nature. The concepts enabled us to understand the socio cultural environment they live along with the behaviour the festivals and norms are followed. How can we transform to inspire a better living is possible to manoeuvre the thought process in terms of thinking, understanding and behavioural setup they are accustomed since ages. We tend to learn another language displaying cultural diversity past experiences are embedded in their experiences and will take time to rethink ways to embellish quality life with the anticipation to cherish life like cities fulfilling the crunch and quest of desires. Diversity promotes strength and collaborates to share and serve. We are fortunate to experience the greatness of the land embroidered cemented and tailored humanity in such a way that the sense of secure and safe approach safeguards the identity. Since we are culturally inhabited the land is the witness to appreciate the festivals, rituals and customs that are performed after every two kilometres. With so many cultures and traditions conventional living cannot be overruled we have been following certain norms and they are in the mind set therefore to compromise is difficult. So understanding the equation of cultural diversity we can reveal the tribes belong to a class who are rich in their world of beliefs and norms because they are culturally rich too and this cannot be ignored. A question dwells on the purpose of the study if we recognise ourselves cultural conscious are we stringent to follow traditions and values religiously? What kind of mind set we carry when we move around the social environment? What kind of relationship and exchange of culture is maintained to harness diversity? The reinforcement requires profound enrichment and endeavour to establish honest confession. The study extends its parameters to realise the science of cultural diversity as a universal affection and respect towards community. A lot of awareness is the need of the hour to ascertain the treasures does not fade behind the dark clouds.
At the end we get to understand every race and community is unique it is our responsibility to ensure we do not interfere through vested interests but ensure to bring a change for the betterment of society as this is important society develops, nation grows. The study recommends to understand the emotions and feelings of the Girasiya Tribes as they are like us and confirm we do not damage their identity at the wake of interest. We really hope that cultural consciousness definitely reshapes the structure of a society because if society grows, nation will grow. Let the tribes be our pride as they are rich in the practices in whatever circumstantial situations they confront the tribes are strong in beliefs and follow the directions of their superiors with dignity. The community maintains strong socio-cultural boundary bordering the neighbours to display their ethnic quality that cannot be compensated nor compared with the mainstream climate. The researcher feels forests and tribes are synonymous as it is time for us to realise nature has prescribed the prescription to nurture and allow every living creature to share the land without conflicts.

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A DIVERSIFIED CULTURAL POOL OF INDIGENEITY IN THE NARRATIVE OF MAHASWETA DEVI

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Even after seventy-three years of independence, Indian society is still embedded with structural and communal inequality, resulting in oppression, exploitation and suppression of individuals or groups through misuse of power, status or authority. In such a situation, the oppressed is deprived of one’s basic rights and freedom and is forced to live in a hapless state. The social exclusion, economic marginalization and cultural subjugation of Indigenous people are pervasive in all regions across the globe. Even today, indigenous people continue to struggle to protect their rights to culture, community, heritage and land. In India, tribals are mostly considered as the Indigenous people and their heritage, ways of life, and cosmological insights are an invaluable treasure house for all. These indigenous people have traditionally enjoyed a close kinship with the forest providing them food, health, spirituality, and identity. Their land is both a critical resource that sustains life and a major cause of struggle and even death. Each indigenous culture is distinct and unique, tracing back to different histories, environments, and creative spirits. The tribal people have different culture, custom, tradition, languages and religions. They are dispersed and disconnected among themselves having different ancestral lineage. They are independent and autonomous, having their own set of rules and practices.

This paper explores the richness of the tribal culture and civilization in the text of Mahasweta Devi. In this respect the novel Aranyer Adhikar (translated as Rights for the Forest) is taken into consideration revealing Mahasweta Devi’s concern for the human world and the ecological environment. Her love and responsibility for the protection of environment and the injustice and oppression inflicted on the tribals by the dominant class are reflected through her narrative. Mahasweta’s narrative becomes a critical discourse on exploitation, survival and struggle, with police atrocities, bureaucratic crimes, striving of the poor and underprivileged for survival, identity and dignity. The struggle for their rights to resources, culture, environment and self-governance and inching towards empowerment is still a far-fetched dream of these tribal and marginalized groups to achieve.

Mahasweta Devi is a Bengali novelist, short story writer, playwright, essayist, columnist, editor, and above all a socio-cultural activist. The tribals and their history and her empathy for them have become an integral part of Mahasweta’s life and mission, revealed through her text. The publication of Aranyer Adhikar (Rights over the Forest) in 1977 established Mahasweta Devi’s position as the leading novelist in Bengal, and one of the most powerful writers of India. This novel has been translated into a number of Indian languages. Mahasweta Devi has been involved deeply with the tribals and their life in the Chotanagpur region, and she has written a number of novels,
short stories and articles concerning tribal issues, mostly the tribal history and their struggle for existence. Much of her writing in the late seventies focussed on these tribal people and the formerly untouchable castes. Her work also dealt with the agrarian movements of the late sixties. A writer and an activist, she contributed to little magazines, district papers, journals and, through these, maintained a close connection even with the rural Bengal.

The novel *Aranyer Adhikar* is about the Ulgulan (Great Tumult) of the Munda tribes, that took place between 1895 and 1900 in the forest regions at the south of Ranchi, now in Jharkhand. Under the charismatic leadership of Birsa Munda (1874-1900), the Munda tribes attacked the local British authorities, the missionaries, and the Indian landowners. Birsa’s *Ulgulan*, which marks the culmination of the repeated rebellions that took place in the colonial period, is considered to be the most important among them. This revolt led by Birsa Munda forms the crux of the novel *Aranyer Adhikar*. The continuing influx of the outsiders to the geo-cultural space of the tribals has led to the destabilization of their indigenous social order, affecting their very survival in the physical and cultural sphere. This process had far reaching impact on the tribal society and their discontent surfaced in the form of numerous uprisings and movements. The glorious days of the tribals came to an end with the intrusion of the outsiders and showed how misfortune struck the tribals. The tribals had a self-sustaining life in the past and lived in harmony with nature. However, with the advent of the outsiders, misery and suffering crept into the tribal society. In her novel, Mahasweta narrates how the colonizers come and intrude into the forest and introduce an alien economic and political system there.

Birsa's *Ulgulan*, which actually charters the culmination of a series of tribal uprising that started from the latter half of the nineteenth century up to its closing years, was agrarian in its basis, violent in nature and political in content. Significantly enough, as an immediate consequence of Birsa Munda’s rebellion, the Chottanagpur Tenancy Act was passed in 1908. The colonial regime was accustomed to revise some of its anti-tribal laws. Furthermore, it has inspired many other tribal movements of resistance like the Jharkhand Movement. Mahasweta Devi’s efforts have been to bring forth the oral history of the tribals to the attention of mainstream society. Through her writings, she urges them to recognize the significance and greatness of tribal life and tribal history. It is worth exploring how the writer combines oral tales, legends and myths with the documented facts in order to reconstruct the past. Her narratives highlight the rich history and culture of the tribals of the Chotanagpur region which has been lesser known to the mainstream society in spite of the commitment and sacrifice of the tribals. For instance, the tribals had a number of resistance movements and revolts against the colonial masters and they laid down their lives for the country. However, these movements and their leaders have not been given adequate attention and are largely ignored by the mainstream historians and writers.

The novel *Aranyer Adhikar (Rights over the Forests)* records the history of tribal life from the colonial period to contemporary times. It is based on Birsa Munda’s Movement for tribal emancipation. According to various sources, Birsa’s movement is interpreted as agrarian, political, a continuation of the old Sardars’ Movement, and as being anti-Christian and anti-European.
local myth however, represent him as primarily a religious leader, an incarnation of God, a social reformer, counselling moderation and calling upon his people to avoid extremist means of struggle. Though Birsa's movement had a much greater significance, it received much less attention than the Santhal Insurrection of 1855-57. Birsa's movement was a leap forward in the history of tribal movements in India. He directed his agitation in unison against two systems—feudal and colonial. Until the movement of 1874-1901, the tribals considered the ‘dikus’, (the native Zamindars, small kings and petty police officials) as their enemies. It was Birsa who exposed the British government as the main enemy of the Munda people and emerged as the hero of his tribe. He visualized of a new age and place for his distressed fellow people, of freedom and salvation, status and power, opportunity and fulfilment instead of the old world that lay shattered because of colonialism. Through this novel, Mahasweta Devi exposes the exploitation of the tribals and its effects on their lives—physical as well as emotional. She makes an attempt to give a realistic picture of the movement. She exposes the unscrupulousness, exploitation, and indifference of the British government, and the ruthless and devious nature of non-aboriginal landlords, moneylenders and petty officials. She portrays the poverty-stricken and insecure lives of the tribal people for whom rice remained an eternal dream, where life meant wandering from one village to another due to ceaseless eviction by the ‘dikus’, for whom land reclaimed from the forest was the basis of tribal life. It can be observed in the novel that Birsa’s father Suguna’s idea of happiness lies in procuring two meals of boiled china-seeds, wearing an un-torn dhoti above the knees and sleeping under the intact roof of a leafy hut. In this poverty-stricken world, even the attainment of bare necessities of life was utmost luxury. The system of exploitation is revealed in this novel through the original mode of narration of an aged Munda, Dhani who has survived all these atrocities and tells the story of his tribe to the younger generation.

Mahasweta Devi’s perception of history and her ability to discern the numerous historical forces that devoured the life of the tribal peasants is evident in the novel. Her knowledge about the people and the prevailing time is disclosed through her depiction of the way individuals such as Dhani Munda lived—the manner in which their lives had been intruded upon by the money-lenders, the Zamindars, the missionaries, the jails, the courts, the tarred roads, the trains, bayonets, guns, the droughts, the famines, the recruiting agents, and free labour. Along with this, the natural calamities—drought and famine—combined with the feudal trick of hoarding of food grains are meticulously revealed by Mahasweta. During the famine, the recruiting agents lured the tribals to the distant tea gardens and take advantage of the famine. It is as if these agents looked forward to drought and famine for doing business. Mahasweta Devi draws a pen picture of the contemporary social life of the tribals and captures their condition, and prepares them for a rebellion. She brings out the contradiction between the religion of Singbonga (the Munda God) and the mission sahibs, between the age-old Mundari prohibitions inscribed in Munda’s blood and the education he received from the Christian missions and Anand Pande, the Vaishnava teacher.

The novel describes Birsa as being a descendent of the two brothers who founded Chotanagpur, playing the flute, dancing in the tribal dormitory, and who felt that the lives of Munda people
were like torn wrappers. He felt very sad when at the end of the day he did not get a bit of salt
with his ‘ghato’ (a type of wild rice). His only ambition was to make his mother a queen by bringing
all the sacks of salt and all the jars of ‘mohua’ oil from the weekly market and laying these at her
feet. He is nostalgic about the golden tribal past, bound to the forest with a strong emotional tie.
When he is inside the forest, he gazes at the blue mountains that merged with the horizon and
gets lost in reveries. At such moments, he saw those primordial men in his dream. He would see
those two brothers crossing the flooded river. He would hear them screaming: “All these are
ours!” (Devi 29). In his childhood, Birsa heard from Dhani about their heroic struggles. Birsa
listened to their stories and was determined to free his motherland. Even as a child he was
determined to equip himself for future struggles and fight for his father’s lost rights in the
Khuntkatti village and recover them. When Birsa lifts a corpse from the village burial ground and
takes the coins and the silver ring that are buried along with the corpse in order to buy rice for his
starving parents, his mother is horrified. At this stage of the novel, we see Birsa’s emergence as
the “Dharti-aba”, the father of the Earth. He is no more his mother’s son whose ambitions and
promise are limited to sacks of salt and jars of oil, but a symbol of a larger goal. Birsa teaches his
fellowmen how to prevent epidemics. He cures the Mundas of ignorance and superstitions, and
restores the lost confidence of the Munda race. He announces that he would not let the Munda
forget their deprivations and blows the clarion call of recovering their motherland from the
shackles of bondage.

Contemporary records and newspapers reckoned that Birsa’s revolution was a continuation of the
Sardar movement. But Mahasweta Devi refutes this and claims that Birsa was not a mere puppet
in the hands of the Sardars, who finally succumbed to the British. He fought for the independence
of the native land against the British rulers and the revival of the tribal culture and Munda raj.
Here, Mahasweta Devi hints at the political goal and the agrarian nature of the Birsa movement.
She also separates this Munda struggle from the national struggle; the Mundas were not fighting
for the nation, but for the recovery of their land, their ‘disum’. About Birsa’s vision, Mahasweta
Devi says that Birsa was aware that he had taken a difficult pledge. He wanted to free the Mundas
from their old inert life style. He wished to form a social structure where the society made by the
British and their administration would get obliterated. He wanted to eradicate all customs and
rituals that were introduced into their lives by the aliens. He wanted to reform society—he
prohibited Koram Puja and the other customs, witchcraft, and the blood-spilling rituals. He would
work for the starving, impoverished and distressed Mundas.

The novel delineated the tribal as a colonial subject who was doubly colonized, primarily by the
dominantly Hindu caste society that forcibly seized the agricultural land belonging ancestrally to
the tribes such as the Mundas, Kols or Santhals. Other demographic and sociological disturbances
were caused by the British administration extending the land revenue system to the tribal belts.
Permanent Settlement Act that introduced an economic system of recompense and colonial
reappraisal of the system of land revenue led to large-scale demographic shifts disadvantageous to tribals. Not only the system of taxation was new to the land, but all
accompanying matters of governance and colonial policing brought the interests of the tribals and

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the colonial Raj in stark opposition to each other. It was during the period of British rule that the tribes in India faced large scale encroachments into their traditional habitats and consequently lost their independence and autonomy. The British introduced new land regulations, and promoted the feudal system and private ownership, which replaced the system of communal land holdings by the tribals, and made them strangers in their own lands. The erstwhile tribal areas were marked by the British for plantations, mines and industries. Deprived of their lands, traditional occupations and burdened with new taxes, the tribals fell prey to the moneylenders and exploitative landlords, and many of them became victims of the evil of bond slavery.

The novel *Aranyer Adhikar* chronicled a colonial peasant uprising, a significant tribal revolt launched against the British in the Chhotanagpur plateau. It revisits the relatively unknown events of the 1890’s Munda Movement in which the Munda tribes of Bihar’s Chotanagpur region waged a war of Abua Disan (self-rule) both against the British and the non-tribal landlord known as Babu or Diku (outsiders). The Munda warriors led by Birsa Munda known to his followers as Bhagawan Birsa (God Birsa) or Dharti Aba (father of the earth), waged a mass revolt or uprising (ulgulan) for two years in Ranchi and Khunti against the missionaries, the police, and the outsiders. After the killing of a few policemen and destruction of property in the area, Birsa and his followers, retreated to the forest of Dumbari Hill, where they were surrounded and fired upon by two companies of army led by the superintendent of police, commissioner, and Deputy commissioner; the death toll of the Mundas was very high, even though the accurate number was debated. Birsa Munda was captured and sent to jail, where he died a suspicious death. This movement was an attempt to overcome the cultural and social injustice prevailing in the Indian society and attain equality in treatment and opportunity. It was a protest against the age-old hierarchical divisions in the Hindu society as well as colonialism.

What makes this novel different from other fiction about peasants and subalterns is the author's treatment of tribal myth. It is observed in *Aranyer Adhikar* that Birsa has become a mythical figure among the tribals. He is given a religious dimension and his movement is also similarly extended to make it more powerful. Chotti Munda, Bashai Tudu, and Birsa have become mythical figures. They adopt strategies rooted in their cultural ethos and myth, which have become a secret knowledge shared only by the tribals. Mahasweta Devi’s descriptions of places like Singhbum, Palamu, Chakradharpur, Chaibasa, the Koel river and a number of villages posit her fiction in a locale that is authentic in terms of history and geography. Her use of tribal terms such as ‘ulgulan’, ‘diku’, ‘ghato’, ‘haramdeo’ and many others add to localization; her tribal characters pronounce the word ‘jail’ as ‘jehel’, and government as ‘gormen’. Her use of polyglot diction, *chalit* (colloquial) Bengali, proverbs and idioms is also an additional effort to achieve an authentic specificity. The songs and dances of the tribals that form an integral part of their struggle find their due place in this novel. Thus, this anecdote records the tribal past and adds to their documented history: its narrate their glory and also tells us what happened to them and what they had lost. Manabendra Bandhyopadhyay has called the narrative style and the use of Bengali dialects in the novel *Aranyer Adhikar* as “savage, fecund and irresistible...an experiment in the
novel form as an extension of the epic genre” (qtd. in Tharu 235). Here, Mahasweta brilliantly explores the articulation of class, caste, and gender in the specific situations she depicts.

While composing the text of *Aranyer Adhikar*, Mahasweta Devi travelled through the Mundari villages acquainting herself with the people whose history she undertook to depict in the novel. The speeches of the Munda people in her novel throb with life. The Bengali dialect which she uses to translate the rich and poignant experiences of the imaginative, simple minded, mystic and oppressed Munda tribe brims with the essence of real life. Birsa once reflected that the Mundas are illiterate; they do not have a script and they do not record their experiences in written words. They ‘sing’ instead. All the deprivations and humiliations of their lives are recorded in their songs. Mahasweta Devi has captured this lyrical element in her reproduction of the language of the tribe.

In *Aranyer Adhikar* she excels in deploying idioms, styles, and modes from the Mundari language and captures the nuances and idiosyncrasies of the tribal's world-view. But the task of using language in a novel like *Aranyer Adhikar* was not limited only to understanding the language of the Munda tribe and rendering a Bengali translation of it. The novel, which is set against the backdrop of a complex social-political situation, portrays a society of heterogeneous people. We find here the non-aboriginal moneylender and Zamindar, the petty Bihari police official, the educated elite Bengali, the hypocritical English missionary, the barrister, the journalist, the callous bureaucrat, the British army officer, and the ruthless British administrator. She quite eruditely includes all the vivid patterns of this complex historical situation in her use of language, and she has done it very well. She does this by drawing on several sources—the ‘impure’ idiom of everyday speech to represent the non-aboriginal feudal lords and the petty police officials, the standard variety to represent the educated Bengali, and several registers of the Bengali language like the medical, the ecclesiastical, the bureaucratic, the journalist, the legal and the telegraphic to delineate the colonial forces. She depicts these representatives of different social classes and various walks of life through the typical languages they speak and write. Her command of these various linguistic expressions gives the novel a rare social dimension of totality.

The novel *Aranyer Adhikar* as a form is unparalleled in the documentation of human lives, especially authentic aboriginal lives. It vividly reflects the author’s concern for the underprivileged who are deprived of their basic rights by the dominant upper classes. Mahasweta Devi’s works do not present a glorified picture of the downtrodden but they certainly present their lives amidst adversity and exhibit their spirit and strength to resist any form of social oppressions. Hence, the author’s discourse of class, caste and gender oppression reveals a unique narrative of the downtrodden, their oppression and finally their resistance to oppression. She advocates for the political, social and economic advancement of these communities, whom she defined as the “suffering spectators of the India that is traveling towards the twenty first century” (*Imaginary Maps*, xi). She gives voice to the voiceless by exposing different forms of despotism and subjugation inherent in the Indian society and also fights for their rights.
REFERENCES


INTRODUCTION

As an alcoholic a person will violate its standards quicker than one can lower them as said by Robin Williams in his renowned weapons of self-destruction nominations. The presence of alcoholism in human civilization has existed since antiquity. The first appearance of the term alcoholism occurred in the classical essay “Alcoholismus Chronicus” (1849) by the Swedish physician Magnus Huss (Keller, 2019). However, chronic alcoholism rapidly became a medical term for the condition of habitual inebriety, and the bearer of the “disease” was called an algebraic or alcoholist (Keller, 2019). Definitions of alcoholism vary depending on the point of view of the definer. The pharmacological- physiological, behavioral, medical, epidemiological thus define alcoholism in different ways. The simplistic definition of alcoholism is, alcoholism is a disease caused by chronic, compulsive drinking (Keller, 2019). According to Med Lexicon’s Dictionary: Addiction is Habitual psychological or physiological dependence on a substance or practice that is beyond voluntary control. (Shende, 2018)

The depiction of alcohol in popular culture especially in movies across the globe is a frequent phenomenon. We find the characters like Deva in the movie Devdas (Devdas, 2009), the leading character from the movie 28 days (28 days, 2000) taking extreme steps under the influence of alcohol. Being brilliant tools to bring about changes in society, movies are a platform which mirror society to a great extent. Entertainment, publicity, knowledge, bringing awareness on public policies and issues, tools of propaganda et cetera are some of the roles of movies.

The movie The Girl on the Train (The Girl on the Train,2016) released in the year 2016, falls under the genre of suspense thriller mystery. It is based on the novel The Girl on the Train by Paula Hawkins. This movie comprises multiple themes and alcoholism is one such major theme in it. The story revolves around the lives of three leading characters - Rachel, Megan, and Anna. Their respective problems expressed through the stream of consciousness with the use of flashbacks. The three characters are tied with a common thread of betrayal, struggle to be loved, and societal expectations. The entire movie is shot in London depicting dark and shady places like road tunnels, subways, shady apartments et cetera. The majority of the storyline revolves around trains, subways, row houses around the train track and train stations and hence the name of the movie is obvious. The character i.e. Rachel riding to and fro in the train to insignificant destinations again makes the title obvious. The story is full of twists and turns and potentially holds the interest of
the audience. Beautifully presented by Tate Taylor, acted by talented actors like Emily Blunt as Rachel Watson, Haley Bennett as Megan, Rebecca Ferguson as Anna. The movie won accolades like the People’s Choice Award 2017 and Hollywood Film Award 2016 and nominations for multiple categories.

In the present research paper, the researcher highlights the theme of alcoholism and analyzes its grave consequences with the help of the character Rachel. The paper further explains the adverse effects of alcoholism especially on women. The psychological, social, economic, emotional and physiological health aspects of the degrading effects of alcoholism on a woman’s body particularly is discussed below.

BACKGROUND

The Girl on the train is a story about three women who are in their early thirties and are struggling with the issues faced by most women in this age bracket. Issues like motherhood, fertility, marital issues et cetera. The movie is narrated by the three characters Rachel, Anna and Megan simultaneously where the character development takes shape revealing details about the mundane lives of these characters. However, Rachel is the protagonist. The lives of all these women are strung together by a common character Tom. Megan is Rachel’s ex neighbour and Anna is Rachel’s ex-husband Tom’s wife. All these women struggle on various grounds in their respective lives. Along with the strongly carved feminist plot, the story focuses on the degrading effects of alcohol addiction on an individual’s life. In this movie the ill effects of alcoholism particularly on a woman’s social, economic, emotional and health are evident. Rachel is a strong hardworking woman who builds her world out of nothing. She puts together everything in the house which she bought with her husband. She is a woman of integrity, patience, good character. However, the tragedy in her life is her alcoholism. This degrades her life and makes her vulnerable to abuse at the hands of her own husband. The plot can be said to base on the Aristotelian tragedy where the protagonist has a tragic flaw/hamartia. This tragic flaw leads to the crisis in the protagonist’s life and this gives rise to catharsis and the ultimate anagnorisis. The plot ends with the protagonist winning over the tragic flaw and setting things back to untroubled times.

Similarly, in this movie the protagonist is Rachel. The story opens with this character. The story traces the journey of this protagonist from her downfall to her recovery. Though the traditional plot line is not strictly followed but it still remains the basis for the plot development. The reasons of the downfall of this character are described as the movie begins. Unhappy marriage, infidelity, infertility, alcoholism, loneliness, motherhood is some of the reasons behind the downfall of Rachel. She is mainly grappled by the grass is greener on the other side of the fence approach which is obviously invigorated by her drinking problem.

Majority of the screen time is invested in showing the different shades of misery of the three characters. However, as the big revelation or the mystery solution or plot twist is introduced,
things begin to change at a faster pace. Though one character i.e. Megan has a tragic end, the other two characters i.e. Anna and Rachel trace their path towards salvation or liberation. And thus, the protagonist conquers over her tragic flaw in the end of the story.

THE PROBLEM OF ALCOHOLISM AND WOMEN

Extensive research has been carried out in the field of alcoholism. The discussion around the social, economic, psychological, physiological, aspects has been explored by many researchers. There are studies which have quantitatively highlighted the impact of alcoholism on men, women and others. The impact of alcoholism on woman’s body in particular has also been studied.

The impact of excessive alcohol consumption on menstrual cycle, mood and expectancy leave us with variations in the results. For example, alcoholism definitely affects the mood but its impact on menstrual cycle are not proven yet. However, the case which is being considered in this research paper i.e. the character study from the movie The Girl on the Train accepts the impact of alcoholism on fertility as a fact and based on this establishes the plot accordingly. It is a major reason for the misery of the protagonist.

Rachel gets deprived of her motherhood because of alcoholism. There is a scene in the movie were Tom and Rachel try to get pregnant, but fail at it repeatedly. Research shows that women’s drinking is tied to quelling emotional pain, while men’s drinking is more linked to social pressure (Taylor M. , 2018). Hence alcoholism is not just the cause of Rachel’s misery but is also the consequence. The degradation of their relationship begins there and a series of problems start arising.

Alcoholism makes one pessimistic and hopeless. From the movie it is clearly evident that Rachel is ignorant about her drinking problem. It is basically her ignorance towards herself, her lack of willingness and enthusiasm towards life in general which invigorates the craving for alcohol. A state of hopelessness is seen from her condition which is a common occurrence in alcoholics. She loses her job, becomes homeless, suffers from infertility, goes through divorce, all because of her drinking problem. She is fed narratives by her husband which kills her self-esteem and makes her a bad person in her own eyes, all because of the blackouts and memory loss due to chronic alcoholism. This is again a commonly observed behaviour pattern in alcoholics. The nervous responses became habitual of the alcohol and body demands intake of such substances affecting the liver, kidneys and eventual death.

Women are increasingly suffering from the ill effects of alcohol. Adult women’s visits to hospital emergency departments for overdosing on alcohol also are rising sharply. Risky drinking patterns are escalating among women in particular. Stumbling while walking, unclear or slur speech due to the slowed metabolism and neural imbalance because of the alcohol influence is also seen.
Smaller quantities of alcohol dehydrogenase (ADH) production in women and because of this the influence of alcohol is seen quicker in women (Taylor M., 2018). Women bodies contain more fat compared to men and fat retains alcohol, while water helps disperse it. Due to this, women experience an even more dramatic physiological response to alcohol. Hence physiological effect is seen much earlier in women. Rachel struggles to apply lipstick, she experienced recurring blackouts, memory loss and became a person with whom she herself could not relate with. She gets into legal troubles and is suspected of the murder of Megan. Under the influence of alcohol, Rachel often roamed around her former house on Beckett street and made recurring phone calls to her ex-husband creating trouble for Anna. Rachel struggles from antisocial personality disorder and psychiatric disorders like anxiety, depression.

Men are more alcoholic than women (Falak, 2020). However, the number of women drinking and too much drinking is increasing significantly (Falak, 2020). There is a stigma attached with alcoholism. This makes acceptance and recovery of an addict even more difficult. In case of women, this stigma is further invigorated by the tight frame women are made to fit in. The percentage of binge drinking is on rise in women putting new challenges for society as a whole. Rachel drank all day. Everywhere. In public, on trains, at parks. She even took counselling but nothing helped. Hence it is said, Alcoholism is a grave disease (TedxnTalks, 2014), that too for everybody irrespective of their gender.

Alcoholism is a serious condition. But it can be done away with willpower. The Girl on the train is a story about finding the missing pieces. Just like the jig saw puzzle craves to stand coherent, similarly Rachel is searching for the lost parts in herself. The lost love. The lost affection, family, motherhood. And she gains herself when she discovers the truth of her ex-husband and understands that it was, he who pushed her towards fringes and addiction. She gains herself fully when she ends the story of exploitation, infidelity and jealousy by killing Tom in her self-defence. And that is how we learn that circumstances can make an individual vulnerable to abuse without that person realising it only because of some unhealthy habits like alcoholism.

CONCLUSION

In the present research paper, the consequences of alcoholism on different aspects of a woman’s life are described. Multiple evidences are provided in the paper which show how an individual and particularly women are affected because of alcoholism. The physiology of women, the societal conditioning, reasons for alcoholism et cetera are different in women than men. With the help of the character Rachel from the movie we can understand all these things. The journey of the character from downfall to recovery mainly influenced by the tragic flaw is studied in this paper.
REFERENCES


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INTRODUCTION

The population of India is increasing on a rapid rate. It stands second after China in having highest population in the world. To keep a check and how to calculate census are carried out in every 10 years. A census is the procedure of systematically acquiring and recording information about the members of a given population. This term is used mostly in connection with national population and housing censuses; other common censuses include agricultural, traditional culture, business, supplies, and traffic censuses. A census can be contrasted with sampling in which information is obtained only from a subset of a population. Modern census data are commonly used for research, business marketing, and planning.

The sex ratio, literacy rate, growth rate, the urban and rural increase in population are the main reasons for the increasing population.

The sex ratio is the ratio of males to females in a population. The human sex ratio is of particular interest to anthropologists and demographers.

Sex ratio = (Number of females / 1000 males) * 100

The literacy rate is the number of people educated in the population. The right to education is a fundamental right. Despite government programmes, India's literacy rate increased only "sluggishly".

The growth rate of each state is increasing only and will continue to increase further.

The urban population has seen a tremendous increase as the students migrate for their education and the working class migrates for the job opportunities.

OBJECTIVES

- To find out the state-wise decadal growth rate of population.
- To predict the growth in population for the upcoming year of 2021 in India.
- To study and predict the difference in urban and rural population.
- To find the reason behind fluctuating sex-ratio.
- To check the rise in sex ratio in India.
- To check the rise in literacy rate of India.
LITERATURE REVIEW

The 2011 census states that the Indian population increased it 1.21 billion with a decadal growth of 17.70%. Adult Literacy Rate increased to 74.04% with a decadal growth 9.21%. The population growth causes a disproportionate negative impact on the environment. (Ehrlich and Holdren, 1971). It addresses the techniques of population prediction. The need to consider sub-classifications under which population component patterns are consistent and interpretable is illustrated, as well as the significance of quantitative as opposed to formal demographic changes analysis. Recent research accounts, important for prediction, are provided in the mathematical explanation of mortality and fertility by variables of age and length. A systematic scheme is being developed to apply time relation models in this way. The place of cohort method is examined and it is concluded that their standard use is not justified in conditions similar to those in England and Wales for extrapolation of the level of fertility into future.

Numerous researches have indicated that population age structure plays a decisive role in economic growth. Since the supply of labour force and the saving rate continue to change over their life cycles, and given that their prolonged life span can contribute to the supply of labour force and saving rate, the change in population age structure can have a huge influence on a society’s economic performance (Wei, Wang, Wang, Li and Jiang, 2019).

Instead, a cyclic projection method of time-limit steps is proposed. Population decreases or increases stems from the interplay between death and birth. Instead of life expectancy and fertility, the main factors of total population, the logistic model can be applied for this. For death the logistic portrays the situation crisply once a person has legally entered society. Human life expectancy hits the culmination of a 200-year-old cycle that forestalls death foe men until around 80 and for women in the mid 80’s. there are no longevity breakthroughs in sight unless genetic engineering comes to the aid. For birth the logistics encompasses the real morphology quantitatively. However, since we have not been able to model this important parameter is a predictive way over long periods, we can’t tell whether human population’s future is accelerated growth or gradual implosions.

METHODOLOGY

MS Excel
a) Sorting and Filter
   o 1)Sorting
   o 2)Classification
b) Graphical Analysis
c) Incremental Increase Method
d) Arithmetic Increase Method
e) Geometric Mean Method
DATA COLLECTION AND STATISTICAL ANALYSIS

Secondary data was collected from official site of Reserve Bank of India. Official ministry websites of India were used to study the policies and effects.

DATA ANALYSIS

Growth Rate
The Growth Rate of Nagaland has seen a tremendous increase in the past few decades.
The Growth Rate of Tamil Nadu has seen a tremendous decrease in the past few decades.
The Growth Rate of Puducherry has seen a tremendous decrease in the past few decades.
The Growth Rate of Chandigarh has seen a tremendous highest in the past few decades.

Arithmetic Increase Method
We have used this method for predicting the Sex Ratio by considering the before decades ratios of India since 1951. Sex Ratio is calculated as (number of female’s female/1000 males) *100. We have predicted it for 2021.
Highest Top 3 states as per our prediction are Kerala with 1093, Meghalaya with 995 and Andra Pradesh and Tamil Nadu with 994.
Lowest Top 3 states as per our prediction are Jammu and Kashmir with 891, Sikkim with 887 and Haryana with 880.
Highest Union Territory as per our prediction is Puducherry with 1038 and lowest with Daman and Diu with 562.

Formula used for Arithmetic Increase Method

\[ P_n = P_0 + n \times \bar{x} \]

Geometric Mean Method
We have used this method for predicting the Literacy rate (LR) by considering the before decades rates of India since 1951.
As per 2011 census the state of Bihar had lowest LR of 61.8% whereas state of Kerala has highest literacy rate of 94%. As per our prediction for the year 2021 the state of Bihar continues to have lowest LR with 71.63% while the state of Kerala with 97.60 will have been succeeded by the state of Mizoram with 99.05.
As per 2011 census the Union Territory of Lakshadweep had highest LR of 91.85% whereas Dadra and Nagar Haveli have lowest literacy rate of 76.24%. As per our prediction for the year 2021 Lakshadweep continues to have the highest LR with 99.6% while Dadra and Nagar Haveli will have been succeeded by Chandigarh with 89.80%.

Formula used for Geometric Mean Method,

\[ P_n = P_0 \times (1 + \frac{r}{100})^n \]
Incremental Increase Method
State and union territories population for 2021 was predicted considering the before decades values from 1951. We found that the state with highest population in 2021 will be with Uttar Pradesh and lowest will be Sikkim. Union Territory with highest population will be of Delhi and lowest will be Lakshadweep.

We found that the state with highest RURAL population in 2021 will be with Uttar Pradesh and lowest will be Sikkim. Union Territory with highest population will be of Puducherry and lowest will be Lakshadweep.

We found that the state with highest URBAN population in 2021 will be with Maharashtra and lowest will be Sikkim. Union Territory with highest population will be of Delhi and lowest will be Lakshadweep.

Formula used for Incremental Increase Method \[ Y_0 = P_0 + n \times x + \frac{n(n+1)}{2} \times y \]

POLICIES AND EFFECTS

- A lot of immigration takes place in Nagaland from Bangladesh through Assam as Nagaland does not share its border directly with Bangladesh. Also because of migration of people in Nagaland to work as agricultural laborer’s, the state of Nagaland has seen a tremendous increase in growth rate in the past few decades.
- Migration of people from Punjab, Himachal Pradesh and Haryana has increased the growth rate of Chandigarh.
- Easy access and availability of sex selective abortions, contraceptives, facilities of medical technologies proliferated the Indian market and turned out to be the major reason for the sex at birth in India declined.
- The Prohibition of sex selection Act in 1994 (the pre-conception & pre-natal Diagnostic technique) paved way for reducing the discrimination of sex and the abortion or killing of baby after knowing its sex. The government exhorted the Union Territories and the states to keep a check and pay attention for the effective implementation of this act.
- Government has adopted long lasting and many strategies, program, awareness and generation measures so the girl child can get a positive environment for her growth and education i.e., schools and colleges.
- The ministry of communication and information technology has taken the charge to block sex selection advertisement going on the different websites.
- The national inspection and monitoring committee have taken care of it. Inspections has been carried out in different states, mostly with the states having sex ratio very low.
- Beti Bachao, Beti Padhao, slogan and complaint were launched by the government to keep a track on child sex ratio every year and then checking it.
- The Kishori Shakti Yojana was implemented by the ministry of women and child development.
- The educational schemes, a lot many programmes, scholarships for the deserving kids, educational importance programs, etc are run by the Kerala government.
- In elementary the state provides free school uniform, mid-meals to the students. The Sarva Shiksha Abhiyaan was also launched. There is not pressure on the parents to afford their children education.
- The state adopted the Akshara Keralam project which is nothing else but Total literacy campaign on the 4th February 1990.
- The state government has already set up ‘The Kerala State Literacy Mission Authority’, which is an autonomous institution under the general education department in 1998.
- Literacy in Kerala was triggered mainly by Christian missionaries back in the 19th century.
- Having neighbouring states with good literacy rate has an impact on Lakshadweep making it a Union Territory with Highest Literacy Rate.

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<tr>
<td>ALL INDIA</td>
<td>1373277</td>
<td>444537</td>
<td>928431</td>
<td>942</td>
<td>82.8</td>
</tr>
</tbody>
</table>
DATA VISUALISATION

POPULATION GROWTH RATE

Sex Ratio of States

Sex Ratio of Union Territories
Research Papers Presented at the 7th LSME International Research Conference on
‘Role of Management, Education and Social Sciences in Responsible Research and Innovations: Challenges and Realities’
RESULTS

The Growth Rate of Nagaland has increased in the past few decades while of Tamil Nadu has decreased. The Growth Rate of Puducherry has decrease while of Chandigarh has seen an increase.

The state with highest literacy rate is Kerala and state with lowest literacy rate is of Bihar. The union territory with highest literacy rate is Lakshadweep and with lowest is Dadra and Nagar Haveli.

The state with highest population is of Uttar Pradesh and lowest is Sikkim. Union Territory with highest population will be of Delhi and lowest will be Lakshadweep in 2021. The highest sex ratio is of Kerala and lowest is of Jammu and Kashmir, among Union Territory is Puducherry and lowest of Daman and Diu.

CONCLUSION

The state of Kerala with highest literacy rate will be replaced by Mizoram in 2021 by 4%, while the state of Bihar continues to be the state with lowest literacy rate. Chandigarh will be the union territory with the lowest literacy rate whereas Lakshadweep maintains it position of union territory with highest LR. The state Sikkim maintains lowest population. Uttar Pradesh has a continuous growing population and it continues to retain its status as an Indian state with highest population. The state of Maharashtra, and union territory Delhi will have the largest urban population in 2021. The total population of INDIA for 2021 will be 1373277, rural population - 44537, urban population- 928431 with 82.8% literacy rate, 942 females per 1000 males will be sex ratio.
These predictions can be useful to RBI, India in designing / making policies for the betterment of the people and growth of the respective states in sectors of Education and Sex, as India is a developing nation it is observed that Growth Rate is increasing rapidly and will continue to do so in coming years.

ACKNOWLEDGEMENT

We would like to express my sincere gratitude to the team of organizer of LSME for giving us this platform to learn and excel in research work.

Special thanks to Reserve Bank of India for providing the data in their website for easily accessible to all researchers. Also, thanks to our parents for making necessary things available at home during this lockdown which helped the research project go smoothly and also thanks to siblings for their support and motivation.

Thank you all for giving us the opportunity to do a research project.

REFERENCES


EFFECT OF LOCKDOWN ON TIME MANAGEMENT, HEALTH AND LEARNING

Sumeeta Dwivedi and Komal Parab
Kishinchand Chellaram College, Mumbai, India

INTRODUCTION

The worldwide spread of novel coronavirus disease is severely affecting life as per the recent updates, almost one-third to half of the global population is now under some form of lockdown. The pandemic has resulted in lockdowns across the world in many sectors. The pandemic-born lockdown is having an impact on the living habits of people and their social behavior. This research analyzes the habits and time management of people during the lockdown. Time management is the process of planning and exercising conscious control of time spent on specific activities, especially to increase effectiveness, efficiency, and productivity [6]. Time management is very crucial and it may affect an individual's overall performance, eters its education or health and all of these are related to how individuals manage their time during lockdown to suit their daily living or to make it flow steadily with their routines. However, at the same time continuation of exercise during this crisis to avoid health problems should also be maintained [2]. The usage of time is also related to how time is used to learn skills and personal achievements [5]. It seems that there is never enough time in the day. But, since we all are in lockdown these days and are having ample time with us. The originality and novelty of this research are defining new dimensions of time management and proposing some specific actions to be implemented to get better time management [4]. But do you know that we all get the same 24 hours, why is it then some people achieve so much more with their time than others? The answer lies in proper time management.

AIM

The Study Aims to Determine the Effect of Lockdown on Time Management, Learning, and Health.

METHODOLOGY

A Questionnaire was designed using google form and it was distributed through social accounts and a survey was conducted. The research was carried in a closed environment and limited boundary with a small number of samplings including the short period duration. Primary data was collected through the google forms where the data collected have 203 samples where 117 are female and 86 are male. The data collected was analyzed qualitatively and quantitatively for the finding and making the recommendations. MS Excel was used for sorting, filtering, and plotting graphs. R software was used for checking the normality using paired t-test. In the case of the absence of normality, the Wilcoxon test is used for statistical hypothesis testing. Fisher's test was also used.
This survey research study aimed to assess the impact of lockdown on individuals’ daily habits such as sleep/got up, social media use, work from home, and more selected variables. It was also intended to measure the adjustment made by people about maintaining their daily routine. We fitted multiple logistic regression models where we have taken the impact of lockdown on health and learning habits as a ‘y’ variable and all the activities which are done during the lockdown as ‘x’ variables to check which activities have a positive impact on health and learning habits. Python software was used to fit the regression model.

ANALYSIS AND RESULT

Data Visualization

The data has 203 samples out of which 117 are female and 86 are male.
• Activities During Lockdown

During lockdown how do you keep yourself fit?
219 responses

Graph 1

Graph 1 shows that Exercise (37.4%) and Household Chores (35.2)% are preferred more in lockdown to be fit followed by Daily walk(26%) and Yoga(15.1%)

• Content Watched Before Lockdown Vs during lockdown

What type of content did you watch most on TV before lockdown?
219 responses

Graph 2
Graph 2 shows that the most watched content before lockdown is Movies (43.4%) followed by News (38.8%) and Sports (24.7%) and Others. The Graph 3 shows that the most watched content during lockdown is News (54.8%) followed by Movies (43.8%) and Informative content (27.9%) and Others.

- Courses Before and During the lockdown

Graph 4 shows that 68% of people have not done any courses whereas 32% of people have done some type of courses.
Data Analysis

While testing the hypothesis if we get a p-value less than 0.05 then we reject Null Hypothesis (H0) otherwise do not reject H0.

1. Sleeping hours before lockdown Vs during lockdown

H0: There is no significant difference between the number of hours on an average people slept in the day during the lockdown and before lockdown.

H1: The number of hours on average women slept in the day during lockdown is greater than before lockdown.

<table>
<thead>
<tr>
<th>group</th>
<th>median</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>d1</td>
<td>9</td>
<td>2.75</td>
</tr>
<tr>
<td>d2</td>
<td>7</td>
<td>1</td>
</tr>
</tbody>
</table>

Wilcoxon signed-rank test with continuity correction

V = 882, p-value < 2.2e-16

Therefore, the number of hours an average person slept in the day during lockdown is greater than before lockdown.

2. Fitness before lockdown Vs during lockdown

H0: There is no significant difference between Time spent per day on an average for fitness during the lockdown and before lockdown.

H1: Time spent per day on an average for fitness during lockdown is greater than the Time spent per day on an average for fitness before lockdown

Shapiro-Wilk normality test

W = 0.72746, p-value < 2.2e-16

Since p-value is less than 0.05 so it does not follow normality.

<table>
<thead>
<tr>
<th>group</th>
<th>median</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>dd1</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>dd2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Wilcoxon signed-rank test with continuity correction

V = 2709.5, p-value = 0.2954
There is no significant difference between time spent per day on an average for fitness during the lockdown and before lockdown.

3. **Disease affected before and during a lockdown**

H0: There is no association between the people frequently affected on an average in a week due to the given condition before and after lockdown.

H1: The number of people affected on an average in a week during lockdown is greater than the people affected before lockdown.

Fisher's Exact Test for Count Data hybrid using asym.chisq. \( p\)-value = 0.9255

Therefore, there is no association between the people frequently affected on an average in a week due to the given condition before and during a lockdown.

**Classes/Work before lockdown Vs during lockdown**

H0: There is no significant difference between the number of hours spent on an average for office work/attending classes per day during the lockdown and before lockdown

H1: The number of hours spent on an average for office work/attending classes per day during lockdown is greater than the hours spent on an average for office work/attending classes per day before lockdown.

Shapiro-Wilk normality test

\( W = 0.96667, p\)-value = 0.01682

Since \( p\)-value is less than 0.05 so it does not follow normality.

<table>
<thead>
<tr>
<th>group</th>
<th>median</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 s1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>2 s2</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Wilcoxon signed-rank test with continuity correction

\( V = 2219, p\)-value = 3.513e-07

Therefore, the number of hours spent on an average for office work/attending classes per day during lockdown is greater than the hours spent on an average for office work/attending classes per day before lockdown

4. **Activities before lockdown Vs during lockdown**

H0: There is no significant difference between the time spent on activities by people during the lockdown and before lockdown.
H1: The time spent by people on activities during lockdown is greater than the time spent by the people before lockdown.

Fisher's Exact Test for Count Data hybrid using asym.chisq.

p-value = 0.0001042

Therefore, the time spent by people on activities during lockdown is greater than the time spent by the people before lockdown.

5.  Account before lockdown Vs during lockdown

H0: There is no significant difference between the number of social media accounts before lockdown and during the lockdown.

H1: The people having social media accounts during lockdown is greater than people having social media account before lockdown

Fisher's Exact Test for Count Data hybrid using asym.chisq.

p-value = 0.96666

So it is concluded that there is no significant difference between the number of social media accounts before lockdown and during the lockdown.

6.  Time spent on mobile before lockdown Vs during lockdown

H0: There is no significant difference between the time spent on mobile by people during the lockdown and before lockdown.

H1: The time spent by people on mobile during lockdown is greater than the time spent by the people before lockdown.

Fisher's Exact Test for Count Data hybrid using asym. chisq. lff (exp=5, perc=80, Emin=1)

p-value = 1.82e-07

Therefore, time spent by people on mobile during lockdown is greater than the time spent by the people before lockdown.

7.  Time spend on TV before lockdown Vs during lockdown

H0: There is no significant difference between the time spent on TV by people during the lockdown and before lockdown.
H1: The time spent by people on TV during lockdown is greater than the time spent on TV by the people before lockdown.

Fisher's Exact Test for Count Data hybrid using asym.chisq.

\[ p-value = 6.679 \times 10^{-05} \]

Therefore, Time spent on TV during lockdown is greater than the time spent on TV by the people before lockdown.

8. The impact of lockdown on health and learning habits:

Y: To what extent do you think this lockdown has impacted your overall well-being and learning habits (In a positive way)?

X: 'Gender', 'activities for fitness', 'time spent for fitness',

'time spent for office work/lectures', 'did you learn software',

'activities to spend time', 'time spent for activities

The model accuracy is 0.62295, a \( p \)-value of activities for fitness', 'time spent for fitness', 'time spent for office work/lectures', 'did you learn software', 'activities to spend time', 'time spent for activities these variables is less than 0.5 hence these are the significant variables.

Activities are done for fitness & time spent for those activities, time spent for office work/lectures, activities to spend regular time & time spent on those activities have impacted the overall well-being and learning habits of people.

GENDER-BASED ANALYSIS

1. Sleeping Hours

H0: An average sleeping time of males and females is not changed during a lockdown.

<table>
<thead>
<tr>
<th>Gender</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>7.65e-05</td>
</tr>
<tr>
<td>Female</td>
<td>2.671e-06</td>
</tr>
</tbody>
</table>

Wilcoxon signed-rank test with continuity correction
Therefore, there is a significant difference between the number of hours on an average of sleeping habits of males and females in a day during the lockdown and before lockdown. Also, there is no difference between the sleeping hours of males and females.

2. **Fitness**

H0: There is no significant difference between time spent per day on an average for fitness during the lockdown and before lockdown by males and females.

<table>
<thead>
<tr>
<th>Gender</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3.93e-08</td>
</tr>
<tr>
<td>Female</td>
<td>6.093e-13</td>
</tr>
</tbody>
</table>

Shapiro-Wilk normality test: W = 0.75319

<table>
<thead>
<tr>
<th>Gender</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3.34e-12</td>
</tr>
<tr>
<td>Female</td>
<td>9.669e-13</td>
</tr>
</tbody>
</table>

Wilcoxon signed-rank test with continuity correction, V = 913

<table>
<thead>
<tr>
<th>Gender</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1</td>
</tr>
<tr>
<td>Female</td>
<td>0.149</td>
</tr>
</tbody>
</table>

Therefore, there is no significant difference between time spent per day on an average for fitness during the lockdown and before lockdown by males and females.

3. **Disease affected before lockdown Vs during lockdown**

H0: There is no significant difference between the males and females frequently affected on an average in a week due to the given condition before and after lockdown.

Fisher's Exact Test for Count Data hybrid using asym.chisq.
Hence, the analysis shows that there is no significant difference between the males and females frequently affected on an average in a week due to the above condition before and during a lockdown.

4. **Class/Work before lockdown Vs during lockdown**

H0: There is no significant difference between the number of hours spent on an average for office work/attending classes per day during the lockdown and before lockdown by males and females.

<table>
<thead>
<tr>
<th>Gender</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0.00396</td>
</tr>
<tr>
<td>Female</td>
<td>0.03112</td>
</tr>
</tbody>
</table>

Hence, the number of hours spent on an average for office work/attending classes per day during lockdown is greater than the hours spent on an average for office work/attending classes per day before lockdown by males and females. Therefore, there is no difference between the working or studying hours of males and females.

5. **Activities before lockdown Vs during lockdown**

H0: There is no significant difference between the time spent on activities by males and females during a lockdown and before lockdown.
Fisher’s Exact Test for Count Data hybrid using asym.chisq

<table>
<thead>
<tr>
<th>Gender</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1.184e-11</td>
</tr>
<tr>
<td>Female</td>
<td>1.184e-11</td>
</tr>
</tbody>
</table>

Hence, the time spent by males and females on activities during lockdown is greater than the time spent by both before lockdown.

6. **Social Accounts**

H0: There is no significant difference between the number of social media accounts before lockdown and during the lockdown.

Fisher’s Exact Test for Count Data hybrid using asym.chisq

<table>
<thead>
<tr>
<th>Gender</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0.06992</td>
</tr>
<tr>
<td>Female</td>
<td>0.06992</td>
</tr>
</tbody>
</table>

Therefore, there is no significant difference between the number of social media accounts before lockdown and during the lockdown. Social media accounts of both males and females remain the same during the lockdown.

7. **Watching Mobile before lockdown Vs during lockdown**

H0: There is no significant difference between the time spent on mobile by people during the lockdown and before lockdown.

Fisher’s Exact Test for Count Data hybrid using asym.chisq.

<table>
<thead>
<tr>
<th>Gender</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0.0006791</td>
</tr>
<tr>
<td>Female</td>
<td>0.0006791</td>
</tr>
</tbody>
</table>

Hence, the time spent by people on mobile during lockdown is greater than the time spent by the people before lockdown. Also, there is no difference between the time spent on mobile by males and females.
8. **Watching TV before lockdown Vs during lockdown**

H0: There is no significant difference between the time spent on TV during a lockdown and before lockdown.

<table>
<thead>
<tr>
<th>Gender</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0.141</td>
</tr>
<tr>
<td>Female</td>
<td>0.141</td>
</tr>
</tbody>
</table>

Hence, there is no significant difference between the time spent on TV by people during the lockdown and before lockdown. Also, there is no difference between the time spent on TV by males and females.

**CONCLUSION AND SUGGESTION**

There is no difference between the time spent on activities for fitness, time spent on TV, time spent on office work/attending classes by people during the lockdown, and before lockdown. Time spent on mobile and time spent on extracurricular activities is increased during the lockdown. It seems that there is never enough time in the day. During a lockdown, there is a 16% increase in people watching the news than before lockdown. During a lockdown, people are watching more devotional content as compared to before lockdown. There is 6% of people watching devotional content. People have started to prefer reading to keep themselves busy during lockdown followed by cooking, drawing, and other activities. But, since we all are in lockdown these days and are having ample time with us the people have started to utilize the time on learning and activities.

Activities that are done for fitness & time spent on those activities has a good impact on health. Time spent for online office work/lectures, activities to spend regular time & time spent on those activities has impacted the overall learning habits of people.

**ACKNOWLEDGEMENT**

We would like to express our special thanks of gratitude to our mentor Mr Shubham Niphadkar for guiding us through all this research with patience, enthusiasm, immense knowledge, and motivating us to keep moving further towards the accomplishment of our goal. We would like to thank Dr Asha Jindal, Associate Professor and Head of Department of Statistics, KC College, and Mrs. Sailaja Rane, Assistant Professor, KC College for guiding us and providing help and support whenever needed. We would also like to thank LSME UK to provide us with the platform to showcase our talent.

Last but not least we would also like to thank our friends and family members for their support during the survey and project.
REFERENCES


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IMMUNITY BOOSTING AND BALANCED DIET PREVENTS VIRAL INFECTIONS WITH SPECIAL EMPHASIS ON COVID-19

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²Department of Oral Pathology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Velappanchavadi, Chennai, Tamil Nadu, India

INTRODUCTION

In present situation the panic of COVID-19 where no effective therapeutics as well as proper medicine available, hence a steady as well as fit immune system is the best significant hope from prevention of viral attack. Boosting immunity by consuming a diet which is rich in several vitamins like A, D and few important trace elements which is useful for the regular boosting for immune system [1]. COVID-19 is also a Respiratory tract infections (RTIs), commonly occurring in all age groups. Although, these RTIs infections are usually due to lack of proper immunity among all age groups as well as greater risk in exposure to various respiratory pathogens.

Earlier in1980s vitamin D has been obtained recognition for its promising effect to prevent disease by its potentiality to produce both innate and adaptive immune responses [2-3]. Both empirical as well clinical trial data of previous reports have revealed a connection between low levels of serum 25-hydroxyvitamin D and increased rates of respiratory tract infections [4]. Additionally, the anguish due to upper respiratory tract infections placed an intensive stress as well as economic burden on health care systems and to societies [5].

The Vitamin D enhances the synthesis of the antimicrobial peptide cathelicidin in respiratory epithelium, which decreases the viral load and replication in case of the influenza virus in vitro [6-7]. Although, it has been confirmed from several literatures that nutrition is one of the elementary factors that correlated with variations in all RTIs distress and fatality [8-9]. The specific immune response to infection is multi-faceted and complex, and it involves a variety of cell types and factors such as chemokines, cytokines, enzymes, and hormones [10-11]. The effect of vitamin supplements on immunity not only is difficult to measure but can also involve affecting one component of the immune system but not another. The main way to boost immunity against infections is to maintain personal hygiene, adequate nutritional intake, and a healthy lifestyle [12-14].

Nevertheless, on throwing lights about current pandemic situation bought by COVID-19, our basic aim in this review article is to evaluate the evidence based on several other literature reports
which clearly pinpoints on enhancing immunity during viral infections literally inhibits the virus replication inside our body. Therefore, this systematic review crucially emphasizes on influenza-like viral infections, pathophysiology and their molecular mechanism of replication have also been included. Lastly, practical recommendations in order to curb/prevent the virus multiplication inside any human body by therapeutic nutritional interventions are exquisitely been highlighted.

The possible responsible research innovation (RRI) from our study presents insights about various vitamins and minerals in mitigation of viral load. However, our systematic study based on several literature reports clearly signifies the importance of natural products possessing bioactive materials to diminish the viral load and subsequently enhance immunity. Our current article major focus to provide a RRI to readers about the questionable concept of “immune boosting” and spread positive response to individuals.

**METHODOLOGY**

The method of study adopted is based on Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The systematic search strategy and meta-analysis was conducted as well as described with facts and observations in adherence to the previous case studies and in accordance to PRISMA as well as MOOSE guidelines [15-17].

**SELECTION CRITERIA AND SEARCH STRATEGY**

We have searched with help of widely used databases i.e PubMed, Embase, SCI (Science citation Indexed), Scopus and Wiley for COVID-19 intervention and prevention studies. We concentrated on articles published on or before March and further period of 2020 is also included. The key search terms used were SARS CoV-2, Nutritional Interventions, COVID-19, Immunity boosting, Vitamins. All the retrieved literature reports were analysed for eligible publications.

The selection of articles based on search strategy is shown in Table -1 as a supplementary material. The references of cited articles of present date as well as previous reviews were also manually checked to for other additional information. Primary studies were also reported on COVID-19 patients in China. We have not included studies that is related to infection in infants, but have included all original data along with clear diagnostic criteria as well as research outside mainland China.

**STATISTICAL DATA ANALYSIS**

This study was analysed by two authors (KRP and KRD) independently extracted relevant information including first author and his publication time, what study designs they have used and from which city. Nevertheless, also studied the number of COVID-19 patients, mean or median age of patients, maximum follow-up duration (days). The following data is extracted based
on details such as a) history of exposure in Wuhan and other countries b) case history on smoking and drinking c) Psychological stress in HCW and doctors d) study population e) primary interventions f) immunological outcomes and clinical symptoms of COVID-19 patients. The case screening is carried out based on Guidelines of Diagnosis and Treatment of COVID-19 (Sixth Edition) from the NHC [18]. We also have included patients admitted to intensive care units (ICU) as severe cases but excluded critically ill patients in the overall meta-analysis cases.

The immunological outcomes were assessed and classified as 1) Clinical response on incidence of disease, duration lasting, severity along with symptoms 2) Serological response, based on immunological phenomenon which were indicated in the relevant tables for vitamins, minerals, nutraceutical, probiotics, and with comparison of similar outcomes between interventions is shown in the Table-1.

RESULTS AND DISCUSSION

SUPPLEMENTATION OF VITAMINS AND MINERALS DURING COVID-19

The Immune response during infection is not stagnant reaction to an infection. The initial stages of antigenic stimulation further changes in the later stages of disease development can be identified as the characteristics of the response [30-31]. Ultimately, the supplementation of nutrients boosted the immunity to a major extent which helped in faster recovery rate [32]. Nevertheless, several protective measures also significantly prevent the transmission of SARS-CoV-2 infection, such as improving personal hygiene, wearing masks when we go outside as well as good ventilation and adequate rest [33]. Moreover, patients recognized with chronic diseases such as diabetes, cardiovascular diseases, hypertension, smoking history seems to be more prone to SARS-CoV-2 infection as they have lower immunity and results in poor prognosis. Several literature reports have clearly highlighted that vitamin C, Vitamin E and multivitamins usage under certain conditions however have the susceptibility of lower respiratory tract infection COVID-19.
Table-1: Immunological effect of Vitamins and multi-nutrients.

<table>
<thead>
<tr>
<th>Author</th>
<th>Nutrient</th>
<th>Study duration</th>
<th>Study design; duration; Jadad score</th>
<th>Study Populations; Sample size; Male/Female (Age in Years)</th>
<th>Intervention; Control</th>
<th>Purpose</th>
<th>Significant antiviral outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siddiqui et al. [19] 2001; Pakistan</td>
<td>Vitamin-A</td>
<td>30 days; 0 points</td>
<td>Healthy participants 20/20 30/10 10-35</td>
<td>IG: Vitamin A (100000 IU on 1st vaccine day and 100000 IU on the following day) CG: No placebo Both groups received anti-rabies vaccine</td>
<td>Study the role of Vitamin A in enhancing humoral immunity produced by antirabies vaccine</td>
<td>Clinical: NA Immunological: IG group had significantly greater (2.1 times) serum anti-rabies titre than CG.</td>
<td></td>
</tr>
<tr>
<td>Patel et al. [20] 2019; USA</td>
<td>Vitamin A and Vitamin D</td>
<td>28 days 2 Points</td>
<td>Healthy children; 39/40; 33/46; 2 to 8</td>
<td>IG: Oral gummy (Vitamin A 20,000 IU and Vitamin D 2000 IU), on days 0 and 28 CG: Oral gummy placebo, on days 0 and 28 Both groups received influenza vaccine</td>
<td>Study benefit of vitamin A&amp;D supplements on humoral immune responses following paediatric influenza vaccination</td>
<td>Clinical: NA Immunological: Higher antibody responses among children who entered the study with insufficient or deficient levels of RBP and 25-hydroxyvitamin D.</td>
<td></td>
</tr>
<tr>
<td>AbuMouch et al. 2011 [21]; Israel</td>
<td>Vitamin D</td>
<td>48 weeks 1Point</td>
<td>Chronic hepatitis C (HCV) patients; 36/36; 39/33; 18-65</td>
<td>IG: Vitamin D3 (2000 IU/day) with antiviral therapy CG: Antiviral therapy alone</td>
<td>Determine whether adding Vitamin D improves HCV response to antiviral therapy</td>
<td>Clinical: Similar in both groups. Immunological: Significantly more IG patients were HCV-RNA negative (at week 4, 12 and 24). Vitamin D supplementat</td>
<td></td>
</tr>
<tr>
<td>Researcher</td>
<td>Supplement</td>
<td>Duration; Points</td>
<td>Participants</td>
<td>Intervention</td>
<td>Comparison</td>
<td>Clinical Findings</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------</td>
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<td></td>
</tr>
<tr>
<td>Aglipay et al. [22] 2017; Canada</td>
<td>Vitamin D</td>
<td>4-8 months; 5</td>
<td>Healthy children; 349/354; 404/296; 1-5</td>
<td>IG: Vitamin D3 high dose (2000 IU/day) CG: Vitamin D3 standard dose (400 IU/day)</td>
<td>Compare effects of highdose vs. standard-dose vitamin D supplementation on prevention of viral upper respiratory tract infections among children</td>
<td>Clinical: No significant difference in incidence of wintertime upper respiratory tract infections in IG compared to CG Immunological: NA</td>
<td></td>
</tr>
<tr>
<td>Ginde et al. [23] 2017; USA</td>
<td>Vitamin D</td>
<td>12 months; 5</td>
<td>Elderly participants; 55/52; 45/62; ≥60</td>
<td>IG: High-dose group (Vitamin D3 100,000 IU/month) CG: Standard-dose group (A Placebo, for participants taking 400e1000 IU/day as part of usual care or 12000 IU of vitamin D3/month, for participants taking &lt;400 IU/day as part of usual care)</td>
<td>Evaluate efficacy of high dose monthly Vitamin D for prevention of acute respiratory infection in older long-term care residents</td>
<td>Clinical: IG had significantly lesser number of acute respiratory infections than CG Immunological: NA</td>
<td></td>
</tr>
<tr>
<td>Goncalves Mendes et al. [24] 2019; France</td>
<td>Vitamin D</td>
<td>3 months; 5</td>
<td>Elderly participants (Vitamin D deficient); 19/19 Both genders 65</td>
<td>IG: Vitamin D (6 doses 100,000 IU, 1 vial/15 days) CG: Placebo (6 doses, 1 vial/15 days)</td>
<td>Study whether Vitamin D supplementation in deficient elderly</td>
<td>Clinical: NA Immunological: IG had a higher TGFb plasma level in response to influenza</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Intervention</td>
<td>Time/Other Details</td>
<td>Population</td>
<td>Intervention Details</td>
<td>Outcomes</td>
<td></td>
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<tr>
<td>Nimer and Mouch [25]</td>
<td>Vitamin D</td>
<td>24 weeks; 1 point</td>
<td>Chronic HCV patients; 20/30; 31/19; 18-65</td>
<td>IG: Vitamin D3 (2000 IU/day) with antiviral therapy CG: Antiviral therapy alone</td>
<td>Examine whether vitamin D improved viral response and predicted treatment outcome in patients with HCV genotype 2e3. Clinical: NA Immunological: Ninety-five percent in IG were HCV RNA negative at week 4 and 12. At 24 weeks sustained virological response was significantly more in IG. Logistic regression analysis identified vitamin D supplement as an independent predictor of viral response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiorino et al. [26]</td>
<td>Vitamin E</td>
<td>12 months; 3 points</td>
<td>Children with chronic HBV; 23/23; 34/12; 2-17</td>
<td>IG: Vitamin E (15 mg/kg/day) CG: No treatment</td>
<td>Evaluate the safety and efficacy of vitamin E for the treatment of paediatric HBeAg-positive chronic HBV Clinical: NA Immunological: Significantly more patients in IG had anti-HBe seroconversion and a virological response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemila and Kaprio [27]</td>
<td>Vitamin E and beta-carotene</td>
<td>5-8 years 3 points</td>
<td>Male participants</td>
<td>IG: Three groups a) Vitamin E (a)</td>
<td>Examine the effects of Vitamin-E and Clinical: Vitamin E supplementat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meydani et al. [28] 2004; USA</td>
<td>Vitamin E</td>
<td>12 months; 5 points</td>
<td>Elderly participants; 231/220; 113/338; ≥65</td>
<td>IG: Vitamin E (alpha-tocopherol, 200 IU) in soybean oil, one capsule/day</td>
<td>CG: Placebo (4 IU of vitamin E) in soybean oil, one capsule/day</td>
<td>Investigate effect vitamin E supplementaton on respiratory infections in elderly nursing home residents</td>
<td>Clinical: IG did not have a statistically significant incidence of lower respiratory tract infections. However, a protective effect was noted on upper respiratory tract infections, particularly the common cold.</td>
</tr>
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</tr>
<tr>
<td></td>
<td>(Smoked at least 5 cigarettes/day and initiated smoking at ≤ 20 years); 10,784/10,873; Males only; 50-69</td>
<td>tocopheryl acetate, 50 mg/day) b) beta-carotene (20mg/day) c) Both Vitamin E and beta Carotene</td>
<td>pneumonia risk in males who initiated smoking at an early age</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>ion had no effect on the risk of pneumonia in participants with body weight in a range from 70 to 89 kg. Vitamin E increased the risk of pneumonia in participants with body weight&lt;60kg and in participants with body weight &gt;100 kg. The harm of vitamin E supplementaton was restricted to participants with dietary vitamin C intake above the median</td>
<td></td>
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</tr>
</tbody>
</table>
C-Controlled; CG-Control group; DB-Double blind; DNA-deoxyribonucleic acid; HBV- Hepatitis B virus; HBeAg -Hepatitis B e-antigen; Hepatitis B HCV-Hepatitis C virus; IG-Interventional group; IU-International units; NA-Not applicable; PC-Placebo controlled; R-Randomized; RNA-Ribonucleic acid; RBP-Retinol binding protein; TGF-Transforming growth factor.

**MORTALITY DUE LOWER IMMUNITY IN COVID-19 CASES**

At present the existence of co-morbidities is basically related with poorer clinical outcome in patients with COVID-19 [34]. In a study of above 1500 cases of COVID-19 in a laboratory confirmed patients, 300(30.7%) patients reported having at least one co-morbidity such as diabetes, high blood pressure and cardiovascular ailments. Even though if cancer patients are infected with COVID-19, the chances for risk is higher in such cases [35].
Although, patients admitted to the intensive care unit (ICU) face nutritional problems which influences both chronic and acute starvation. Since the ICU patients diet is diverse and it might typically induce a marked catabolic response leading to rapid loss of lean body mass. Nevertheless, this triggers among 5% patients in single-organ failure to 30% in multi organ dysfunction syndrome (MODS) who were admitted in the ICU for more than a week. Therefore, nutritional therapy is the best method to improve malnutrition in case of critically ill patients. Further it is also required to take several precautionary measures such as personal hygiene practices against contamination of food, food-contact surfaces as well as when serving [36-37].

CONCLUSION

At present situation for a viral disease like COVID-19, where no possible pharmacological strategies available for diminishing or treating the patients affected with disease. Henceforth boosting of immunity is possible by nutritional strategies which help in enhancing immunity. In our current review we have highlighted the potential preventive measures as well as therapeutic application of few vitamins, trace elements, several nutraceuticals and probiotics. Since there is limited therapeutic strategies available to reduce the viral load, best would be a balanced and varied diet. Therefore, we strongly recommend that all the potential interventions need to be implemented in order to control the emerging COVID-19 as the disease is uncontrollable.

AUTHOR CONTRIBUTIONS

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Contributions
KRP and KRD contributed in writing, drawing figures and tables in this review article.KRP solely drafted this review article. All authors provided critical feedback on manuscript. All authors read and approved final manuscript.

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Compliance with Ethics Requirements
Not Applicable

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To all the frontline health workers who have put their efforts day and night during the pandemic period of COVID-19.
REFERENCES


Patel N, et al. Baseline serum vitamin A and D levels determine benefit of oral vitamin A&D supplements to humoral immune responses following pediatric influenza vaccination. Viruses 2019;11(10).


IN SILICO DOCKING OF FLAVONOIDS FROM CASSIA OCCIDENTALIS L. FOR THEIR INHIBITORY ACTIVITY AGAINST DENV SEROTYPE-1.

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Corresponding author - Ravikumar Y S, Department of Biotechnology, M. S. Ramaiah Institute of Technology, Bengaluru, Karnataka, India

INTRODUCTION

Dengue is one of the most widespread diseases causing serious health problems worldwide (Bhatt S et al 2013). Currently, no vaccine is available for treating dengue infection (Idrees S and Ashfaq UA, 2012). DENV belongs to the Flaviviridae family with a single stranded positive stranded encapsulated RNA virus, composed of three structural protein genes and seven non-structural proteins (Kuno G et al, 1998). Dengue infection leads to dengue fever (DF), dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) (Shresta S et al, 2006). The four serotypes of the dengue virus (DENV -1, DENV -2, DENV -3 and DENV -4), exhibits about 65 – 70% sequence homology (Rico-Hesse R, 1990). Dengue is a mosquito-borne disease transmitted by Aedes aegypti (Rosen L et al, 19837). DENV-2 is the most widespread among all four serotypes (Takahashi H et al, 2012). In India, the earliest isolation of DENV-2 is from Vellore, South India (Kumar SRP et al, 2010). NS2B-NS3 serine protease of Viral protein is prominently involved in viral replication as it is required for the synthesis of the polyprotein precursor before the assembly of the viral complex (Mueller NH et al, 2008). Hence most of the anti-dengue drug developments aim at this target.

Flavonoids play an important role as anti-viral agents. Studies have shown the importance of phytochemicals against DENV (Johari J et al, 2012) (Chattopadhyay D et al, 2009) (Tang LI et al, 2012).

Cassia occidentalis L. belonging to Family Fabaceae is an erect, annual herb found in tropical regions. It is an Ayurvedic plant that is used in several traditional medicines to cure various diseases. It has wide Phytochemicals showing diverse biological activities, such as antiallergic, antibacterial, antidote for poison, blood purifier, antifungal, antidiabetic, anti-inflammatory, antimutagenic, psoriasis, melanoblast cell line leprosy and hepatoprotective activity (Yadav et al, 2010). The study has not been carried out on its antiviral property against DENV protease. Thus, this work aims to is to evaluate the anti-DENV effect of the flavonoids of Cassia occidentalis L. against the active sites of the dengue viral protease 3L6P of Serotype-1.
COMPUTATION METHODS

The computational methods involved the designing of the protein and ligand for virtual screening of protein-ligand interaction by molecular docking.

DESIGNING OF LIGAND

A library of the Flavonoids from Cassia occidentalis L. was listed. The structure of these flavonoids was searched in PubChem and then drawn using Chem Draw software and saved as mol format for further use in AutoDock software in pdbqt format.

MODIFICATION OF PROTEIN

For the docking studies crystal structure (PDB ID-3L6P) of dengue virus, NS3 protease was used. The structure was obtained from Protein Data Bank in .pdb format and subjected for optimization by removing all the heteroatoms and water molecules. This was used as a receptor in the docking study.


PROTEIN-LIGAND DOCKING

Molecular docking was carried out with the ligands and the receptor (3L6P) on NS2B-NS3protease using AutoDock Vina. The best-ranked model with the lowest binding energy was analyzed further and visualized using Ligplot software.

RESULTS

The library of eight flavonoids from Cassia occidentalis L was listed and used as ligands for docking (Table I).

The 3D structure of the DENV proteases was retrieved from PDB. The PDB ID of the 3D-structure was 3L6P for Serotype-1. Molecular docking was performed for flavonoids listed with Serotype-1. Flavonoids that showed the least binding energy with the highest stability were selected and subjected to ligplot analysis.
Table I: List of flavonoids from *Cassia occidentalis* L.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Flavonoids</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>1,8-Dihydroxyl-3-methyl anthraquinone</td>
</tr>
<tr>
<td>2</td>
<td>Cassiollin</td>
</tr>
<tr>
<td>3</td>
<td>Chryso-obtusin</td>
</tr>
<tr>
<td>4</td>
<td>Chrysarobin</td>
</tr>
<tr>
<td>5</td>
<td>Chrysoeriol</td>
</tr>
<tr>
<td>6</td>
<td>Funiculosin</td>
</tr>
<tr>
<td>7</td>
<td>Helminthosporin</td>
</tr>
<tr>
<td>8</td>
<td>Islandicin</td>
</tr>
</tbody>
</table>

Results of docking studies with 3L6P

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Compounds</th>
<th>3L6P Binding energy (-kcal/mole)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chryso-obtusin</td>
<td>14.1</td>
</tr>
<tr>
<td>2</td>
<td>Cassiollin</td>
<td>10.3</td>
</tr>
<tr>
<td>3</td>
<td>Islandicin</td>
<td>10.3</td>
</tr>
<tr>
<td>4</td>
<td>Funiculosin</td>
<td>10.2</td>
</tr>
<tr>
<td>5</td>
<td>Chrysoeriol</td>
<td>10.1</td>
</tr>
<tr>
<td>6</td>
<td>1,8-Dihydroxyl-3-methyl anthraquinone</td>
<td>9.8</td>
</tr>
<tr>
<td>7</td>
<td>Helminthosporin</td>
<td>9.8</td>
</tr>
<tr>
<td>8</td>
<td>Chrysarobin</td>
<td>9.7</td>
</tr>
</tbody>
</table>

Table II: Binding energy details of flavonoids with 3L6P

Analysis of lead molecules with 3L6P using Ligplot software-

The ligplot software analysis of lead molecule, Chryso-obtusin with 3L6P showed the Hydrophobic interactions- *Tyr-211 Gly-203 Gly-201 Ser-213 Val- 212 Asn-202 Tyr-200 Gly-183 Pro-182* and Hydrophilic interactions- *Ser-185 Thr-184* with the binding affinity of -14.1 kcal/mole.
DISCUSSION

The DENV genome contains a single open reading frame, which encodes the structural proteins capsid, membrane precursor (prM), and envelope and the nonstructural proteins NS1, NS2, NS3, NS4, and NS5. Cellular proteases and the viral serine protease (PR) are responsible for cleaving the viral precursor polyprotein into functional proteins. The DENV PR consists of the amino-terminal domain of the NS3 protein and requires NS2B, a 14-kDa protein, as a cofactor to form a stable complex. This heterodimeric PR cleaves at the capsid-prM, NS2A/NS2B, NS2B/NS3, NS3/NS4A, NS4B/NS5, internal NS2A, NS3, and NS4A cleavage sites (Bera et al, 2007). PR inhibitors (PIs) have been shown to be valuable antiviral drugs, especially in the treatment of HIV-1 and hepatitis C virus (HCV) (Jacobson et al, 2011) (Poordad et al 2011) (Mathews et al 2012) (Pearlman et al 2012) (Kohl et al, 1988). In the case of DENV, some already published substances showed inhibition of 50% of DENV replication in a mini replicon system at a sub micromolar range (Yang et al, 2011) or inhibition to 10% of DENV replication with wild-type virus at micromolar concentrations (Nitsche et al, 2013). Despite these promising developments, antiviral DENV drugs are still not available.

Dengue is an appalling disease and requires urgent attention to develop new inhibitory compounds that could work against it. Like other flaviviruses dengue virus NS3 protease has been
declared as a significant drug target. The active residues are important in viral replication therefore, any disruption in them may block the replication of the virus. Thus, efforts directed to search for new therapeutic targets and molecules that inhibit viral infection are required. Therefore, natural products like flavonoids which are present in almost all plants offer great promise as potentially effective new antiviral drugs due to their simple structure and ease to manipulation for further design and synthesis.

In the present study, a library of flavonoids from Cassia occidentalis L. was docked against DENV protease 3L6P of Serotype-1. When the ligands and the protein is docked together, Autodock Vina searches for the best confirmation of the complex with the least binding energy and hence the highest stability. In this way, it gives an output file of 8 best-ranked models with different binding affinities in -kcal/mol. The confirmation which is ranked first has the least binding affinity and is considered to be the best possible orientation that can be obtained in docking.

The results indicated potent inhibitory activity of the flavonoids with Chryso-obtusin as lead molecule with the binding affinity of -14.1kcal/mol. It is ranked first with the Hydrophobic interactions- Tyr-211 Gly-203 Gly-201 Ser-213 Val- 212 Asn-202 Tyr-200 Gly-183 Pro-182 and Hydrophilic interactions- Ser-185 Thr-184 (Fig 1). This is followed with Cassiollin(- 10.3 kcal/mole), Islandicin(-10.3kcal/mole), Funiculosin(-10.2kcal/mole), Chrysoeriol(-10.1kcal/mole), 1,8-Dihydroxyl-3-methyl anthraquinone(-9.8kcal/mole), Helminthosporin(-9.8kcal/mole) and Chrysarobin(-9.7kcal/mole) as mentioned in Table II.

Thus it can be concluded that these compounds could be used as potential drugs against dengue virus NS2B/NS3 protease of Serotype-1. Furthermore, studies can also be designed to synthesize these compounds or the chemically modified compounds of these molecules and could be used as potential drugs against the dengue virus.

REFERENCES


IMPACT OF MODERNIZATION ON ETHNO-MEDICINE AND CULTURE IN NORTH-EAST INDIA: AN OVERVIEW

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Department of Botany, Madhab Choudhury College, Barpeta, Assam, India

INTRODUCTION

North-east India is lies between Eastern Himalayas and Indo-Burma biodiversity hotspots, is a treasure house of medicinally and economically valuable plants. North-east India is home to a large number of tribal communities with rich culture and traditional knowledge, which has great significance. The North-East of India is well known for its recognizable culture and ethnic lifestyle. North-Eastern states offer a mixture of cultures from various religions viz. Hindu, Muslim, Christianity, and Buddhism; North-Eastern states have their own unique traditional identities like folk dance, food, and crafts. Various tribal communities of the North-Eastern states of India perform ethnic practices for healing or remedial purposes. Ethnic practices provide various remedial measures against a wide range of diseases among children as well as adults of different communities in North-East India. Ethnic-medicine or traditional healing system is governed by a tradition that has been developed through time in the perspective experiences of the people.

The depth of their traditional knowledge can be understood by the fact that many of the Ethno-medicinal plants used by these tribes are yet to be explored. These plants are enriched with various valuable phytochemicals viz., saponins, alkaloids, sterols, glycosides, terpenoids; which have tremendous medicinal values, are used to produce drugs or medicine to cure a variety of infectious and non-infectious diseases. The people of North-East India acquired the knowledge of using these plants in the recipe gives a clear idea about the relationship of man and nature from time immortal. The claims incorporated in the present study may be extended for further scientific investigation in the area of pharmacology which may raise new pharmaceutical medicine. In the era of modernization, the newer generations are showing less interest to acquire their community culture and traditional knowledge of Ethno-medicine due to western influence, which results in pitfall and disappearance of traditional education.

This paper deals with the pitfall of Ethno-medicinal plants and the traditional culture of North-East India due to modernization. North-east India is an unexplored paradise, but its traditional culture and knowledge decline day by day due to ignoring its significance by new generations. To enhance the ethnic practices and continue to transfer traditional knowledge from the older generation to younger ones, people just need to be understood its importance. Through this paper, I want to make people socio-politically aware to take potential steps to conserve sustainably the traditional education and culture.
Responsible Research and Innovations emphasizes socio-economic issues. We just need to adopt responsible research and innovation practices to achieve the goal of sustainable conservation (Burget et al., 2017).

**METHODODOLOGY**

This critical review is carried through published data on traditional dance and ethno-medicinal plants of northeast India. All the information and data collected from the online bibliography databases such as Scopus, Google Scholar, and Web of science.

**ETHNO-MEDICINAL PLANTS OF NORTH-EAST INDIA**

North-east India is known for its richness in biodiversity, including various plant communities that have great commercial and medicinal significance. The medicinal properties shown by different medicinal plants are due to the phytochemicals present in the plant. Medicinal plants have bioactive compounds known as phytochemicals that play an important role in curing and healing various diseases in humans. In the preliminary investigation, it was found that commonly some plant species used or consumed by ethnic tribe having a medicinal impact on various respiratory problems and reproductive health. Some plant species viz., Allium chinense, Juglans regia, Eryngium foetidum, Ageratina adenophora, Elsholtzia blanda, Perilla frutescens, Mentha sicata, Zingiber officinale has found to be enriched with medicinal values against respiratory problems (Singh et al., 2015). These plant species are a rich source of vitamin C, polyphenol, phytosterol and flavonoids, antioxidants. Some plants viz., Ipomoea paniculata, Cynodon dactylon, Emblica officinalis, Cocos nucifera, Hibiscus rosasinensis, Musa paradisiaca, Bauhinia purpurea, Adhatoda vasica, Nymphaea rubra has found to be enriched with medicinal values to maintain reproductive health (Dwivedi et al., 2017). These plants are widely utilized for the treatment of common gynecological problems among women of different age groups. Some traditional remedial plant species contain antiviral properties that can be used to treat COVID-19(Amber et al., 2017).

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>Plant species</th>
<th>Parts used</th>
<th>Recipe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Achyranthes aspera</em></td>
<td>Herb/Whole Plant</td>
<td>Plant decoction is given</td>
</tr>
<tr>
<td>2</td>
<td><em>Cannabis sativa</em></td>
<td>Herb/Leaves, Seeds</td>
<td>Leaves and seed extract with pepper, cumin seeds and cardamom is given</td>
</tr>
<tr>
<td>3</td>
<td><em>Desmodium gangeticum</em></td>
<td>Herb/Root</td>
<td>Extract of root is given</td>
</tr>
</tbody>
</table>

Table: Some Plant species and recipe used to treat viral disease in North-East India

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Research Papers Presented at the 7th LSME International Research Conference on
‘Role of Management, Education and Social Sciences in Responsible Research and Innovations: Challenges and Realities’
<table>
<thead>
<tr>
<th>No.</th>
<th>Plant Name</th>
<th>Type</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td><em>Desmodium elegans</em></td>
<td>Herb/Whole Plant</td>
<td>Extract of plant is used</td>
</tr>
<tr>
<td>5</td>
<td><em>Ephedra gerardiana</em></td>
<td>Shrub/Whole Plant</td>
<td>Powder of the crushed plant and some time its tea is used for relaxation of bronchial muscles</td>
</tr>
<tr>
<td>6</td>
<td><em>Euphorbia hirta</em></td>
<td>Herb/Whole Plant</td>
<td>Decoction of plant is used</td>
</tr>
<tr>
<td>7</td>
<td><em>Indigofera tinctoria</em></td>
<td>Shrub/Whole Plant</td>
<td>Extract of plant is used</td>
</tr>
<tr>
<td>8</td>
<td><em>Lantana camera</em></td>
<td>Shrub/Whole Plant</td>
<td>Decoction is given</td>
</tr>
<tr>
<td>9</td>
<td><em>Ocimum basilicum</em></td>
<td>Herb/Leaves</td>
<td>Decoction of leaves is given</td>
</tr>
<tr>
<td>10</td>
<td><em>Taxus wallichiana</em></td>
<td>Tree/Leaves</td>
<td>Leaves extract is given</td>
</tr>
</tbody>
</table>

**VARIOUS TRADITIONAL CULTURE OF NORTH-EASTERN STATES OF INDIA**

North East India is an unexplored paradise and one of the best places to visit, who loves natural beauty. North East India comprises 7 contiguous states Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland, and Tripura, Hence, also known as the Seven Sister States of India with one brother state viz., Sikkim and some region of Bengal as Darjeeling, Jalpaiguri, and Koch Bihar. North-east India is one of the most treasured and Eco-friendly regions in India with various tribes and their traditional cultures.

Some Traditional dance of North-eastern states of India:

- **Bardo Chham** is a famous traditional dance of Arunachal Pradesh that is performed by the sherdrukpen tribes from the west kameng district. The people wear masks representing twelve different animals and perform using many musical instruments (Bashel, 2018).
- **Ponung dance** is a culture of Arunachal Pradesh that is performed during harvest time by women using musical instruments (Bashel, 2018).
- **Wancho dance** is a culture of Arunachal Pradesh that is performed during Oriah festivals. In this dance men will be holding a sword in their hands and perform dances by thrusting the swords, then women start dancing (Bashel, 2018).
- **Bihu** is a dancing culture followed in Assam that is performed during the Bihu festival by young people, they play music by holding pipes and drums and dance in a circle formation, its symbolizes love and affection (Kashyap, 2016).
- **Bagurumba dance** is performed in Assam during festivals that are performed by women with the help of instruments like drums and flutes. The dance is inspired by nature (Bavle et al., 2016).
Jhumur dance is performed in Assam by both men and women. Women place their arms around the waist of the next dancer and sway together and men perform music using the instruments. They dance to gain energy (Biswas, 2018).

Ojapali is a traditional dance of Assam that contains the song, dance, and story narration, it is performed by a group of men (Nath, 2021).

Nongkram Dance is performed in Meghalaya by both men and women, which is performed in May and November. The dance is performed to give their respect towards their god (Majumder, 2017).

Hojagiri dance is performed during festivals like Lakshmi pooja and Durga pooja in Tripura. The dance is performed by women by balancing bottles or lamps on their heads, men play music with the musical instruments.

Dhol Cholom is performed by men by using the drum in Manipur. It is performed during the Holi festival to show their happiness, they also do acrobatic stunts while playing the drums (Devi, 2020).

Cheraw dance is a dance that is performed between the bamboo staves in Mizoram. The men move in the horizontal and vertical direction and women dance between them. The main task in the dance is that they must not get caught between the staves.

Chang Lo is the dance that is performed to celebrate the victory by defeating enemies in Nagaland. The dance is performed by wearing warrior dress by men and women support their men.

Maruni is the dance that is performed during wedding times in Sikkim, men and women wear a colorful dress. A joker called Dhatu Waray performs to add fun to the dance, nine different musical instruments called Naumati Baja is used in the performance (Chaudhuri et al., 2020).

IMPACT OF MODERNIZATION ON ETHNO-MEDICINE AND TRADITIONAL CULTURE

Every place has its own identity and significance, The North-East India is famous for its richness in biodiversity, traditional culture, and ethnic knowledge, which is transfer generation after generation among the people of tribal communities living in North-eastern states. The people of North-East India practicing these culture and tradition generation after generation, which makes North-East India, an ethnic heritage. These traditional practices have great significance in it but most of them are yet to be explored. In the 21st century, the era of modernization, the people of new generations are showing less interest in practicing their Traditional culture, Ethno-remedial knowledge, which results in the disappearance of many unexplored cultures and remedial knowledge, which ultimately leads to the pitfall of Traditional Culture and Ethno-medicine in the name of modernization.

The people who are practicing these culture and remedial knowledge, found to be stronger, having more stamina, better fertility, better immune system, live longer as compared to those people who are choosing modernization over these practices. Hence, in order to live longer and
enhance disease resisting ability, we must practice these traditional practices and consider their significance.

CONCLUSION

As the surrounding environment changes day by day, humans should learn from their past and need to consider their traditional knowledge as a base of modernization rather than ignoring its significance. Recently, the whole world facing COVID-19 pandemic, which is considered as a human-made virus, threatened humankind in an unprecedented way, but it was observed that the people of Northeastern states are less involved as compared to other states of India due to their significant traditional knowledge and practices.

The traditional knowledge and culture are developed by our forefathers through time by observing the nature. Hence, we just need to carry both the traditional education and modern aspects in a balanced way, by adopting responsible research and innovation practices to make life more comfortable.
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HERITABILITY AND GENETIC ADVANCE STUDY FOR GRAIN YIELD AND RELATED ATTRIBUTES IN HUSKED WHEAT (*Triticum aestivum*)

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INTRODUCTION

*Wheat* (*Triticum aestivum*) is the oldest crop in the world. It was the first cereal to be domesticated in South-East Turkey around 10,000 years ago. India is the world’s second-largest wheat producer, and it accounts for more than the world’s 10% wheat production. It sums up to roughly 612.56 million metric tons per year, about 12 million metric tons less than 2003-2004 crop season (624.51 million metric tons) (Shoran et al., 2005). The higher growth rate witnessed in wheat production has dropped from 3.57% in the 1980s to 2.11% in the 1990s and below 1% in the current decade and downward trend may continue in the absence of new technological advances. The demand projection of wheat for 2020 has been variously estimated to be between 91.1 and 95.6 million metric tons (Shoran et al., 2005). Therefore, the wheat output needs to grow annually by at least 2% to keep pace with the rise in demand due to the increasing population. Hence, this increase in production has to come from the increased productivity per unit area.

Wheat is genetically described as a diploid (containing two sets of chromosomes). The complete set of numbering 42 chromosomes (2n = 6x). It is hexaploid. It has six copies of its seven chromosomes. So, the wheat is an allohexaploid (an allopolyploid with six sets of chromosomes) 2n = 6x, free threshing wheat is closely related to spelt. So hexaploid wheat is developed through hybridization and doubling of chromosomes. Since the ideal temperature for wheat cultivation is 21 to 26 °C and 50 to 75 cm of rainfall, it is an essential crop in the temperate region. It is used as a stable food in these regions. Keeping in mind the utility, sustainable productivity under particular environment condition, and adopting appropriate breeding methodology to achieve anticipated advancement in productivity is of vital significance. However, wheat has gluten (a form of protein) present in it, which raises insulin dramatically. The small intestine is unable to digest the gluten. Wheat also causes another human disease - increases obesity, heart disease, expand celiac disorder.

MATERIAL AND METHOD

In the present study, twelve, genetically diverse genotypes of husked wheat were intermated in all possible combination excluding reciprocals. The parents, along with F1 and F2 progenies, were evaluated in a Randomized Block design (RBD) with three replications. A single row of parents and F1 and double rows of F2 were sown during 2017 to 2018. Inter plant spacing was maintained at
3 cm in a row of 5 m length. All the required anatomical practices were adopted to grow a good crop. The observations on grain yield and related parameters viz: plant height, days to reproductive phase, number of productive tillers per plant, length of spike, grain per spike, spikelets per spike, biological yield per plant, harvest index, grain yield per plant, grain weight per spike and 1000-grain weight on five plant, basis in parents in F1 generation whereas 20 plants in F2 generation basis were recorded. The mean was subjected to various statistical and biometrical analysis as per Hayman (1954). The analysis of the heritability based on genetic components was worked out according to the method by Crumpacker and Allard (1984) and genetic advance by Johnson et al., (1955).

Table 1: Heritability and genetic advance estimates for yield related attributes in F1 and F2 generation of wheat

<table>
<thead>
<tr>
<th>Characters:</th>
<th>Means</th>
<th>Heritability (narrow senses %)</th>
<th>Genetic Advance</th>
<th>Genetic Advance (in % over mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F1</td>
<td>F2</td>
<td>F1</td>
<td>F2</td>
</tr>
<tr>
<td>Plant height (cm)</td>
<td>90.63</td>
<td>89.77</td>
<td>66.13</td>
<td>58.04</td>
</tr>
<tr>
<td>Days to reproductive phase</td>
<td>47.23</td>
<td>45.71</td>
<td>47.99</td>
<td>53.43</td>
</tr>
<tr>
<td>No. of tillers per plant</td>
<td>18.28</td>
<td>17.48</td>
<td>20.84</td>
<td>14.14</td>
</tr>
<tr>
<td>No. of grain per spike</td>
<td>54.29</td>
<td>55.40</td>
<td>31.602</td>
<td>38.55</td>
</tr>
<tr>
<td>Length of spike</td>
<td>9.79</td>
<td>9.08</td>
<td>15.58</td>
<td>14.55</td>
</tr>
<tr>
<td>No. of spikelets per spike</td>
<td>22.37</td>
<td>20.71</td>
<td>43.38</td>
<td>30.22</td>
</tr>
<tr>
<td>Biological yield per plant</td>
<td>83.00</td>
<td>76.95</td>
<td>24.23</td>
<td>31.36</td>
</tr>
<tr>
<td>Harvest index (in percentage)</td>
<td>37.60</td>
<td>34.42</td>
<td>41.93</td>
<td>41.44</td>
</tr>
<tr>
<td>Grain yield per plant (grams)</td>
<td>31.02</td>
<td>26.55</td>
<td>37.90</td>
<td>28.09</td>
</tr>
<tr>
<td>Grain yield per spike (grams)</td>
<td>2.90</td>
<td>2.56</td>
<td>7.10</td>
<td>12.64</td>
</tr>
<tr>
<td>1000 grain weight (grams)</td>
<td>50.60</td>
<td>46.72</td>
<td>23.5</td>
<td>12.7</td>
</tr>
</tbody>
</table>

RESULTS AND DISCUSSION

High heritability estimate, i.e., more than 30% were observed for plant height, days to reproductive phase, the number of grains per spike, spikelets per spike and harvest index in both the generations and for grain yield per plant in F1 and biological yield per plant in F2 generation.
due to more contribution of additive genetic components. The results are in accordance with Prasad, et al., (2006) study the genetic parameter under different environmental condition in wheat. According to them, moderate heritability (10% to 30%) was observed for tillers per plant, length of the spike and 1000-grain weight in both generations and grain weight per spike in F2 generation which were in accordance with the report of Pawar et al., (2003) about genetic variability and heritability in wheat. The contribution of non-additive components was significant for controlling traits like grain weight per spike. In F1 generation, it is evident from low heritability in F1 generation (7% to 10%). This finding follows the results reported by Katiyar (2003) and Kumar and Ahmad (1987). The genetic advance for 5% intense selection showed that an advancement of 6.98 grams based on F1 and 5.92 based on F2 were expected per cycle of selection for economic attribute like grain yield/ plant. Accordingly, for 1000 grain weight an advancement of approximately 3 grams was also estimated. Association Study Pooled over environment revealed that a number of productive tillers per m², grain weight per spike, 1000-grain weight, harvest index is associated (highly, significantly and positively) with grain yield per plant. The implications on breeding methodologies have been discussed for practical utility in improving the highly selected base material in spring wheat, under an irrigated situation.

The expectation for advancement in grain weight per spike and length of spike was quite meager. Considering genetic advancement in percentage over mean, maximum advancement to the tune of approximately 42% was estimated for grains per spike whereas an approx. of 22% to 25% grain was estimated for plant height, days to reproductive phase, harvest index and grain yield per plant. However, meager grain (below 10 %) was recorded for grain weight per spike in F1, the length of the spike in F2, and 1000-grain weight in both generations. Generic advance is confirming to the heritability. It is very difficult in certain cases to differs the phenotypic standard deviation. The number of grains per main spike was observed as most important character while good for selection for high grain yield. The highly heritable attributes may be improved through progeny selection, whereas attributes like grain weight per spike are required to be subjected to bulk selection followed by progeny selection.

Considering heritability estimates, the economic attributes like grain yield were moderate to high quantified non-additive gene action involved in considerable proportion. Hence for improvement in grain yield, the progeny selection followed by biparental mating would be appropriate. After statistical analysis of the individual environment revealed a significant difference between the above ten attributes’ genotype.

CONCLUSION

The analysis of variance indicated a significant difference in the treatment of 12 characters given above. Parents vs F1 reveals a significant difference for plant height, days of reproductive phase, number of tillers per spike, number of grains per spike, length of spike, number of spikelets per spike, biological yield per plant, harvest index, grain yield per plant, grain weight per spike, 1000-grain weight exhibiting the considerable amount of heterotic response in these traits. High

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estimates of heritability were observed for peduncle length, spike area, number of tillers per plant, number of grains per spike, length of spike, number of spikelets per spike, harvest index etc. Moderate heritability values were recorded in the rest of 3 characters (grain yield per plant, 1000-grain weight and grain weight per spike).

High estimates of heritability were recorded for grain filling period and grain weight per spike at all the locations and in the pooled basis. Other traits exhibited low to moderate heritability estimates. The genetic grain was moderate in grain filling period while other traits revealed low genetic grain.

REFERENCES


Kumar et al. (2014) heritability in the broad sense plays an important role in deciding the suitability and strategy for selection of character.


Munir et al (2013) reported that salinity also affected the heritability of wheat genotype.


MICROWAVE ASSISTED ORGANIC SYNTHESIS: WORKING METHODOLOGY OF GREEN CHEMISTRY

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INTRODUCTION

The microwave assisted methods by which small molecules are built up into large polymers in a fraction of time when compared to thermal methods ensuring the acceptance of Microwave assisted irradiation reactions as a valuable tool for acceleration of a wide variety of organic molecules development. The methods for synthesis of organic compounds have continuously modified from the decade. Conventional method of organic synthesis usually needs longer heating time, tedious apparatus setup, which result in higher cost of process and the excessive use of solvents/ reagents lead to environmental pollution. Microwave Assisted Organic Synthesis (MAOS), which has developed in recent years, has been considered superior to traditional heating. Microwave assisted organic synthesis (MAOS) has emerged as a new “lead” in organic synthesis. The technique offers simple, clean, fast, efficient, and economic for the synthesis of many organic molecules. In the recent years’ microwave assisted organic reaction has emerged as new tool in organic synthesis. Important advantage of this technology is:

- Highly accelerated rate of the reaction
- Reduction in reaction time
- Improvement in the yield of the product.
- Pollution free

Now day’s technique is considered as an important approach toward green chemistry, because this technique is more environmentally friendly. This technology has large impact on:

- Fields of screening
- combinatorial chemistry
- medicinal chemistry
- Drug development.

This growth of green chemistry holds significant potential for a reduction of the by product, a reduction in waste production and a lowering of the energy costs. Due to its ability to couple directly with the reaction molecule and by-passing thermal conductivity leading to a rapid rise in the temperature, microwave irradiation has been used to improve many organic syntheses.
PRINCIPLES OF GREEN CHEMISTRY

The basic principle behind the heating in microwave oven is due to the interaction of charged particle of the reaction material with electromagnetic wavelength of particular frequency. The phenomena of producing heat by electromagnetic irradiation are ether by collision or by conduction, some time by both. All the wave energy changes its polarity from positive to negative with each cycle of the wave. This cause rapid orientation and reorientation of molecule, which cause heating by collision. If the charge particles of material are free to travel through the material (e.g. Electron in a sample of carbon), a current will induce which will travel in phase with the field. If charge particle is bound within regions of the material, the electric field component will cause them to move until opposing force balancing the electric force.\(^3\)\(^-\)\(^7\) The twelve principles of Green Chemistry

- Prevent waste
- Maximize atom economy
- Design less hazardous chemical syntheses
- Design safer chemicals and products
- Use safer solvents and reaction conditions
- Increase energy efficiency
- Use renewable feedstocks
- Avoid chemical derivatives
- Use catalysts, not stoichiometric reagents
- Design chemicals and products to degrade after use
- Analyse in real time to prevent pollution
- Minimize the potential for accidents

MICROWAVE HEATING MECHANISM AND COMPARISON WITH CONVENTIONAL HEATING

Heating reactions with traditional equipment, such as oil baths, sand baths and heating mantles are not only slow, but products, substrates and reagents often decompose also over time. It depends on the thermal conductivity of the various materials that must be penetrated, and results in the temperature of the reaction vessel being higher than that of the reaction mixture.
Microwave energy, in contrast, is introduced into the chemical reactor remotely and passes through the walls of the reaction vessel heating the reactants and solvents directly. In microwave Superheating can be generated rapidly in closed transparent materials, such as borosilicate glass, quartz, or Teflon, to temperatures as high as 100°C above the normal boiling point of a particular solvent. For every 10°C increase in temperature, the rate of the reaction is approximately doubled.

Microwave-enhanced chemistry is based on the efficient heating of materials by “microwave dielectric heating” effects. This phenomenon is dependent on the ability of a specific material (solvent or reagent) to absorb microwave energy and convert it into heat. Microwave-enhanced chemistry is based on the efficient heating of materials by “microwave dielectric heating” effects. This phenomenon is dependent on the ability of a specific material (solvent or reagent) to absorb microwave energy and convert it into heat.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Conventional heating</th>
<th>Microwave assisted heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reaction mixture heating proceeds from an inside surface of reaction vessels</td>
<td>Reaction mixture heating proceeds directly inside mixture.</td>
</tr>
<tr>
<td>2</td>
<td>The vessel should be in physical contact with surface of a higher temperature source (e.g. electric plate heater, oil bath, heating mantle, steam bath, sand bath etc.)</td>
<td>Vessel is kept in microwave cavities.</td>
</tr>
<tr>
<td></td>
<td>Heating is achieved using both thermal and electric source.</td>
<td>Heating takes place by electromagnetic waves.</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>4</td>
<td>Heating mechanism involves conduction.</td>
<td>Heating mechanism involves dielectric polarization (dipolar polarization) and conduction.</td>
</tr>
<tr>
<td>5</td>
<td>Transfer of energy occurs from the wall, surface of vessel, to the mixture and eventually to the reacting species.</td>
<td>The core mixture is heated directly while surface (vessel wall) is a source of loss of heat.</td>
</tr>
<tr>
<td>6</td>
<td>The highest temperature (for an open vessel) that can be achieved is limited by boiling point of particular mixture or solvent.</td>
<td>The temperature of mixture can be raised above its boiling point.</td>
</tr>
<tr>
<td>7</td>
<td>Heating is done from outside; therefore, the core of the solvent may be as much as 5°C cooler than at the edges.</td>
<td>The core is 5°C hotter than the outside, because of surface cooling. Therefore in microwave heating, we can raise the boiling point of solvent by as much as 5°C, an effect known as super heating.</td>
</tr>
<tr>
<td>8</td>
<td>There may be more by-products &amp; more chances of decomposition of products, substrates and reagents</td>
<td>A properly designed vessel allows the temperature increase to be uniform throughout the sample, leading to fewer by-products and/or product decomposition.</td>
</tr>
<tr>
<td>9</td>
<td>The heating procedure is controlled to a lesser extent.</td>
<td>The heating procedure is highly controlled since the energy input starts and stops immediately when the power is turned on or off, respectively.</td>
</tr>
<tr>
<td>10</td>
<td>There may be unwanted side reactions, so final product is less pure</td>
<td>Reduction in unwanted side reactions. (Reaction Quenching), so purity of the final product is high.</td>
</tr>
<tr>
<td>11</td>
<td>Environmental heat loss is more.</td>
<td>Environmental heat loss is saved.</td>
</tr>
<tr>
<td>12</td>
<td>Heating rate is less.</td>
<td>Heating rate is several folds high. Reactions which require many hours or even days to complete, have been accomplished in a minutes.</td>
</tr>
</tbody>
</table>
Average reaction time using conventional heating is 6 hours.

High efficiency of heating since specific component can be heated specifically. (More selective heating)

Large number of solvents are used which are hazardous and carcinogenic.

Microwave heating is also known as “GREEN SYNTHESIS” because: (i) Minimal amount of solvent is utilized. (ii) Use of water (supercritical water) in organic reaction, instead of organic solvent, as water in microwave acts as an excellent solvent.

Low investment costs.

High investment costs.

A few reactions which were carried out using microwave heating and compared with conventional heating indicating time efficiency of the technique are compiled in Table 2.

Table 2: Comparison of reaction times using microwave versus conventional heating

<table>
<thead>
<tr>
<th>Compound synthesized</th>
<th>Reaction time: Microwave</th>
<th>Reaction time: Conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methyl benzoate</td>
<td>5 minutes</td>
<td>8 hours</td>
</tr>
<tr>
<td>4-nitrobenzyl ester</td>
<td>2 minutes</td>
<td>1.5 hours</td>
</tr>
<tr>
<td>Zeolite synthesis</td>
<td>30 seconds</td>
<td>60 minutes</td>
</tr>
<tr>
<td>Cubanite</td>
<td>3 minutes</td>
<td>3 days</td>
</tr>
<tr>
<td>NaAlH₄</td>
<td>2 hours</td>
<td>8 hours</td>
</tr>
<tr>
<td>CuBi₂O₄</td>
<td>5 minutes</td>
<td>18 hours</td>
</tr>
<tr>
<td>Ag₃In</td>
<td>2 minutes</td>
<td>48 hours</td>
</tr>
</tbody>
</table>

All the wave energy changes its polarity from positive to negative with each cycle of the wave. This cause rapid orientation and reorientation of molecule, which cause heating by collision. If the charge particles of material are free to travel through the material, a current will induce which will travel in phase with the field. If charge particle is bound within regions of the material, the electric field component will cause them to move until opposing force balancing the electric force.
APPLICATIONS OF MICROWAVE ASSISTED SYNTHESIS

Application of microwave irradiation in chemical synthesis involves its use in the acceleration of chemical synthesis. Microwave-enhanced synthesis results in faster reactions, higher yields, and increased product purity. In addition, due to the availability of high-capacity microwave apparatus, the yields of the experiments have now easily scaled up from milligrams to kilograms, without the need to alter reaction parameters. Microwave-assisted synthesis can be suitably applied to the drug discovery process. Following reactions have been performed through microwave heating.

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Reaction</th>
<th>Sr.</th>
<th>Reaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Acetylation reaction(^{10})</td>
<td>18</td>
<td>Diel’s-Alder reaction(^{26})</td>
</tr>
<tr>
<td>2</td>
<td>Addition reaction(^{11})</td>
<td>19</td>
<td>Dimerization reaction(^{27})</td>
</tr>
<tr>
<td>3</td>
<td>Alkylation reaction(^{12})</td>
<td>20</td>
<td>Elimination reaction(^{11})</td>
</tr>
<tr>
<td>4</td>
<td>Alkynes metathesis(^{13})</td>
<td>21</td>
<td>Esterification reaction</td>
</tr>
<tr>
<td>5</td>
<td>Allylation reaction(^{14})</td>
<td>22</td>
<td>Enantioselective reaction(^{28})</td>
</tr>
<tr>
<td>6</td>
<td>Amination reaction(^{15})</td>
<td>23</td>
<td>Halogenation reaction</td>
</tr>
<tr>
<td>7</td>
<td>Aromatic Nucleophilic substitution reaction(^{16})</td>
<td>24</td>
<td>Hydrolysis reaction</td>
</tr>
<tr>
<td>8</td>
<td>Arylation reaction</td>
<td>25</td>
<td>Mannich reaction(^{29})</td>
</tr>
<tr>
<td>9</td>
<td>Carbonylation reaction(^{17})</td>
<td>26</td>
<td>Oxidation reaction(^{30})</td>
</tr>
<tr>
<td>10</td>
<td>Combinatorial reaction(^{18})</td>
<td>27</td>
<td>Phosphorylation synthesis(^{31})</td>
</tr>
<tr>
<td>11</td>
<td>Condensation reaction(^{19})</td>
<td>28</td>
<td>Polymerization reaction(^{32})</td>
</tr>
<tr>
<td>12</td>
<td>Coupling reaction(^{20})</td>
<td>29</td>
<td>Rearrangement reaction</td>
</tr>
<tr>
<td>13</td>
<td>Cyanation reaction(^{21})</td>
<td>30</td>
<td>Reduction reaction(^{33})</td>
</tr>
<tr>
<td>14</td>
<td>Cyclization reaction(^{22})</td>
<td>31</td>
<td>Ring closing synthesis(^{34})</td>
</tr>
</tbody>
</table>
FUTURE TRENDS

A common requirement associated with the introduction of a new technology is the possibility to scale-up the respective processes, first to a pilot plant-scale and eventually to the production scale. The aim of using microwave processing is to accelerate reactions in order to avoid disadvantageous reaction parameters (i.e., long reaction times, secondary reaction time, solvent use, excess components etc.). A further goal for process improvement is to transfer a batch operation to a continuous operation after they have undergone a process analysis. For this purpose, usually the first step is to repeat the known reaction conditions used in the conventional reactions in the microwave field.

CONCLUSION

In conclusion, in this review we have attempted to show how microwave irradiation can be used under green and sustainable conditions. Rather than providing a comprehensive review, we have tried to highlight the green applications of this methodology and the synergy with other green conditions. The most obvious advantage, namely energy efficiency, requires a strong absorption of microwave irradiation by one component of the reaction mixture—either the solvent, reagents, catalyst or a susceptor. In addition to energy efficiency, the application of microwaves in conjunction with other green conditions, e.g. solvent-free reactions, reactions in water or neoteric solvents, has enabled the green applications of this methodology to be expanded.

REFERENCES


INTRODUCTION

Bacterial vaginosis (BV) is the most common vaginal disorders of women of childbearing age. The major symptom of BV is a malodorous, thin vaginal discharge or local irritation. Although a mild disease (Amsel et al., 1983), it can cause obstetric infections, many adverse consequences of pregnancy, and pelvic inflammatory diseases (Eschenbach et al., 1988) as well as increased probability of developing sexually transmitted diseases. Thus, finding novel potential vaccine candidates to prevent bacterial vaginosis becomes extremely important, in consideration to its grave impact on women’s health. Therefore, the motivation for the responsible research & innovation (RRI) in the present study was to predict potential vaccine candidate proteins against the dreadful disease of bacterial vaginosis—a major societal challenge.

BV is characterized by an increase in vaginal pH to greater than 4.5 and the resident Lactobacillus species are replaced by a substantial increase of anaerobic bacteria including Gardnerella vaginallis, Atopobium vaginae, and Mobiluncus sp. (Fredricks et al., 2005). The bacteria related to BV have been shown to form a prolific polymicrobial biofilm, that adheres to the vaginal epithelium and G. vaginalis was found to be its main constituent. This biofilm has been found to be involved in the pathogenesis of bacterial vaginosis (Swidsinski et al., 2005).

Until 1980, Gardener specified that G. vaginalis vaginitis is a precisely defined, specific vaginal infection that accounts for most vaginitis earlier classified as nonspecific. The pathogenic role of G. vaginalis was controversial due to the earlier failures for its detection in blood cultures and urinogenital specimens, but this inadequacy was improved in subsequent studies (Spiegel, 1991). Many studies have well described the role of G. vaginalis in BV disease (Hill, 1984). G. vaginalis has been isolated from up to 95% of BV cases, and infection with $2 \times 10^9$ bacteria from pure culture produced BV in 5 out of 9 women thus inoculated (Patterson et al., 2007). It has also been reported that G. vaginalis has the highest virulence potential due to higher initial adhesion and cytotoxicity of epithelial cells (Alves et al., 2014).

The cells of G. vaginalis are small, non-motile, gram-variable, pleomorphic rods that do not possess flagella, endospores, or typical capsules. But, it has been reported that G. vaginalis growing in cultures of patients’ blood specimens for 48-h were found as mainly gram positive (Legrand et al., 1989).
There have been some serious attempts of conventional vaccinology to develop a vaccine against BV, for example, Siboulet, et al., 1991 reported vaccination with Gynatren in 1991, but it was a *Lactobacillus* vaccine, developed for nonspecific vaginosis. Then, Yan et al, developed an ‘inactivated’ vaccine of *Gardnerella vaginalis* of fox in 1997. But, till now, there is no report of a vaccine with ‘targeted’ antigenic protein against a specific pathogen like *G. vaginalis*.

Different antibiotics or antimicrobial agents have also been reported for the treatment of BV, but their efficacy has not been found optimal due to some side effects or frequent relapse after treatment (Menard J-P, 2011). Thus, it can be concluded that there is a significant need to develop an efficient and target specific subunit vaccine for BV, which overcomes the limitations of conventional vaccine development methods and other therapeutic methods. With the availability of genomic sequences and rapid progressions in the field of bioinformatics, the task of efficient vaccine development has become easier. So, the access of sequence data is an essential prerequisite when pursuing bioinformatic innovations and is therefore important when pursuing RRI.

As it is termed, reverse vaccinology includes *in silico* analysis of whole proteome of the pathogen, which leads to discovery of novel antigens, irrespective of their abundance in cell, *in vitro* expression and immunogenicity during infection. The important parameters for the analysis of potential vaccine candidate include sub-cellular localization, number of trans-membrane helices, adhesion probability, ability to bind to MHCs and dissimilarity with human, mouse and pig proteome.

Thus, data mining of different parameters and the pivotal role of biological data in bacterial vaginosis related innovations in the present bioinformatic study clearly exemplifies the concept of RRI: from science in society to science for society, with society (Owen et al., 2012).

**MATERIAL & METHODS**

**Prediction of Core Proteome:** The identification of pan and core genome of 3 strains of *G. vaginalis* was performed using reciprocal BLAST search method by the EDGAR 2.0 software. At the time of writing, genome sequences of 3 strains of genus *Gardnerella* were available, which have been used in this study. These include: *G. vaginalis 409-05* (NC_013721), *G. vaginalis ATCC 1409* (NC_014644) & *G. vaginalis HMP9231* (NC_017456).

**Predicting protein subcellular localization:** The core proteome of all 3 strains of *G. vaginalis* was subjected to Vaxign and CELLO v.2.5 softwares, which classified the proteins as cytosolic (CYT), extracellular (EXC), outer membrane (OMB), inner membrane (IMB) and proteins localized in cell wall. Since *G. vaginalis* is gram-variable, thus predictions were done considering the bacterium as gram-positive and gram-negative separately.
**Prediction of vaccine candidates:** Core proteome was subjected to Vaxign to predict potential vaccine candidates. The candidate proteins were filtered based on the following criteria: adhesion probability of 0.5 or more, number of trans-membrane helices <2 and no similarity with human, mouse and pig proteome.

**Prediction of function of uncharacterized genes** was done using using SVM (Support Vector machine) Prot web server.

**Prediction of Linear B-Cell Epitopes** was done using BCpred using default parameter of 75 % specificity. Class I MHC & Class II MHC binding of the epitope was done using ProPred-I and ProPred respectively, with 1% threshold.

**Prediction of essential genes** was done by Geptop Web Server (http://cefg.uestc.edu.cn/geptop/).

**Prediction of hydrophobic residues** was done using Helixator tool and Web Based Hydropathy and Amphipathicity predictions (WHAT 2.0). The coiled coil domains were predicted using Waggawagga (https://waggawagga.motorprotein.de/) tool.

**Prediction of surface accessibility, hydrophillicity, flexibility and beta-turn** was done using Immune Epitope Database –Analysis Resource (IEDB-AR, tools.iedb.org/main). The tools included Emini surface accessibility prediction, Parker hydrophilicity scale, Karplus and Schulz flexibility scale and Chou and Fasman beta-turn prediction tool. All the analysis was done with default parameters (i.e., at threshold value of 1.0).
Allergenicity assessment was done using AllerHunter tool.

The basic outline of the methodology followed is illustrated in Fig. 1.

**RESULTS**

The core genome of *Gardnerella vaginalis* consisted of 959 CDSs (coding sequences) and the pan-genome consisted of 1772 CDSs with *G. vaginalis* (NC_013721) used as the reference genome (Fig. 2A). As seen in Fig. 2B, the drastic drop of the core genome size with the introduction of *Gardnerella vaginalis 409-05* (NC_013721) is clearly visible.
Fig. 2 (a) The Venn diagram of three *Gardnerella* genomes, depicting the number of singleton genes (red, green, and blue areas) of the respective genome and the core genome (centered gray shape). The numbers in the areas are the genes in every subset of the dispensable genome. Core versus Pan development plot of 3 *Gardnerella vaginalis* genomes. The numbers in circles denote the core genes with the numbers in parenthesis stating the no. of CDSs (in key for the plot).

The core proteome (amino acid sequences of core genes of core genome) was then subjected to Vaxign analysis and considering the fact that *G. vaginalis* is Gram-variable; therefore, predictions were done using both gram positive and gram-negative possibilities (Table 1, 2 & 3, 4). Cytoplasmic proteins and extracellular proteins which were localized in cell wall and outer membrane, having adhesion probability more than ≥0.5, having trans membrane helices ≤2 and with no homologs present in human, mouse and pig were selected only.

The selected proteins after Vaxign analysis (obtained from predictions considering *G. vaginalis* as both gram positive and gram negative) were also investigated for detection of B-cell epitopes as well as their binding affinity with different Class-I & Class-II MHC alleles (Table 5 & 6). Two proteins common in both the predictions: Protease Associated domain-containing protein (HMPREF0424_0423, length: 2042 a.a) & LPXTG-motif cell wall anchor domain-containing protein (HMPREF0424_1196, length:3173 a.a) were found. Thus, further characterization of epitopes was restricted to these two proteins only.

The hydropathy plots of these two selected proteins was done and it was found that these proteins consist of only two transmembrane segments (data not shown here), which agrees with the presence of relatively less hydrophobic residues, as evident from their helical wheel diagrams given below in Fig. 3.
Fig. 3. Helical wheel diagrams of protein sequences of (a) HMPREF0424_0423 and (b) HMPREF0424_1196. The hydrophobic amino acid residues are represented by a dark blue color and hydrophilic residues are not colored.

Also, trimeric coiled coils were detected at position 102-150 and 854-902 in HMPREF0424_0423 and HMPREF0424_1196 respectively (Fig. 4 & 5).

Fig. 4 (a) Helical wheel view for 3 heptad repeats in a coiled coil predicted in protein sequence of HMPREF0424_0423, depicting possible residue interactions inside the predicted coiled-coil. (b)
Helical net plots showing selected sequence. The hydrophobic residues which form the charged interactions (between the alpha helical segments) have been written inside grey shaded blocks. Positively charged basic amino acids, shown in blue, while negatively charged acidic residues are shown in red. The black solid lines are strong interactions and the dashed grey ones are weak.

Fig. 5 (a) Helical wheel view for 3 heptad repeats in a coiled coil predicted in protein sequence of HMPREF0424_1196, depicting possible residue interactions inside the predicted coiled-coil. (b) Helical net plots showing selected sequence.

**Table 1:** Extracellular proteins/proteins localized in cell wall, having adhesion probability more than 0.5. (Predictions done considering *G. vaginalis* as gram-positive bacterium)

<table>
<thead>
<tr>
<th>Protein Accession</th>
<th>Protein Note</th>
<th>Localization Probability</th>
<th>Adhesion Probability</th>
<th>Trans-membrane helices</th>
<th>Protein Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMPREF04 24_1164</td>
<td>LPXTG-motif cell wall anchor domain-containing protein</td>
<td>0.926</td>
<td>0.559</td>
<td>2</td>
<td>597</td>
</tr>
<tr>
<td>HMPREF04 24_1196</td>
<td>LPXTG-motif cell wall anchor domain-containing protein</td>
<td>0.939</td>
<td>0.672</td>
<td>2</td>
<td>3173</td>
</tr>
</tbody>
</table>
Table 2: Extracellular proteins and proteins localized in the outer membrane, having adhesion probability more than 0.5. (Predictions done considering G. vaginalis as gram-negative bacterium)

<table>
<thead>
<tr>
<th>Protein Accession</th>
<th>Protein Note</th>
<th>Localization</th>
<th>Adhesion Probability</th>
<th>Trans-membrane helices</th>
<th>Protein Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMPREF04_24_0028</td>
<td>hypothetical protein</td>
<td>Outer Membrane</td>
<td>0.538</td>
<td>1</td>
<td>251</td>
</tr>
<tr>
<td>HMPREF04_24_0103</td>
<td>thiol-activated cytolysin</td>
<td>Extracellular</td>
<td>0.555</td>
<td>0</td>
<td>516</td>
</tr>
<tr>
<td>HMPREF04_21_21351</td>
<td>hypothetical protein</td>
<td>Extracellular</td>
<td>0.543</td>
<td>0</td>
<td>155</td>
</tr>
<tr>
<td>HMPREF04_21_21158</td>
<td>single-strand binding protein</td>
<td>Extracellular</td>
<td>0.612</td>
<td>0</td>
<td>213</td>
</tr>
<tr>
<td>HMPREF04_24_0399</td>
<td>NlpC/P60 family protein</td>
<td>Extracellular/Outer Membrane</td>
<td>0.572</td>
<td>1</td>
<td>240</td>
</tr>
<tr>
<td>HMPREF04_24_0423</td>
<td>PA domain-containing protein</td>
<td>Extracellular</td>
<td>0.621</td>
<td>2</td>
<td>2042</td>
</tr>
<tr>
<td>HMPREF04_21_20494</td>
<td>hypothetical protein</td>
<td>Extracellular</td>
<td>0.577</td>
<td>0</td>
<td>514</td>
</tr>
<tr>
<td>HMPREF04_21_20998</td>
<td>hypothetical protein</td>
<td>Extracellular</td>
<td>0.540</td>
<td>0</td>
<td>414</td>
</tr>
<tr>
<td>HMPREF04_24_0698</td>
<td>phage prohead protease, HK97 family</td>
<td>Extracellular</td>
<td>0.618</td>
<td>1</td>
<td>734</td>
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<tr>
<td>HMPREF92_31_0931</td>
<td>hypothetical protein</td>
<td>Outer Membrane</td>
<td>0.523</td>
<td>0</td>
<td>443</td>
</tr>
<tr>
<td>HMPREF04_24_0847</td>
<td>YjeF domain-containing protein</td>
<td>Extracellular</td>
<td>0.545</td>
<td>0</td>
<td>383</td>
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<tr>
<td>HMPREF04_21_20789</td>
<td>hypothetical protein</td>
<td>Extracellular/Outer Membrane</td>
<td>0.581</td>
<td>0</td>
<td>242</td>
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</table>
### Table 3: Cytoplasmic proteins having adhesion probability more than 0.5. (Predictions done considering *G. vaginalis* as gram-positive bacterium)

<table>
<thead>
<tr>
<th>Protein Accession</th>
<th>Protein Note</th>
<th>Localization Probability</th>
<th>Adhesion Probability</th>
<th>Transmembrane helices</th>
<th>Protein Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMPREF0424_0283</td>
<td>hypothetical protein</td>
<td>0.75</td>
<td>0.570</td>
<td>1</td>
<td>333</td>
</tr>
<tr>
<td>HMPREF0424_0309</td>
<td>ssDNA-binding protein</td>
<td>0.967</td>
<td>0.612</td>
<td>0</td>
<td>193</td>
</tr>
<tr>
<td>HMPREF9231_1058</td>
<td>ion protease S16 C-terminal proteolytic domain protein</td>
<td>0.967</td>
<td>0.510</td>
<td>1</td>
<td>297</td>
</tr>
<tr>
<td>HMPREF0424_0655</td>
<td>NMT1/THI5-like protein</td>
<td>0.75</td>
<td>0.603</td>
<td>1</td>
<td>350</td>
</tr>
<tr>
<td>HMPREF9231_0774</td>
<td>polyphosphate--glucose phosphotransferase</td>
<td>0.967</td>
<td>0.511</td>
<td>0</td>
<td>256</td>
</tr>
<tr>
<td>HMPREF0424_0837</td>
<td>Holliday junction DNA helicase RuvA</td>
<td>0.967</td>
<td>0.515</td>
<td>0</td>
<td>209</td>
</tr>
</tbody>
</table>

### Table 4: Cytoplasmic proteins having adhesion probability more than 0.5. (Predictions done considering *G. vaginalis* as gram-negative bacterium)

<table>
<thead>
<tr>
<th>Protein Accession</th>
<th>Protein Note</th>
<th>Localization Probability</th>
<th>Adhesion Probability</th>
<th>Transmembrane helices</th>
<th>Protein Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMPREF0424_0283</td>
<td>hypothetical protein</td>
<td>0.25</td>
<td>0.570</td>
<td>1</td>
<td>333</td>
</tr>
<tr>
<td>HMPREF0424_0304</td>
<td>transglycosylase</td>
<td>0.982</td>
<td>0.523</td>
<td>1</td>
<td>773</td>
</tr>
<tr>
<td>Protein Accession</td>
<td>B-cell epitope</td>
<td>Position</td>
<td>Peptide</td>
<td>MHC-I alleles (Peptide score)</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------</td>
<td>----------</td>
<td>---------------</td>
<td>------------------------------</td>
<td></td>
</tr>
<tr>
<td>HMPREF0424_0028</td>
<td>NKTLGSSTSEGKESSDTGSS</td>
<td>76</td>
<td>NKTLGSSTS</td>
<td>HLA-A20 Cattle (100.0)</td>
<td></td>
</tr>
<tr>
<td>HMPREF0421_21158</td>
<td>GGFATFGASSDFGGSDDEPE</td>
<td>193</td>
<td>FATFGASSD</td>
<td>HLA-B*5401 (149.89)</td>
<td></td>
</tr>
<tr>
<td>HMPREF0424_0423</td>
<td>SGEVSSSLASSDSGSQTDS</td>
<td>1827</td>
<td>GEVSVSSSA</td>
<td>HLA-B40 (160.0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PKKPGEDPKPKPGEDPAKPKN</td>
<td>1689</td>
<td>KKPGEDPKK</td>
<td>HLA-A20 Cattle (1000.0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PKKPGEDPK</td>
<td>HLA-A20 Cattle (100.0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KKADTAAAASKETEEVVTVGK</td>
<td>1262</td>
<td>KKADTAAA</td>
<td>HLA-A20 Cattle (100.0)</td>
<td></td>
</tr>
</tbody>
</table>

Table 5: Predicted binders for Class-I MHC alleles, with 1% threshold. (The high scoring peptides depicting maximum probability of binding have been shown only).
<table>
<thead>
<tr>
<th>Protein Accession</th>
<th>Sequence</th>
<th>Length</th>
<th>MHC Class</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPVKFAVPDQEVVNESNEVN</td>
<td>706</td>
<td>KPVKFAVPD</td>
<td>HLA-B*0702 (137.46)</td>
<td></td>
</tr>
<tr>
<td>HMPREF0421_20494</td>
<td>NSRNANANQNNNSANPAS</td>
<td>340</td>
<td>SRNANANQN</td>
<td>HLA-B*2705 (200.0)</td>
</tr>
<tr>
<td>HMPREF0421_20998</td>
<td>QDTREGRNRAFQGGGEDENSEN</td>
<td>27</td>
<td>TREGNRRAF</td>
<td>HLA-B<em>2702 (60.0), HLA-B</em>2705 (300.0)</td>
</tr>
<tr>
<td>HMPREF0424_0698</td>
<td>TVNSSTNNSSTTASNTETSS</td>
<td>43</td>
<td>SSTNNSSTT</td>
<td>MHC-Db revised (122.76)</td>
</tr>
<tr>
<td>HMPREF9231_0931</td>
<td>ANSSNSGIYKSKENSENED</td>
<td>331</td>
<td>ANSSNSGI</td>
<td>MHC-Kd (69.12)</td>
</tr>
<tr>
<td>HMPREF0424_0847</td>
<td>EKDNENNANNNEKNNANNK</td>
<td>296</td>
<td>EKDNENNA</td>
<td>HLA-A20 Cattle (100.0)</td>
</tr>
<tr>
<td>HMPREF0424_1196</td>
<td>NNSTYHYSIGVRPGPDQD</td>
<td>225</td>
<td>STYHYSIGV</td>
<td>HLA-A2 (273.256)</td>
</tr>
<tr>
<td>TFTWGTGKDGSKGPDSK</td>
<td>2223</td>
<td>FTWGTGKD</td>
<td>HLA-B*5401 (162.11)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>WGTGKDGS</td>
<td>HLA-B*5401 (144.14)</td>
<td></td>
</tr>
</tbody>
</table>
Table 6: Predicted binders for Class-II MHC alleles, with 1% threshold.

<table>
<thead>
<tr>
<th>Protein Accession</th>
<th>B-cell epitope</th>
<th>MHC-II alleles</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMPREF0424_0028</td>
<td>NKTLGSSTSEGKESSDTGSS</td>
<td>HLA-DRB1<em>0401, HLA-DRB1</em>0421, HLA-DRB1*0426</td>
</tr>
<tr>
<td>HMPREF0424_0698</td>
<td>TVNSSTNNSSTTASNTETSS</td>
<td>HLA-DRB1<em>0401, HLA-DRB1</em>0421, HLA-DRB1<em>0423, HLA-DRB1</em>0426</td>
</tr>
<tr>
<td>HMPREF0424_1196</td>
<td>NNSTYHYSIGVRPGRPGDQD</td>
<td>HLA-DRB1<em>0305, HLA-DRB1</em>0309, HLA-DRB1*1107</td>
</tr>
</tbody>
</table>

A B-cell epitope is characterized by being antigenic, hydrophilic, and accessible in a flexible region of an immunogen (Yasmin, 2015). One of the B-cell epitope (SGEVSVSSASSDGSQTDS) of extracellular PA domain-containing protein (HMPREF0424_0423) at position 1827 was found to qualify all these parameters (Fig. 6). It was found to be hydrophilic with maximum propensity score of 7.129 and minimum score of 2.957 and surface accessible with maximum propensity score of 1.685 and minimum score of 0.385. Similarly, the B-cell epitope (NNSTYHYSIGVRPGRPGDQD) of LPXTG-motif cell wall anchor domain-containing protein (HMPREF0424_1196) at position 225 was found to qualify all these four criteria (Fig. 7). The allergenicity of the predicted epitopes of these two proteins was also checked and AllerHunter predicted the sequences (HMPREF0424_0423 & HMPREF0424_1196) as non-allergens.
Fig. 6. Plots for (a) Beta turn prediction, (b) Flexibility, (c) Hydrophilicity and (d) Surface accessibility of predicted B-cell epitope PA domain-containing protein (HMPREF0424_0423). The residues below the cut off (red line, 1.00) are in the green region.)
Fig. 7. Plots for (a) Beta turn prediction, (b) Surface accessibility, (c) Flexibility and (d) Hydrophilicity of the predicted B-cell epitope of LPXTG-motif cell wall anchor domain-containing protein (HMPREF0424_01196).

The extracellular PA domain-containing protein (HMPREF0424_0423) was further analyzed and it demonstrated high percentage similarity with histidine kinase of G. vaginalis. Bacterial histidine kinases are part of bacterial two-component system involved in regulation of different cellular processes like bacterial growth & survival, metabolism, virulence, and homeostasis. They are considered promising antibacterial drug targets (Bem et al., 2014). The other protein (HMPREF0424_01196) is the cell surface protein containing the conserved peptide motif (LPXTG), i.e., Leu-Pro-X-Thr-Gly. These types of proteins are covalently attached to cell wall peptidoglycan by the cysteine protease–transpeptidase sortase A, SrtA (Paterson & Mitchell, 2004).
Table 7: Functional identification of uncharacterized essential proteins of core proteome of G. vaginalis by SVM-Prot Web server.

<table>
<thead>
<tr>
<th>Protein Accession</th>
<th>Molecular Function</th>
<th>Gene Ontology (GO) Category</th>
<th>Probability (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMPREF0424_0028</td>
<td>Lipid-binding protein</td>
<td>GO:0008289</td>
<td>91.3</td>
</tr>
<tr>
<td>HMPREF0421_21351</td>
<td>Zinc-binding</td>
<td>GO:0008270</td>
<td>65.4</td>
</tr>
<tr>
<td>HMPREF0421_20494</td>
<td>EC3.4 Hydrolases - Acting on peptide bonds (Peptidases)</td>
<td>GO:0008233</td>
<td>73.8</td>
</tr>
<tr>
<td>HMPREF0421_20998</td>
<td>EC3.4 Hydrolases - Acting on peptide bonds (Peptidases)</td>
<td>GO:0008233</td>
<td>76.2</td>
</tr>
<tr>
<td>HMPREF9231_0931</td>
<td>TC2.A.1 Major facilitator family (MFS)</td>
<td>GO:0005215</td>
<td>58.6</td>
</tr>
<tr>
<td>HMPREF0421_20789</td>
<td>EC3.4 Hydrolases - Acting on peptide bonds (Peptidases)</td>
<td>GO:0008233</td>
<td>62.2</td>
</tr>
</tbody>
</table>

In addition to the characterized proteins, B-cell epitopes were also detected in some uncharacterized proteins or hypothetical proteins with no known function. Hence, functional characterization of these uncharacterized proteins was also done (Table 7), so that they can also be used for drug or vaccine development.

DISCUSSION

In the present study, reverse vaccinology approach has been used to identify epitopic peptides, which could be used as potential targets for rational drug designing against G. vaginalis: an aim of responsible innovation. In this approach, the genes of the core proteome were analyzed, which are the most desirable targets as they are likely to be broad spectrum rather than species or strain specific. Also, the two selected proteins found in this study (HMPREF0424_0423 & HMPREF0424_01196) are the conserved genes and also among the essential genes of the G. vaginalis strains used in this study. Thus, they become the most suitable drug targets. Additionally, some uncharacterized proteins also qualified the criteria required for vaccine development. So, their functional characterization was done based on the molecular functions or their involvement in specific biological processes defined by the Gene Ontology (GO).

A total of 47 MHC Class-I alleles and 51 MHC Class-II alleles were screened using ProPed-I and Propred respectively. Since, both servers cover a maximum number of HLA (Human Leukocyte antigens), therefore, were considered suitable for predicting epitopes. Also, length is an important factor to consider for peptide antigen binding with MHC or TCR or both, since most MHC class I molecules prefer binding to peptides of 9 amino acids in length. The predicted epitopic peptides
in this study are also of ~9 amino acids in length. The prediction of epitopes was done at the lowest threshold value of 1.0 % (in Proped-I server) as the threshold plays a vital role in determining the stringency of prediction. A lower threshold value increases the stringency of prediction with lower rate of false positives. Also, the predicted MHC binders were filtered based on prediction of proteasome cleavage sites at 1% threshold value. This is based on observations of previous studies where it has been demonstrated that most of MHC binders having proteasome cleavage site at their C terminus have high potency to become T cell epitopes.

So, this study identified putative target proteins, which provide a basis for vaccine development against G. vaginalis in order to overcome the challenges of bacterial vaginosis. However, the experimental validation of these targets needs to be done for defining their specific role in bacterial survival and pathogenicity.

To conclude, this paper illustrates that the bioinformatic innovations related to bacterial vaginosis are driven by biological (sequence) data and point towards a responsible innovation in finding out the vaccine targets against this disease.

REFERENCES


A CASE STUDY ON THE CHALLENGES AND THE REASONABLE ACCOMMODATIONS FOR STUDENTS WITH AUTISM IN THE MAINSTREAM EDUCATION SYSTEM

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\textsuperscript{3}Director, Autism Society West Bengal, Kolkata, India

INTRODUCTION

Successful inclusive education happens primarily through accepting, understanding, and attending to student differences and diversity. It also means providing reasonable accommodations. With respect to the right to education, reasonable accommodation means ensuring the specific support needs of learners with disabilities are provided for so that they are able to equitably participate in learning alongside their peers. In the evaluation of UNESCO funded project ‘Special needs in the classroom’ the researchers concluded that “relatively small changes in schooling, supported by better teacher preparation, can facilitate the education of many children with disabilities and make better arrangements for many others who experience difficulties in learning”(Ainscow et al 1995).

RIGHT TO EDUCATION FOR THE DISABLED STUDENT

The right to education is universal and expands to all children, youth and adults with or without disabilities. The right of children with special needs to attend a regular school has its genesis in many international statements, the most recent being the United Nations Convention for the Rights of Persons with Disabilities (UNCRPD 2006).

Over the years there have been numerous acts of legislation that have advocated students with special needs to be out of isolated educational environments and into classrooms with their regular education counterparts. Originating from the Salamanca World Conference on Special Needs Education (UNESCO, 1994), which Ainscow and Cesar (2006) referred to as “the most significant international document that has ever appeared in the field of special education”, inclusive education received widespread recognition across the world. It was in June 1994 when representatives of 92 governments and 25 international organisations formed the World Conference on Special Needs Education, held in Salamanca, Spain. They agreed a dynamic new Statement on the education of all disabled children, which called for inclusion to be the norm.
INCLUSIVE EDUCATION

The Conference adopted the Salamanca Statement on Principles, Policy and Practice in Special Needs Education and a Framework for Action. This Statement made an important contribution to the agenda for achieving Education for All and for making schools educationally more effective. Singal in 2006 said that for education to play this role as ‘an enabling right’ it must be of high quality, available equitably, built to tackle discrimination and allow each child to flourish according to their own talents and interests. Yell & Katsiyannis in 2003 stated that the current trends in education are moving toward more inclusive educational experiences for children with disabilities, alternative learning styles, and differentiated instructional practices to support all students to succeed. For any educational institution to provide

HIGH PREVALENCE PRESCHOOL AND SCHOOL-AGE CHILDREN DIAGNOSED WITH AUTISM

Globally, there is an increased prevalence of preschool and school-age children diagnosed with Autism Spectrum Disorders. In a review of international epidemiological studies on disorders in young children, Fombonne (2009) reported an estimation of 28 to 70 per 10,000 as the prevalence of ASD. Autism Spectrum Disorder (ASD) manifests itself in various ways in different individuals and this fact must be kept in mind while teaching them. Given the complexity of the disorder, often the educational needs of persons with autism remain largely unmet. Students with autism require attitudinal and social support to be integrated into mainstream education for the maximum realisation of their human resource potential.

AUTISM SPECTRUM DISORDER (ASD)

Autism Spectrum Disorder (ASD) happens when the brain develops differently and has trouble with an important job: making sense of the world. ASD affects the functioning of the brain, in the way it processes information. Every day, our brains interpret (understand) the things we see, smell, hear, taste, touch, and experience. But when someone's brain has trouble interpreting these things, it can make it hard to talk, listen, understand, play and eventually learn.

Individuals with autism demonstrate certain degree of impairment that may differ widely. ASD manifests itself in a myriad of ways in different individuals. One person with ASD may be non verbal, intellectually challenged and almost entirely self absorbed, while another may be verbal, bright and in tune with his surroundings. It is a spectrum condition which means that individuals within the autistic spectrum differ in how severely they are impaired in each of the triad areas - some will have significant difficulties in all areas, while for others, their difficulties may appear to be quite subtle. So the symptoms of people with ASD will fall on a continuum, with some individuals showing mild symptoms and others having much more severe symptoms. While all people with ASD share certain difficulties, their condition will affect them in different ways.
ASD is a complex lifelong neuro-developmental disorder that occurs in the first three years of life. It causes difficulties in three main areas viz. communication (both verbal and non-verbal), social understanding and in individual’s thinking process (difficulties in generalizing and abstract thinking). These are referred to as the triad of impairments which are as follows.

Behavioral manifestations of ASD vary widely from one individual to another. This heterogeneity is impacted by variability in different factors, such as developmental trajectories, level of language, cognitive ability, gender, adaptive behaviors, and sensory and motor impairments. The term “spectrum” refers to the wide range of symptoms, skills, and levels of impairment or disability that children with ASD can have. Some children are mildly impaired by their symptoms, while others are severely disabled. Some people are affected with fairly mild symptoms and signs of autism. Many of these individuals learn to live independent lives. Others are more severely affected and require lifelong care and supervision.

The term Autism Spectrum Disorder (ASD) reflects the fact that no two people with ASD are alike. Even though each individual with ASD has difficulties in the areas of communication, socialization and flexibility of thought, each has a unique combination of characteristics and so may seem quite different. ASD often causes individuals to struggle to understand and relate to other people and to their environment and this can often result in extreme behaviour, which can be seen as tantrums in children or rudeness in adults. It is the only way they have to indicate how anxious they are feeling. Most people with autism have problems using language, forming relationships, and appropriately interpreting and responding to the external world around them.

**CHALLENGES FOR TEACHERS**

Owing to the placement of children with ASD in mainstream classrooms, teachers are obligated to successfully and effectively include these children often with a limited or an absence of guidelines and training (Horrocks, White & Roberts, 2008; Lindsay, Proulx, Scott & Thompson, 2013). In an inclusive school, the special educator works hand in hand with regular teachers so that special educational needs are met within the school premises itself. The regular/mainstream teacher can modify the teaching learning content as per the suggestions and advice of the special educator and parents. The special teacher works in close collaboration with the regular teacher to meet the academic goals of Children with Special Needs (CWSN) and other learners. New teachers in the mainstream school very often don’t have much idea how to handle the students with different disabilities. The inclusion of pupils with social, emotional and behavioural difficulties which is common in students with ASD in inclusive classroom can be particularly challenging for teachers and teachers need to be properly trained and prepared to face such challenges (De and Basu, 2017).

India’s 2009 Right to Education (RTE) Act recognizes education as a fundamental right. The law states that education for children in the age 6–14 groups, including those who have dropped out...
or face issues in admission due to migration, caste, disability, etc., should be free and compulsory. All children with disabilities within the act have been included under the blanket term “disadvantaged group”.

OBJECTIVES

The viewpoint of the students with invisible disabilities like ASD in mainstream education is of prime importance. There has been considerable research on the challenges faced by the teachers in a mainstream education system. However, often the viewpoints of students with disability are usually not considered. Perhaps it would be a welcome change if the viewpoints of all the stakeholders of mainstream education are considered, both teachers and students; more so the students with invisible disabilities in mainstream education system are considered. This case study was taken up keeping this objective in mind.

METHODOLOGY

STUDY DESIGN AND DATA COLLECTION

In order to address the foregoing objective, this study used a qualitative approach. The semi structured questions were framed in such a way that the student could express their viewpoints.

PARTICIPANTS

In this case study 15 (fifteen) students with ASD who are getting mainstream education were interviewed using semi structured questionnaire. Among the students two (2) were young girls and the (13) young boys. The age of the students ranged from 6 years to 21 years. 4 students were going to government school/colleges while the rest went to private schools. The challenges faced by students with ASD were noted from their perspective. Their parents were also interviewed to access the impact of these challenges in the daily life of the student.

RESULTS

The data that was submitted by the students gave an insight to the students with ASD in mainstream education.

Table 1. Challenges faced by a student with ASD in Mainstream Education. (Sample size 15)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Challenge faced by a student with ASD in Mainstream Education</th>
<th>Percentage of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Being misunderstood by teachers and classmates.</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>Students failed to understand instructions.</td>
<td>60%</td>
</tr>
</tbody>
</table>

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<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Student found educational institution overwhelming</td>
<td>30%</td>
</tr>
<tr>
<td>4</td>
<td>No special educators in school</td>
<td>10%</td>
</tr>
<tr>
<td>5</td>
<td>Student faced any teasing or bullying event</td>
<td>100%</td>
</tr>
<tr>
<td>6</td>
<td>Students were often punished for their behaviours in class.</td>
<td>100%</td>
</tr>
<tr>
<td>7</td>
<td>Students had few classmates who were supportive and friendly.</td>
<td>25%</td>
</tr>
<tr>
<td>8</td>
<td>The parents reported that they got complaints from school on a regular basis.</td>
<td>95%</td>
</tr>
</tbody>
</table>

**DISCUSSION**

From Table 1 it is apparent that there are several challenges faced by a student with autism in Mainstream Education. All the participants in the study responded that they were misunderstood by the teachers and classmates. As autism is a communication disorder the students with autism often fail to communicate their thoughts as well as they may face difficulties in understanding and comprehending others. Some students with autism can speak and write well but when it comes expressing their thoughts and opinions they often face great difficulty in expressing themselves. This often leads to them being misunderstood by others.

Findings from this investigation also show that 100% of the students stated that they were punished for their behaviour in class. Inappropriate behaviours especially aggressive behaviours stem from the impairment in communication. The behaviour displayed is often the last stage of the process where the students had tried to express their opinions but failed miserably. The behaviour is just like the tip of an iceberg; all trials and tribulations of communication lie beneath and are often invisible. From the questionnaire it becomes clear that complaints from school are sent to the students’ parents on a regularly basis. In this study it was as high as 95%. This regular procedure would have far reaching impact on the self esteem of these students with autism. Though none of the participants were drop outs previous literature review shows that there is a high percentage of school drop outs among the disabled student population. In 1996 studies by Blackorby & Wagner stated that the dropout rate for students with disabilities is approximately twice that of general education students. Ten years later in 2006 a research study by Carter & Hughes brought to light an alarming finding viz ‘72% of high school students with multiple disorders, 58% of students with mental impairment, and 60% of students with autism spent most of their school day outside the general education classroom’. These studies indicate that the school environment is not as supportive as they are supposed to be. The findings from our study indicate that all the students in our study group were being misunderstood and punished for behavioural issues. The school administration was sending complaints to their parents. A future
study with these students would reveal whether they could continue in mainstream education or not.

This study also revealed that 100% of the students with autism in mainstream education were teased or bullied. This seemingly innocuous teasing may sap the self confidence of the student. In the process the student with autism may be scarred for life. Often this teasing and bullying doesn’t happen within the classroom but occurs in the playground where there is no teacher supervision. When a school has students with autism the teachers need to anticipate where the students would require support and provide the reasonable accommodations. Very often students with autism need a fair amount of support in their social lives. They need to be taught how to navigate the social world. When students with autism fail to find a supportive social environment they tend to become more introvert, often masking their impairment with a show of disdain for the social world. Quite often it is then that they earn the label of ‘nerd.’

In our investigations it was observed that 60% of the study group found difficulties in understanding the instructions in school. This could have serious implications in the future. Literature review has shown that McNeely and Falci in 2004 found that students who had difficulty processing information from oral presentations and written materials and who showed evidence of low self-esteem were more likely to leave school.

The United Nations Educational, Scientific and Cultural Organization (UNESCO; 2005) characterizes ‘Inclusion’ as a process. It is not a single goal but an ongoing effort to find ever better ways to address the needs of children in a classroom. Inclusive education has been internationally recognized as a philosophy for attaining equity, justice and quality education for all children, especially those who have been traditionally excluded from mainstream education. Education enables the individual to have a valued role in the community. So when students cannot access education they fail to develop a valued role in society. They miss out on the opportunities that an educated person can get.

Invisible Disabilities like (ASD) autism spectrum disorder, auditory processing disorders or learning disorders viz. dyslexia, Dyslexia, Dysgraphia, Dyscalculia, and Dyspraxia could be the cause of the behaviours displayed by the students. To deal with the situation the teachers must be competent enough to understand the underlying cause of these behaviours and then use appropriate teaching strategy. There is a very popular saying from the viewpoint of the students with disabilities viz. ‘I can’t learn from the way you teach. Could you teach me the way I can learn?’ In the mainstream education system, the way of teaching can’t be changed but there could be ample visual supports that could make the learning environment supportive.

Students with autism require attitudinal and social support to be integrated into mainstream education for the maximum realisation of their human resource potential. Teachers work in complex situations and the success of inclusion is dependent on the class teacher accepting of awareness is often not a regular in depth component of teacher-training courses it makes most
teachers ill-equipped to manage disability. It has also been seen that as a student progresses to higher education as in colleges and universities the skills to adapt increase. But the areas of deficits remain throughout their life though it can vary. Reasonable accommodations must be given as per the special need of the student (De, 2019).

From Table 1 we can see that for many students with ASD the biggest issue for students in higher classes is not academics. It’s navigating the social environment. Also teaching independent living skills to pursue mainstream education when the student is younger might help.

**CONTRIBUTION OF RESEARCH**

Responsible Research on the viewpoints if all the stakeholders in mainstream education system is needed for sustainable progress. Unless the varying perspective is taken into account there can be no innovation in this sector. There have been several cases where students with invisible disabilities especially autism dropped out of the mainstream schools as they couldn’t find the school environment supportive. This amounts to all great loss in the human resource potential. This study was with a small sample group but it revealed that these students with invisible disabilities in mainstream school were not receiving the social support in their school environment. The education institutions these days are providing varied reasonable accommodations for students with disabilities. Steps are taken so that students of different disabled groups may get quality education. But for many students with invisible disabilities the prime difficulty that they were facing was to understand and fit in the social world in schools and other educational institutions. Sustained responsible research in analyzing the viewpoints of the students themselves could be an important step in understanding the special needs of the disabled student community in mainstream education system. Appropriate need based reasonable accommodations could be provided. This in the long run could play a positive role in curtailing the drop-out rates from educational institutions.

**RECOMMENDATIONS**

**Reasonable Accommodations for a student with ASD in mainstream education system**

Use of visual strategies has been reported to enhance play behaviour; reduce aggressive behaviour (Mirenda et al 2003), enhance language acquisition (Lal R. 2005, Lal R. 2006) and improve communication (Jordan and Powell. 2000).

Despite children with disabilities gaining access to higher education there are a number of exclusionary practices taking place as a result of lack of knowledge and awareness; more so in cases of invisible disabilities like Autism Spectrum Disorder (ASD). This is usually not due to the lack of intent or understanding on the part of the teacher. Teachers work in complex situations and the success of inclusion is dependent on the class teacher accepting diversity, different learning styles and maintaining a flexible system. There are several strategies which could reduce
these challenges to a certain extent. These reasonable accommodations if implemented may prove to be a boon for students with invisible disabilities.

The policy of inclusion is often difficult to implement because teachers are not sufficiently well prepared and supported to work in inclusive environment. There are certain strategies which work very well with students with ASD and at the same time maybe used by other students much like universal design. Some of them are given below very briefly.

1. Setting up a Structured Classroom
2. Using Visual Schedules
3. Presenting lessons using Structured Work Stations

Limitations of the Study
The discussion and recommendations were based on the inputs by the 15 students with ASD in this study. As ASD is a spectrum disorder it is quite possible that if the same study were to be conducted using another sample of participants their challenges and needs could be different.

CONCLUSION

There are many important stakeholders on who rests the success of Inclusive Education viz. teachers, peers, administrators and parents of students without disabilities. A primary criterion for making any education system inclusive is the acknowledgement of the neuro-diversity within the student population. Acceptance of the differences among students can then follow. Only after acknowledging and accepting neuro-diversity can providing reasonable accommodations be possible. These accommodations are necessary for making the existing facilities accessible. The need of the hour would be to shift the focus away from talking about individual 'deficits', to looking at how we can develop environments, attitudes and curricula that are more enabling and empowering for these students with autism in mainstream education system.

ACKNOWLEDGEMENT

Thanks to all the children with ASD who come to Autism Society West Bengal (ASWB) for intervention. They have shown us how ASD manifests itself in a myriad of ways in different individuals. The first author is indebted to her son, Dipyaman Dey a fourteen-year boy with ASD for introducing her to his fascinating yet enigmatic world of autism. The authors also thank the anonymous reviewers for suggesting the points for revision of this paper.
REFERENCE


MOBILE LEARNING READINESS: LECTURERS’ PRACTICE-BASED PERCEPTION IN THE HIGHER EDUCATION INSTITUTIONS OF MALDIVES

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INTRODUCTION

Mobile technology has been developing, growing and penetrating from personal activities to activities done by organizations. Mobile technology has shown peak in its involvement in simple and complex activities of teaching and learning. The ubiquity of mobile devices has changed the focus of educators to convert stationed education to mobile education/learning. According to Wagner, et al. (2016), the efficiency of use in technology-based activities aided with computers, multimedia programs, and videos stimulate a variety of learning.

Smart mobile devices, especially mobile phones are being used as a medium for official and unofficial communication from, schools, higher education institutions, banks, government and private organizations, overseas, inter-atolls, inter-islands and one-to-one to groups interactions. The practices made the dispersed population of Maldives connected with family, education, work, national and international updates. Higher education institutions specifically used and adopted mobile technology in reaching their students. Thus, the mobile technology utilized by lecturers may vary based on the level of the technology-based facilitation. Hence, this study was aimed to explore mobile learning readiness of lecturers who facilitated distance programs at the higher education institutions of Maldives. This guide is guided by the following research questions.

1- What percentage of the higher education institutions lecturers were accessible to mobile device and internet connectivity in the Maldives?
2- How much have the lecturers acquired basic and advanced mobile skills required for mobile learning?

The content of the research comprises of literature review, the methodology adopted to find out the perception of the lecturers who facilitated distance programs at higher education institutions on mobile learning, based on their practice and use of basic and advanced mobile skills. In addition to this, the research paper includes the analyzed data and conclusions made on the mobile learning readiness of lecturers in Maldives higher education institutions.
LITERATURE REVIEW

Mobile learning has become a research interest topic among educators in the last decades. The definition for mobile learning in the early years were focused on the device (immediacy, convenience, access and mobility), while recent definitions focused on personal and social-driven such as location, motion and augmented reality (Pedro, Barbosa and Santos, 2018). The separation of the island communities is one of the driven factors for adopting mobile learning in Maldives. Considering location, mobile learning (mLearning) is defined as use of private electronic devices in the learning process with supportive social and content interaction (Saxena and Saxena, 2015). The growing new style among youth and the desire to be connected anytime anywhere has brought a new angle of living in learning activities. “As mobile learning has gradually become a key learning channel in our lives, it is critical that the researchers and practitioners should concentrate not only on the use of mobile technology, but also on the continued use of mobile technology in learning” (Huang, Hsiao, Tang & Lien, 2014).

Higher education has benefited from mobile learning in the facilitation and learning in many ways. Expressing the benefits of mobile learning, Jin & Zhirui (2017), explained that wireless mobile communication also allows opportunity for practical problems or realistic situations fostering quality collaborative authentic learning. Based on the literature, Ozer & Kılıç (2018), forecasts that mobile learning will be incorporated with mainstream education as most students tend to be more achievable through the smart mobile devices by 2025. Adding on to the benefits of mobile learning, Suresh (2018) listed six benefits that would enhance facilitation and learning. They include:

1- Learn anywhere, anytime to better completion rates.
2- Bite-sized delivery leading to faster learning.
3- Improves knowledge retention and information recall.
4- Personalized learning to a higher rate of engagement.
5- Availability.
6- Responsive design leading to easy adoption and future proofing the content.

Therefore, facilitation through mobile learning can be a considerable approach to improve and meet learning needs of 21st century learners. According to Horizon Report (2017), more than 40% of the world population access the internet and learners are motivated to upgrade their learning skills making use of the learning options through online platforms such as YouTube, learning management platforms and open sources. Experience in implementing mobile learning at University of Macau, Li & Wong (2018) explained that mobile learning using smartphone application was implemented at the University of Macau due to the observation of losing students’ interest in the conventional pedagogy over smartphone applications and social networking. Further added that substantial improvement was observed in the facilitation and learning due to the shift. Hence, the collaborative learning environment created by mobile learning instructions could stimulate individual intellectual capacity through a variety of mix media options such as social network applications.
Furthermore, the research can be considered under the “Responsible research and innovation” (RRI) approach as it showed the societal expectations and lecturers’ practice to meet the needs of higher education of mobile first learners of twenty-first century in Maldives. Responsible Research and Innovation (RRI) implies that societal actors (researchers, citizens, policy makers, business, third sector organizations, etc.) work together during the whole research and innovation process in order to better align both the process and its outcomes with the values, needs and expectations of society. (Horizon, 2020).

METHODOLOGY

A quantitative survey design was used to explore the lecturers’ accessibility to mobile devices, internet connectivity, acquisition of basic and advanced mobile skills to interpret the readiness of lecturers to facilitate mobile learning based on the facilitation experience using mobile technology. An e-questionnaire was used to collect quantitative data from the lecturers who facilitated distance and flexible delivery programs at the institutions.

A population can be considered as the entire group of people with common features (Kenton, 2019). The population was chosen considering that the lecturers from flexible delivery programs would be using a variety of mobile technology options to reach dispersed learners. All the lecturers (n=150) who facilitated distance, flexible delivery programs in the first term of 2019 were considered as the population for the research. The lecturers represented three out of the six major higher education institutions (50%) delivering distance and flexible delivery programs. A sample consisting of fulltime and part time lecturers (n=109) who facilitated at the three higher education institutions took part in the survey. The participant number represented 73% of the total population. The sample was selected using the single stage cluster sampling technique under probability sampling so that maximum lecturers get the opportunity to take part in the research. Singh (2018), states that in probability sampling, every element gets equal opportunity to take part in the research.

The data was collected using a structured e-questionnaire developed in Google Forms. The questions used were adapted from the questionnaire used by Indira Gandhi Open University to find out mobile learning readiness and perception of teachers of five Commonwealth Asian countries in 2017. The e-questionnaire was digitally delivered to lecturers through Viber application, SMS and email contact. It was organized using single option selection, multiple selection and a five-point Likert scale (‘strongly disagree’, ‘agree’, ‘neutral’, ‘disagree’, ‘and’, ‘strongly disagree’). The e-questionnaire consisted of three sections, the demographic information, device and connectivity readiness, basic and advanced mobile skills required for mobile learning. The study analyzed data using automatic analysis generated by Google forms and SPSS. Descriptive statistics including frequencies, valid percentages, data tables, statistical graphs and Pearson Correlation were used to represent the results obtained from data.
RESULTS
The results obtained from data analysis were presented as demographic information, basic and advanced mobile skills. The questionnaire was completed by 109 lecturers from different higher education institutions displaying their perception for mobile learning.

a. Demographic Information
The demographic information included gender, age and teaching experience of the lecturers. Majority of the participants were represented by females, 65 (59.6%). Among the lecturers, there were 16 (14.7%) below 30 years of age, 73 (67.0%) who were between the age of 31 to 45 years, 14 (12.8%) were in the age of 46-50 years, 5 (4.6%) were between 51-60 years and only one of the lecturers was above 61 years of age. Overall, the lecturers who facilitated distance programs were females contributing to almost 60% of the participants (Table 1.1).

Table 1.1- Gender, Age and Teaching experience of Lecturers

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Teaching Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency/ Valid %</td>
<td>Frequency/ Valid %</td>
</tr>
<tr>
<td>Female</td>
<td>65 / 59.6</td>
<td>16 / 14.7</td>
</tr>
<tr>
<td>Male</td>
<td>44/ 40.4</td>
<td>73/67.0</td>
</tr>
<tr>
<td>Less than 30</td>
<td>16 / 14.7</td>
<td>73/67.0</td>
</tr>
<tr>
<td>31-45</td>
<td></td>
<td>5/ 4.6</td>
</tr>
<tr>
<td>46-50</td>
<td>14/ 12.8</td>
<td>5/ 4.6</td>
</tr>
<tr>
<td>51-60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61 and above</td>
<td>1/0.9</td>
<td></td>
</tr>
<tr>
<td>&lt; 5 years</td>
<td>27/24.8</td>
<td>36/33</td>
</tr>
<tr>
<td>5-10 years</td>
<td></td>
<td>26/23.9</td>
</tr>
<tr>
<td>11-15 years</td>
<td></td>
<td>5/4.6</td>
</tr>
<tr>
<td>16-20 years</td>
<td></td>
<td>10/9.2</td>
</tr>
<tr>
<td>21-25 years</td>
<td></td>
<td>4/3.7</td>
</tr>
<tr>
<td>26-30 years</td>
<td></td>
<td>1/0.9</td>
</tr>
<tr>
<td>&gt;30 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>109</td>
<td>109</td>
</tr>
</tbody>
</table>

The majority of the lecturers who facilitated were very young and in the age range of 30 to 45 years, contributing to 67% of the participants. This pattern indicates a good sign to show that most of the lecturers completed their training in the digital era, using digital platforms such as World Wide Web, smart gadgets and were already adjusting life to the mobile applications. Collectively, 94.5% lecturers were below the age of 50 years and 5.5% were over 50 years. There were 67 (63.2%) full time lecturers and 39 (36.8%) part time lecturers among the participants who were facilitating programs from more than twelve different disciplines with 62 (57.9 %) representing education, followed by business & management 22 (20.6 %), language 19(17.8 %) and health sciences 13(12.1%) as the major contributed areas using mobile technology.
b. Device and connectivity readiness
Data on device readiness confirmed that all (100%) the lecturers owned mobile phones and 105 (96.3%) had mobile phones with screen size greater than 3 inches. According to https://www.phoneppi.com/screen-size-of-mobile-phones.php, the average screen size of smartphone ranges in 4.7 to 6.5 inches. The lecturers added that 95 (87.2%) carried the mobile phones with them always, followed by 12(11%) usually carried and 2(1.8%) sometimes carries mobile phones with them. The results further added that 100% lecturers used internet in their mobile phones, when 86 (78.9%) used home Wi-Fi and 59 (54.1%) used mobile data packages of 3G or 4G. Additionally lecturers used, Mi Fi, and campus Wi Fi to access internet. Lecturers used different mobile devices to access internet other than the mobile phones. Lecturers response showed that a large number, 76 (69.7%) used laptops, followed by 53 (48.6%) used Samsung devices while PDA, I-Phones and other devices were also used by the lecturers (Figure 1.1). The results additionally indicated that lecturers used multiple mobile devices to access internet.

![Figure 1.1- Mobile devices used to access internet](image)

Therefore, the lecturers had access to more than one mobile device and were accessing the internet using more than one source. Hence, it can be said that the lecturers facilitating distance programs in Maldives were connected with learners using internet and technology-based mediums.

c. Basic and Advanced Mobile skills
In order to investigate the acquisition of basic and advanced mobile skills, eleven statements were provided. Lecturers’ showed their level of agreement to the statements using a five-point Likert scale ranging from “Strongly Agree”, “Agree”, “Neutral”, “Disagree” and “Strongly Disagree”. The frequency obtained showed majority lecturers acquired almost all the mobile skills (Figure 1.2).
Use of basic mobile skills were found to be common among the lecturers indicating their frequent use in daily learning activities. In addition, it can be said that lecturers were confident to search the internet, download applications, use a variety of learning resources such as audio, video and social media in their instructional designing to support distance learners. Based on the results it is evident that lecturers facilitating the distance, flexible mode programs acquired the basic mobile skills required for mobile learning in Maldives.

To assess advanced mobile skills, lecturers were provided with twelve statements describing the skills. The valid percentages had variations in the agreement scale. The highest number of lecturers 94 (90%) agreed on watching online videos, 87 (84%) used to do online banking, 82 (79%) used mobile device as a storage device, while 80 (78%) made video calls and 77 (74%) used to download and read e-books. While 70 (67%) used online calendar, 57 (55%) used editing tools in their device (Figure1.3). On the other hand, blogging, downloading and playing offline games, playing interactive games, downloading audio podcasts were noted as advanced mobile skills that were not used commonly by the lecturers. Therefore, the advanced mobile skills attained by the majority lecturers were watching online videos, reading e-Books, making video calls, internet banking skills and using the mobile device as a storage. These skills ensured that already a lot of lecturers were capable of using mobile devices in the selection of video content, e-content from e-books and used mobile banking to save time in managing daily activities and stored documents in the device for on-the-go access. Several applications providing online services were used by Maldivians to minimize the effort of physical attendance for distance learners.
Moreover, the analyzed results were tested to see whether there was a significant correlation between age, basic mobile skills and advanced mobile skills using Pearson Correlation test. The output of the correlation test run for age, basic mobile skills, advanced mobile skills showed that the correlation was significant at 0.01 level(2-tailed).

**Table 1.2 - The correlation between basic and advanced mobile skills**

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Age range in years</th>
<th>Basic Mobile Skills</th>
<th>Advanced Mobile Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
<td>-.289**</td>
<td>-.117</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.002</td>
<td>.224</td>
</tr>
<tr>
<td>N</td>
<td>109</td>
<td>109</td>
<td>109</td>
</tr>
<tr>
<td>Basic Mobile Skills</td>
<td>-.289**</td>
<td>1</td>
<td>.545**</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td></td>
<td>.002</td>
<td>.000</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>109</td>
<td>109</td>
</tr>
<tr>
<td>N</td>
<td>109</td>
<td>109</td>
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<tr>
<td>Advanced Mobile Skills</td>
<td>-.117</td>
<td>.545**</td>
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<tr>
<td>Pearson Correlation</td>
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<td>Sig. (2-tailed)</td>
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**. Correlation is significant at the 0.01 level (2-tailed).
A negative correlation was stated in the test results for the relationship between age and basic mobile skills and advanced skills (Table 1.2). A negative correlation obtained from data describes that when one variable increases, the other increases and vice versa (https://examples.yourdictionary.com/negative-correlation-examples.html). Based on this result it can be said that when the age of the lecturers increased their mobile skills decreased. Therefore, the majority lecturers were young and at the right age to acquire mobile skills to facilitate mobile learning in Maldives higher education institutions.

CONCLUSIONS

The findings from the current study on the mobile learning readiness of lecturers who facilitated distance and flexible programs owned mobile devices and were connected indicating their readiness for device and connectivity for mobile learning facilitation. The results related to basic mobile skills showed that the majority of the lecturers’ acquired basic and advanced mobile skills indicating their positive perception and readiness to adopt and redesign instructions to facilitate mobile learning using mobile technology. However, it is recommended that higher education institutions provide training opportunities for lecturers to develop emerging mobile skills to meet the needs of mobile first learners of the twenty first century.

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CREATING AN INCLUSIVE WORLD: LEARNERS WITH SPECIAL NEEDS AND CHALLENGES AHEAD

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INTRODUCTION

The long standing mission to provide education and literacy to all has been a major challenge for governments and advocacy experts around the world. The World Health Organisation has clearly stated that “today, disability is understood to arise from the interaction between a person’s health condition or impairment and the multitude of influencing factors in their environment” (Disability). The increasing focus and awareness in the field of ‘disability studies’ have made it possible for practitioners, reformers, social activists and advocates to create a kind of dialogue that has the capacity to transform and transcend the negative notions of disability among common masses.

New technological tools and advanced assistive devices have opened fresh avenues for dealing with misconceptions related to disability, disabled body and mental health conditions. Twenty first century has witnessed unparalleled progress in Information and Communication Technologies (ICT) usage as more meetings, conferences and classes are being taken through the virtual medium. Remote areas across the world are witnessing online activity in the form of online teaching, different mobile applications and social media. Today, social media is a powerful source of infotainment and a veritable chronicler of people’s opinions and sentiments. It is therefore not a surprise that today most international organisations like United Nations Educational, Scientific and Cultural Organization (UNESCO), World Health Organisation (WHO), World Bank etc. are communicating their latest schemes, scholarships, work culture, orientation and ethos with masses through their social media handles. However, several countries are still struggling to create safe, inclusive and accessible learning spaces for people with special needs and challenges.

The sudden occurrence of Covid19 pandemic in 2020 and dependence on internet prompted everyone to rethink uncomfortable questions related to connectivity, privilege, accessibility, class hierarchy and gender differences among several others. In the context of special needs learners, some of the primary issues that gained widespread attention were hygiene and caregiving, ensuring safety, giving relevant information about inclusive practices at workplace, gender equality and greater access to spaces with special consideration to the challenges of differently abled people.
This paper has been written with the following objectives:

i. firstly, to examine the nature of digital inequality for and its impact on education and inclusion of learners with disabilities;

ii. secondly, to assess the role that Responsible Research and Innovation (RRI) can play in order to “counteract histories of disenfranchisement in scientific and technological innovation” (Monteleone 84);

iii. and finally, to explore opportunities for advocacy and ensuring dignity of life for the differently abled individuals.

LITERATURE REVIEW

The Persons with Disabilities Act, 1995 (PWD Act) in India was a benchmark year in the history of disability awareness, protection and participation. In 2007, India signed the United Nations, Convention of the Rights of Persons with Disabilities (CRPD), 2006. The Rights of persons with Disabilities Act was passed in the parliament in 2016. There has been a definite shift in the government’s approach to matters pertaining to disability and literacy. In the two decades that followed Persons with Disabilities Act (PWD), 1995, several schemes have been launched. The ‘Samagra Shiksha’ or Education for All (an integrated scheme for school education) for example laid down some significant rights and practices in place to help and support Children with Special Needs (CWSN 2018-19):

The component provides support for various student oriented activities which include identification and assessment of CWSN, provision of aids, appliances, corrective surgeries, Braille books, large print books and uniforms, therapeutic services, development of teaching-learning material (TLM), assistive devices & equipments, environment building and orientation programme to create positive attitude and awareness about nature and needs of CWSN, purchase/development of instructional materials, in-service training of special educators and general teachers on curriculum adaptation, stipend for girls with special needs etc. (Samagra Shiksha)

The ‘Samagra Shiksha Scheme’ lays emphasis on the following features: holistic approach to education; administrative reforms; quality of education; digital education; school strengthening; girl education; inclusion; skill development; sports and physical education and balanced educational development. These reforms have the capacity to revolutionise education if planned and implemented carefully.

The rise of technology in the field of education has had a lasting impact on learner’s autonomy and preference. While ICT tools help in connecting people through remote learning, the internet transformed the way education can be delivered to create interactive and immersive experiences for learners. The printed book is no longer the sole source of learning, quite the contrary, organisations today are looking to enrich and equip the learning environment to create opportunities for self-motivated learning. Internet based technologies has made learning much
engaging and activity oriented but there are various factors that may impact the utility, quality and management of technology during educational usage. Maintaining quality in a diverse country like India has been challenging despite continuous efforts to bring reforms, for instance a case study conducted in Sri Lanka showed seven major challenges for e-learning in developing countries (Andersson 50):

i. Student support
ii. Flexibility
iii. Attitudes on e-learning
iv. Teaching and learning activities
v. Access
vi. Academic confidence
vii. Localisation of content

Online learning became the single most viable option for continuation of teaching learning activities during the wake of the Covid 19 pandemic. It helped in ensuring safety of learners but as Eva Herskovitz notes “for students with disabilities, e-learning fails to replicate in-person attention and support.” The isolation norms, restricted access to social spaces, lack of digital access was stressful for many learners and ‘disparity of access’ opine Mahapatra & Sharma, “becomes a harbinger of academic stress…which in the long run would add to the mental health and economic burden in society.” Low literacy and drop-out rate both are prevalent among the disabled in rural India as learners are unable to cope and flourish in traditional, unflexible environment of schools. Census 2011 reveals that an estimated 8.3% (20.78 Millions) of the total households in the country are having disabled persons, of which 71% are in rural areas. The data also highlights the inequalities faced by children with multiple disabilities (54% of the children) and mental challenges (50% of the children) as many of them have never attended educational institutions owing to their specific challenges. In 2010 globally around 785-795 million persons aged 15 years and older lived with disability based on 2010 population estimates (Kumar et.al, 69).

The situation is worsened by gaps in barriers to accessing health, education, transportation, information and work services as analysis of global trends points to the grim reality of disabled population across the world (Wagner):

i. In the year 2017, people aged over 60 years old represented 962 million people, which was twice as many as in 1980
ii. 1 in 2 disabled persons cannot afford treatment
iii. people with disabilities have a more fragile general health
iv. disability increases dependency and limits participation in society
v. the poverty rate is higher for people with disabilities

The trends are similar in India where disability is a limiting factor to full participation of the impacted individuals. However, it may be added that Census 2001 and 2011 show substantial progress and development owing to a number pf legal and constitutional measures to support
disabled communities. Census report 2001 emphasised Article 21A of the Indian constitution which guarantees education as a fundamental right. Section 26 of the Persons with Disabilities Act, 1995, made free and compulsory education to be provided to all children with disabilities up to the minimum age of 18 years. The Rights of Persons with Disabilities Act, 2016 specifically emphasises equality, non-discrimination, protection from abuse and special attention to women and children with disabilities among various other significant highlights.

The battle at legal level has been moving in the right direction since the last two decades. It is due to various social disparities, implementation issues and lack of access to resources, that full benefit of these policies is yet to reach people living in rural areas, women and those with multiple disabilities. A comparative analysis of data from Census 2001 and 2011 highlight an upward trend in overall literacy but full inclusion is where significant amount of work is required (see table 1 after Conclusion).

There are many contributing factors towards the backwardness and illiteracy of disabled people in India. Lack of planning, teacher training, implementation of schemes and unavailability of resources on national level, urban/rural divide, gender bias, prejudiced mindset are some of them. The figures above (Table 1) give a clear indication of the extent to which ‘inclusive’ is still a privilege of the few who can afford it. This also draws attention to the work and effort that is yet to be put into the policy frameworks so that each person is able to avail the best opportunities they can get.

THEORETICAL FRAMEWORK

The paper has utilized the following three major developments to interpret the complexities of life and learning for the differently abled populations: I) Disability Discourse II) Inclusive Learning and III) the research driven policy framework of RRI. All these points have been discussed briefly in the sections below.

i. The Disability Discourse
The ‘Americans with Disability Act’ of 1990 shifted the disability model from medical to social and instead focused on ‘functional ability rather than specific medical diagnosis to extend its legal protections to the full range of persons with disabilities’. Also, a person with a “disability is defined as someone who experiences a physical or mental condition that limits the ability to perform a major life activity, such as walking, breathing, seeing, hearing, thinking, or working” (“Ableism-NCCJ”). Berghs et al. (2016) identify four models in disability literature-a) medical model b) human rights model c) social model d) critical disability studies model. They concluded that disability and public health intervention efforts should offer a “reflexive framework that has a range of options with which public health research could engage”. Disability studies scholars have further focused their research to take a critical look at the body vs environment dichotomy while rightly positioning “dis/ability” within the purview of a kind of “branding” which adheres to “a
grand narrative, a brand of designed identity policy that on the surface speaks of resources and equity, but in essence serves up populations identified or identifying as disabled or otherwise vulnerable to the disability park…” (Depoy and Gilson 490-491).

The ideas of disability and ability are rooted in an “ideological screen of normality” says Lennard. Davis. He states that the need to confirm to it can be elaborated by example of “the bell curve,” that became in its own way “a symbol of the tyranny of the norm”.

The discourse on dis-ability enables us to create multiple strands of counter discourse on ‘ableism’ and direct the research towards:

i) deconstruction of the blueprint of ‘atypical vs typical’ bodies

ii) comprehension and research into the complex interplay of prevalent cultural systems, power dynamics and normative ideals

iii) participation of differently abled people in community and better representation through visibility in the public sphere.

ii. Literacy and Inclusion

Education is the most effective way to bring social justice, equality and opportunity among diverse groups of people. Literacy and inclusion are at the heart of efforts to uplift people with special needs. Kumar &Kumar point out that by 1998 different states had added inclusive education with the District Primary Education Programme (DPEP) with the motive to:

- evolve strategies to provide resource support to those children with special needs who were enrolled in DPEP schools…Towards this end DPEP supported community mobilization and early detection, in-service teacher training, resource support, provision of educational aids and appliances and removal of architectural barriers (Kumar & Kumar).

At the international level, United Nations historic declaration of the Convention of the Rights of Persons with Disabilities (CRPD) proposed guidelines to support inclusive initiatives:

To enable persons with disabilities to live independently and participate fully in all aspects of life, states parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas. These measures, which shall include…a) Buildings, roads, transportation and other indoor and outdoor facilities, including schools, housing, medical facilities and workplaces; b) Information, communications and other services, including electronic services and emergency services. (Article 9, United Nations Enable)

The UN CRPD guidelines have served as a wakeup call to governments across the world to ensure access to education and inclusion of every child/adult at school, community and
environmental level. In India, the enactment of PWD Act and establishment of Rehabilitation Council of India (or RCI became a statutory body in June, 1993 and the Act was amended in the year 2000) helped in broadening the base for inclusion and integration. The struggle for inclusion and literacy in India is far from over as data reveals that 75% of five-year-olds with disabilities and a quarter (more than one in four) of children with disabilities (in the age group of 5 to 19 years) do not attend any educational institution (N for Nose: State of the Education Report for India 2019; Children with Disabilities 54). It must be therefore asserted that legal support and schools alone cannot bring about satisfactory changes. What is required is a committed investigation of hidden barriers and social attitudes along with implementation of research based policy, framework and intervention at the grassroots level. In the context of inclusion and policy, RRI with its focus on utilising scientific advancements for supporting issues of social interest is certainly the way forward and offers a baseline framework to conceptualise the process.

iii. **Responsible Research and Innovation (RRI)**

Responsible Research and Innovation (referred as RRI henceforth) is a framework that helps in anchoring science, technology and innovation with socially relevant social issues. The European Commission regards the central process dimensions of RRI as -a) diversity and inclusiveness b) anticipation and reflexivity c) openness and transparency and d) responsiveness and adaptation (RRI Practice). Diversity and inclusion are significant drivers of change in society and are treated as an integral part of the work and practice of RRI. The role and practice of RRI is commendable in marking out territories where maximum research is required in the current scenario. In case of hidden disabilities (for example Learning Disabilities or LD), educational environment and structures may lead to academic stifling as it has already been noted for example, that “LD is as much the product of school related structures as a child’s learning related impairments. The more contextual structures demand academic skills and dispositions the more children with learning impairments become learning disabled” (Hale). There is hence an urgent need to align science and technology policies to enable not only people with disabilities but also the structures that surround them. Montalone however warns that “disabled publics” require “particular attention in RRI for healthcare innovations, in part due to epistemic and citizenship contestations that disenfranchise disabled perspectives and bodyminds” leading to “epistemic invalidation of disabled perspectives, particularly in relation to medical technologies” (87). The theoretical foundations of RRI must be translated into effective practice by those within scientific research community as diversity and inclusion have transformative potential which can impact and uplift millions of lives.
METHODOLOGY

This is a qualitative study involving theoretical-interpretative method of data collection and analysis. The selection of reading material was based on the following threefold model:

i. Identification of challenges to inclusion for persons with special needs based on research gaps highlighted in the literature review

ii. Identification of research based solutions adopted nationally and internationally to achieve inclusion, literacy and removing barriers

iii. Exploring the need to broaden RRI’s framework to impact policy and design of inclusive education (including digital learning) and suggest recommendations.

The data has been sourced from recent research in the domain of literacy and special education and this paper spans the time period between 2000 and 2021. Primary research in the areas of Disability Studies, Inclusion, Digital Access and RRI have been significantly drawn upon. The concepts are further corroborated by data released by Indian government (Census 2000 and 2011), published outcomes of prominent schemes like Samagra Shiksha and the website of Rehabilitation Council of India (RCI). This research paper has been developed on the basis of close analysis of recent as well as early documents on literacy among disabled, inclusive practices and awareness in rural and urban India. Authored works by several prominent researchers, journals, web articles and newspaper stories were consulted for assessing latest developments especially those related to Covid 19 period.

The subject matter has been approached from three viewpoints which are disability vs ableism, literacy and inclusion, and Responsible Research and Innovation (RRI). These three approaches summarise the core foundations of the research. Analysis included a close scrutiny of barriers that exist within social and cultural spaces leading to stigmatisation and discrimination against disabled individuals.

RESULTS

The analysis of various documents and discourse on disability provides a multifaceted view of challenges that differently abled individuals face as a community. Moreover, it highlights the obstacles which undermine efforts to alleviate social, cultural and political condition of people with disabilities.

Some of the major conclusions that may be drawn on the basis of this study are as listed below.

i. The theoretical framework helped in identifying the intertwined nature of literacy, ability and inclusion in the Indian context, as each one of these factors have a direct impact and reinforce the other. Hence, it may be clearly inferred that the route for “enabling” differently abled people is dependant upon literacy efforts and adoption of inclusive practices in all aspects of education, work and society.
ii. This study also shows that lack of support and apathy from society along with self-inflicted stigma of being different from others leads to compromised quality of life also. Self-esteem issues arise due to lack of opportunities in participating and contributing to society in meaningful ways add to the sense of loss at a personal level. Also, the tendency to negate/deny invisible disabilities in social (attitude, taboo, stigma) and legal discourse (lack of clear definition of disability, need of documentation, need to prove disability type or degree for availing benefits) create a multilevel barrier which is difficult for many to surpass. Many individuals are unable to find a suitable job despite much struggle, thus making them vulnerable to survival and support hardships. They might also be seen either as a burden on family or as victims of fate who must be dealt with sympathy and pity. This adds another level of complex relation dynamic of opportunity, access and self-esteem as each is connected with the other.

iii. Accessibility, workplace inclusion and safety concerns add to the final layer of factors that determine the success of people with disabilities. Concerns related to distance from rehabilitation centres, safety of the child (esp. girls) reinforces conservative attitudes resulting in higher drop-out rates in schools and colleges. Many work areas/offices are not fully equipped to support people with challenges and this has a huge economic cost for the nation. It leads to lack of participation, opportunity and assistance at the work place making it difficult for them to fight an unfair battle to provide for themselves or their families.

Any kind of discourse that posits disability as a problem existing in the body rather than society creates a deep chasm of mistrust, low confidence and depression. It is therefore not surprising that that “severe or extreme functional or activity difficulties are highly prevalent and the prevalence of disability was higher in “low and middle income countries”, especially among women. “Disability is found to be highly prevalent among adults, with an estimated global prevalence at 14%. Disability deserves enhanced policy attention and resources in public health and international development” (Mitra & Sambamoorthi, 941). Similarly, online environment may offer only a temporary sense of equality as Holloway & Foley looks at how the online medium “doesn't mask all differences in educational styles, social customs and body language. Chat environments styles can vary, seem strident and intimidating, and thus risk alienating or marginalizing students of different cultures.” These reports emphasise the need to work look at prevalent modes of learning with specific perspective of special education to overcome challenges in a multipronged way.

**DISCUSSION**

The shift from classroom to online education during Covid19 pandemic may have been exclusionary to the rural people with limited accessibility and resources. Kundu states that the “penetration of digital technologies in India has been haphazard and exclusionary”. He presents facts from the 2017-18 National Sample Survey Report on Education which states that “only 24%
of Indian household have an internet facility...66% of India’s population is in villages and only a little over 15% of rural households have access to internet services. For urban household the proportion is 42%” (Kundu). This also puts people disabilities at a higher risk of suffering from isolation, alienation and stress (Mahapatra and Sharma). Access to basic facilities and resources like sanitation, hygiene, water, food, library, shopping and daily news became difficult due to isolation norms. The Covid-19 situation has opened our eyes to the attention deserved by the disabled women and those in rural areas where a higher percentage of disabled people reside with little access to health and hygiene facilities.

The findings pose urgent challenges for policy-makers, disability activists, scholars, planners and strategists. This paper suggests the following recommendations to create equally participative, safe and supportive spaces for differently abled communities:

i. Capacity building and teacher training to ensure sensitivity to disability issues and appropriate selection of learning materials and resources for every learner. Developing supportive and Inclusive Learning Friendly Environment (ILFE) and tools equipped for diverse needs.

ii. Implementation of Universal Design for Learning (UDL) so that no person should have to struggle due to inadequate and unflexible learning environment thus facilitating the ideal engagement, representation, and action and expression.

iii. Demystification of differences and disability by promoting neurodiversity, different learning styles, unique learning differences and assistive models for designing space, material and curricula (e.g. “Barkha” text book series (at primary level by NCERT, India) with color coding and systematic content design targeted for helping children with learning disability).

iv. Ensuring equity, accessibility and acceptability of initiatives intended to provide support to people with special needs with proper planning and execution from micro level to macro levels across hierarchical and oppressive systems.

v. Based on Farrell and Ainscow’s (2002) Presence-Acceptance-Participation-Achievement cycle, Boyle & Topping highlight the widening basis of inclusion and state that “inclusion implies celebrating the diversity and supporting the achievement and participation of all pupils who face learning and/or behaviour challenges of any kind, in terms of socio-economic circumstances, ethnic origin, cultural heritage, religion, linguistic heritage, gender, sexual preference” (12).

vi. Incorporating and practicing key aspects of inclusive education which should be community based, barrier-free, promotes collaboration and equality (Davis 23)

Dr Jayanthi Narayan, a special educator from NIMH (National Institute of Mentally Handicapped) highlights an encouraging change in people’s attitude from “charity to rights” as disabled people have learnt not only to “accept their disability” but also “take pride in being contributing members of society.” The paper also identifies some significant drivers of change which could prove to be milestones in the path of initiating a meaningful dialogue between the state and citizens.
To ensure better participation from all individuals irrespective of individual differences the authors suggest following measures as potential drivers of change:

i. Integration - ensuring full integration and participation; also, locating disability within the systemic failure to account for lack of opportunity and access to all.

ii. Attitudinal change - viewing disability not as a disabled person’s problem but rethinking it as a social and political responsibility

iii. Accessibility - making efforts to increase accessibility instead of offering sympathy.

iv. Responsible research - shifting the locus of discourse from disabled body/mind to removing barriers, welcoming multiple voices and developing research opportunities for equalising the ground for each individual.

v. Innovation - in design, technology, interactive spaces Creating customised assistive technology solutions for each person.

vi. Dignity and quality of life - Advocating for the right of every person to lead a dignified and successful life. Making “educational, social and economic justification” to create right policies and supportive disability networks is the need of the hour (Ainscow et al. 672)

CONCLUSION

There are many ways to improve the quality of life of the differently abled individuals. There is a need to create better assistance facilities at school level, safety precautions for commutation, appropriate accommodations at work place and clear goal setting for any transformation to happen. There might be obstacles in achieving the goal but a strong determination to overcome them can difference is the need of the hour.

<table>
<thead>
<tr>
<th>Census</th>
<th>Population</th>
<th>Total Population</th>
<th>Literacy of People with disabilities</th>
</tr>
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<tbody>
<tr>
<td>2001</td>
<td>21.9 millions</td>
<td>2.13% of total population</td>
<td>49 % literates (&quot;Census of India: Disabled Population&quot;).</td>
</tr>
</tbody>
</table>
| 2011     | 26.8 millions | 2.21 % of total population | Literates: 55%  
Gender Gap:(Males- 62% Females-45%)  
Rural literacy :49% Urban literacy 67%  
(Ministry of Statistics and Program Implementation | Government of India): |

Table 1: Comparison of Census data on disability in 2001 and 2011
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EMPOWERING YOUTH THROUGH INQUIRY-BASED EDUCATION FOR RRI

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INTRODUCTION

One of the key barriers for online distance education during the pandemic faced by various countries with large populations of low Internet connectivity. This is the lack of meaningful approaches to support formal curricula that integrate online and offline learning as well open and informal education.

There are approximately ⅓ of the population in Brazil who do not have access to the internet (CGI, 2018), particularly in rural areas (Souza, 2020).

In terms of Brazil as a country, 67% of households (CGI, 2018) have internet, of which, a proportion is marked in access to social classes. People in the urban areas have 74% access, compared to the rural regions, whose numbers of users is 49%. Approximately 33% of users are excluded in Brazil.

Although 89% of young people have internet access (CGI, 2020), only 25% of young people perform elementary learning tasks and 2% of students have some abilities to access reliable sources of information (Fraillon et al, 2020). The majority of youth have difficulties dealing with disinformation and developing critical thinking.

Thus, equipping youth as active learners, researchers and co-entrepreneurs. Has become very relevant to being able to face contemporary issues affected by covid-19. These include health, economy, environment, technology-enhanced learning, and competences for employability.

Inquiry-based learning for Responsible Research and Innovation (RRI) is an approach promoted in Europe, with practices developed in Brazil. Through two European projects called we SPOT and ENGAGE. Both projects offer pedagogical approaches and participatory technologies to engage researchers, youth and educators to bridge formal and informal learning, with topical socio-scientific issues.
This study aims to examine the correlations between the principles and skills presented by these two RRI projects with the practices developed in Ceara State of Brazil to support science with and for society.

**THEORETICAL PRINCIPLES**

In the theoretical studies of this article we present a new socio-cultural. Discussion demonstrate a society marked by the challenge of virtual inclusion and the development of digital skills. However, we experience extractive educational models that intensify in the post-pandemic moments, due to the lack of training and understanding about how to train critical and creative young people.

In the contemporary world, connected to digital communication networks, where learners use technology artifacts earlier and develop naturally skills for its use, there is an urgent need for the teacher to invest in the creation of skills broad enough to allow them to act effectively in the fluent handling of media, and apply them creatively in their pedagogical practice with their students.

Therefore, this study presents an example of approaches to working with open co-learning, in which it recognizes this learner as being an active, collaborative, co-manager of learning. Thus, new pedagogies are emerging, but without forgetting Patron of Education in Brazil (FREIRE, 2001). They author already invited us to develop the pedagogy of autonomy, so that young people can build themselves as protagonists.

This brings us to the most recent studies by Boaventura Santos on post-abyssal pedagogy (Santos, 2018), which reinforces the importance of the collective construction of knowledge.

That allows other learning possibilities to emerge, from a generation that is connected and that needs to learn to create, collaborate, cooperate and share on the network (Souza, 2016).

This perspective is evident in the works of the Colearns group. This group research a category that is linked when learning together and when investigating together, defined as Co-learn and Co-investigate (Okada, 2014). These studies are fundamental for this post-pandemic cultural context, for the development of the engagement of educators and researchers, combining formal, informal and non-formal learning with current socio-scientific issues.

This study started from a model denominated MATRIX C (Okada, 2014), used to underpin the theoretical framework used in this work. To enable competency assessment, and the development of scientific skills introduced by the European funded ENGAGE Project (Okada & Sherborne, 2018).
On example the MATRIX C has been used in various studies including in this current work as a visual approach to evaluate the process of colearning and coinquiry. Figure 1 presents a map that connects category as evidence to indicate a particular skill indicated in the MATRIX C.

**Figure 1 - MATRIX C (Okada, A., Serra, A., Ribeiro, S., & Pinto, S., 2015)**

It was possible to do a meta-analysis of the constituent elements (Okada, 2014) and (Okada, A., Serra, A., Ribeiro, S., & Pinto, S., 2015) such as: digital literacy, collaboration-communication and critical-creative thinking, which are concepts that integrate this approach that enable the solution of local problems with ICT.

The studies (SOUZA, 2014) dialogue with this theoretical basis, by designing following teaching for working with young people whomobilize the dream, conceive, develop, implement and evaluate
social practices with educational technologies, always attentive to the students' ethical, social and cultural principles.

Analyzing these studies helps us to rethink social practices with digital technologies, in the development of projects that are in line with the studies of Okada and Sherborne (2016). In this sense, we recognize these elements as guiding the process of development and assessment by competencies.

Therefore, all projects were necessary to support the development of a new generation of Digital Natives. That develop Competencies to Coentrepreneuship (plan, use, share, interact, elaborate, innovate, reflect) according Souza (2014).

These theoretical elements help us to develop the case study, with the research questions:

1. What are the skills developed by students during an online course?
2. What are the relationships between skills and activities presented in the project Student Club?

METODOLOGY

This qualitative study is centred on four RRI principles: respect, diversity, equity and inclusion. The methodology is supported by digital ethnography and thematic analysis with a set of categories.

PARTICIPANTS

There were 50 young learners from a Student Club course who contributed to this study; they were attending a module offered in Moodle as part of the AVACED programme (2019/2020).

CONTEXT

In the state public schools of the government of Ceará there are full-time schools in which young people are trained in the physical, affective, cognitive, intellectual and ethical dimensions, by expanding time, space and curriculum.

This extension the full-time school allows interdisciplinary activities, valuing the student's potential. One of them is the Student Club which allows the student to become protagonists.

The club is an organization of students around learning experiences, developing activities associated with a common theme. Who proposes are the students, who are appreciated by the school manager.
To assist the training path, an online training was created, focusing on the development of projects that mobilize the protagonism. For that develop Competencies to Coentrepreneurship (plan, use, share, interact, elaborate, innovate, reflect).

**DATA GENERATION**

Participants generated data during September 25 to December 20, we selected class 4 (with 50 students) with 4 discussion forum - 284 comments, with the end of 15 shared projects.

**ANALYTICAL APPROACH**

For analysing data generated by participants, the categories were crossed: the inquiry skills for RRI of the ENGAGE (Okada & Sherborne 2018), and Coentrepreneurship skills (Souza, 2014).

The inquiry skills for RRI include devising questions, interrogating sources, analysing data, drawing conclusions, justifying opinions, using ethics, examining consequences, estimating risks, justifying opinions and communicating ideas.

The co-entrepreneurship skills are: dream, conceive, develop, implement, evaluate. These categories were used to analyse learning practices developed by young people.

**PROCEDURES**

The context of analysis of the study is based on a critical and reflective training with young people from public schools in the state of Ceará, in a virtual environment. The training has 4 modules (1. protagonism, cooperativism and leadership 2. Full-time school - conceptions and characteristics, 3. Cooperative Learning, 4. Me and the project (virtual space as a knowledge production tool) in order to contribute to the practices of Student Clubs, through texts, discussions in forums, articles, videos, quizzes and wikis. The action described was aims to develop the protagonism, self-management and leadership of students, through study and reflection. For analysis of this study, the last module (Me and the project) will be explored, with the respective results of a project.

**FINDINGS**

When researching the skills developed by young people in training, we realized the implications with the RRI on: Openness and transparency, Reflexibility, Responsive and Adaptive, Diversity and Inclusion.
The outcomes of this study revealed that youth were able to develop and show technical and proactive skills through the projects that they developed, using the various technologies in the Virtual Learning Environment - Moodle - AVACED.¹

According to the studies of Venn and Vraking (2009), a generation of youths needs to learn to deal with complex problems, from different angles, because only then can they present unexpected solutions. This changes the work in the educational context “as we see technology, knowledge and society expand rapidly, we must come to realize that there will always be structures, a history and limits for what we do. The lesson we have to learn is to be creative and ignore obstacles.” (Venn and Vraking, 2009, p. 25)

The thematic analysis based on the Coentrepreneuship skills of their posts in the discussion forum revealed that most of them were able to develop their projects cooperatively by setting meaningful goals (dream), implementing collective procedures, sharing information with a common purpose. The key issue was to be able to evaluate their own achievements.

This evidence marks the importance of developing training spaces of developing training spaces that mobilize Coentrepreneuship, doing science, new ways of undertaking knowledge on the Web, in order to do something constructive and meaningful with digital technologies.

From this perspective, we categorize the projects developed by young people, according to the excerpts, at the intersection of the two matrices Coentrepreneuship and Engage.

<table>
<thead>
<tr>
<th>Coentrepreneuship Skills</th>
<th>Skills RRI Engage</th>
<th>AVACED / Evidences Project</th>
<th>Activities Resume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dream ( Plan)</td>
<td>Ask questions</td>
<td>share curiosities, bring their stories to life. Example of elaborated project: Young Scientist</td>
<td>“How can we act in a protagonist way? How is it possible with student clubs? (Question - forum 1)</td>
</tr>
<tr>
<td></td>
<td>Interrogate the sources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Virtual Learning Environment of the Coordination of Teacher Training and Distance Education of the Government of the State of Ceará, built on the basis of Moodle - available at the link: http://avaced.seduc.ce.gov.br/
When relating the developed projects meet young researchers from society, in a connects, creates, collaborates, cooperates, shares - C5 generation (Souza, 2020). These dimensions bring together conscious and social involvement, enable a new understanding of entrepreneurship and a constant curiosity to continue to dream and learn in spite of diversities and adversities. Therefore, it maintains a strong connection with the RRI approach.

To conclude the qualitative analysis, evidence from the debate forums that characterizes the Student Clubs Formation is found as a meeting space, in which 66% of the young people participated with debates. In this study, categorization focuses only on forum 4 - on project development:

In this last forum, you will critically reflect what you have developed throughout the course, using interactive tools to assist in the act of learning, to help in this new posture.
of student who implements projects in the student clubs of your school. (Cut by the
author Source: AVACED -

For this study we categorized a forum, which presents the reflection of each student on what he
developed in the course. The space has 33 messages with 10 agreements / consensus, 11 sharing
ideas, 4 link shares, 5 thanks (general comment), 3 messages with pros and cons. For example:
I fully agree with you.
The discussion forums are a space for debates. Through this tool, we have the opportunity
to share doubts, help solve other people's questions and collectively build various types
of knowledge. (Student A – forum 4) In these excerpts, we do not want to generalize, but
the forum space was a fundamental space for the development of the solution of local
problems, with students' ethical, social, and cultural principles. Due to the reflective space
and free writing, however, we found no evidence of literature review, scientific
questioning. For that they need a deeper analysis in the field, to observe the results of
the implementation of the clubs, after the training period.

However, when mobilizing the questioning of social transformation, promoting the collective
connection of ideas, the strengthening of collaboration and cooperation, we find steps of
investigation techniques, in the talent to contribute in the resolution of conflicts, in the different
areas. Issues that assist in the action to confront the covid-19, which is essential to equip young
people as an active student, researcher and coentrepreneur.

The analysis of the messages of this forum highlighted the aspects of the RRI, with regard to:
Openness and transparency (Student B), Reflexibility (Student C), Responsive and Adaptive
(Student D), Diversity and Inclusion (Student E)

“I recognize that I need to grow more and change a little when it comes to helping
colleagues, because when someone makes a statement that is not interesting, I simply
ignore it” (Student B – forum 4)

It is essential that at the end of all activities done in clubs there is an applied activity like
this so that everyone learns where they went and where they got it right, so in the next
group work we will all have more learning. (Student C- forum 4)

“Because I really like to criticize people and see what they did wrong, it may even be my
fault, but I'm still trying to improve (Student D- forum 4)

We point out that the analyses presented indicate that action leaves the seed of improvements,
hope, and the desire for change, based on the dreams constituted in their projects. For this
reason, we highlight the word “good” - it was present in 89% of the evaluations of reaction and
good word (11%), which reinforces the proposed model to look outside, to project to analyze society as the one that leaves passivity to Coentrepreneurship Model linked to the RRI principles. A setback was noticed in the use of wiki interfaces in Moodle. However, some of their difficulties were developing reflexive and scientific skills, as they were not able to contribute to collective writing (Wiki), devise scientific questions, interrogate sources and communicate ideas based on evidence. This requires further investigation, to understand whether the difficulties were technical in the use of the environment, or in organizing the common theme.

Although this in the course's reaction rating, students say the course is 75.58% great and 24.42% good. No negative categories. Regarding the evaluation of the student clubs action. We highlight the categories, which:

- Ability to motivate student integration and participation, favoring learning:
  "I found the idea of creating this course very interesting because it is online, and all participants are part of a full-time institution, it ends up helping because it doesn’t matter how everyone goes to physical meetings, the site could improve more when it comes to sending of activities but in general he is quite satisfactory "Student Club G (Reaction evaluation)
  "The course contains excellent material, enabling the student to learn more and more about the subject addressed and facilitating the student's academic life in group activities and requiring instructions" Student J (Reaction evaluation)

- Applicability in the project:
  "The course clarified a lot about how to work as a team and study cooperatively, I will take a lot of luggage from these contents for project." Student J (Reaction evaluation)

RESEARCH INNOVATION

Inquiry-based learning for Responsible Research and Innovation (RRI) has become very relevant in Europe and with practices developed in Brazil through two European projects weSPOT and ENGAGE. Both projects offer pedagogical approaches and participatory technologies to engage researchers, youth and educators to bridge formal, informal and non-formal learning with topical socio-scientific issues.

In this sense, in the object of study we highlight the RRI principles (Respect, Equity, Inclusion, Diversity), with the following evidences:

“what we do is to try to reduce the inequality of students who do not have access to the internet (Student J– Project Podcast)2.

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2 The presentation https://www.youtube.com/watch?v=yb2F8tMXui0&feature=youtu.be
“if we didn’t discuss social issues we wouldn't understand the problems of colleagues” (Student J– Project Podcast).

The context of these extracts, evidence the empowerment of young people who are part of the project Student clubs. That know get involved and want to transform the reality, which we will contextualize below, in the topic implications in the RRI.

**RRI IMPLICATIONS**

Returning to table 1 and excerpts with students' voices, we can evidence that the activities developed by young people in the Student Clubs Course equipped young people with the principles covered in the RRI: Openness and transparency, Reflexibility, Responsive and Adaptive, Diversity and Inclusion (Okada & Sherborne, 2016).

To locate this analysis, we select the digital ethnography study of one of the projects - Podcast - action is taking place in a full-time school in the metropolitan region of Fortaleza, as a great support in these pandemic times. Action led by two young women who, due to the difficulties of their colleagues' access to school content - create a channel to share their studies, in audio file format (shared by digital media).

In this project, young women develop technological inclusion, in addition to helping with curricular activities, through quick submissions to the whatsapp group. What marks the adaptation of a new language, for the engagement of colleagues, helping to overcome difficulties in teaching studies, initially the work started in the humanities area, then expanded to other curricular areas.

With this, we find the basis of cooperative learning and studies by Freinet (1998), for whom cooperation is a joint educational activity motivated by spontaneous interest and engulfed in a free atmosphere.

This study does not aim to generalize, but to select this evidence of the application. The young are active researchers, who take ownership of the content, anticipating the problems of colleagues who have digital difficulties (regarding access), they have the attitude and initiative to train and be trained - marked by a Freirian approach (Freire, 2001).

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3 The presentation [https://www.youtube.com/watch?v=yb2F8tMXui0&feature=youtu.be](https://www.youtube.com/watch?v=yb2F8tMXui0&feature=youtu.be)

4 The project was selected to be analyzed, due to the repercussion and the protagonism of the young women - as can be deepened in the report - link: [https://globoplay.globo.com/v/8735758/](https://globoplay.globo.com/v/8735758/).
Data from the research report on Monitoring and access conditions in the State of Ceará (2020) shows that about 80% of young people have access (telephone and internet). However, it still lacks training for the development of critical and creative thinking (Fraillon et al, 2020).

That is why it is so important to develop projects that they support with a spirit of equity and inclusion, supporting the skills of coentrepreneurship. It is in this context that we recognize the mobilization with problem solving in our daily lives with the digital, understanding this technological issue - with ethical and critical use - so that it is possible to seek bases for the emancipation and transformation of our community (FREIRE, 2001).

With the adoption of such a posture, we recognize ourselves, as the educator Paulo Freire. What creates spaces for dispute and dialogue in education - this is a fundamental factor in the construction of educational communities in the network, as it establishes doors in the face of conflicts. In order to make it possible, expanded feelings and cordialities in this new virtual context.

RECOMMENDATION THROUGH INQUIRY-BASED EDUCATION FOR RRI

When studying the principles of RRI (Okada & Sherborne 2016) such as: reflexivity, respect, diversity, equity and inclusion and actions developed by young people that article5.

To evidence the proposed research problem and promote this active student, researcher, co-entrepreneur capable of facing contemporary issues. Teaching is essential to sow that work. We do not want to create recipes, but when to examine the correlations between the principles and skills presented by these RRI with the practices developed in Ceara State of Brazil to support science with and for society.

We highlight the work of educators who can remix, adapt the didactic approach of (Souza, 2014), involving ethical principles, scientific education, open access, public engagement, governance, RRI gender equality.

5 In the state of Ceará there are 130 full-time high schools in the state of Ceará - EMTI that have been trained for student clubs. Action analyzed in this article is an excerpt from online training, with a load of 104 class hours, composed of four modules that addressed: the characteristics of the Full Time school, the concept of student protagonism, the premises of Cooperative learning and the concept of network, through virtual platform of the Coordination of Teacher Training and Distance Education - https://avaced.seduc.ce.gov.br/.
Therefore, we signal the role of the teacher in deepening the new ways of educating in a network, which breaks with the model of reproduction, for actions that can collaborate and cooperate in the network, so that they leave the comfort zone and can face the inevitable changes as an alert. (Costa, Rodrigues, Cruz & Fradão, 2012) for working with digital skills and citizenship.

In promoting the rhetorical process, to develop a social action with the technologies, new learning spaces that in addition to promoting the use of mobile and ubiquitous technologies are established in a creative process.

With some recommendations for educators: harnessing local problems when elaborating questions, planning projects with social issues (with the group), using, sharing, interacting in the digital world; provide guidance to explore new contexts, identify new creative opportunities, develop and evaluate actions in / with the network - all these recommendations will be useful for promoting scientific and digital thinking.

REFERENCES


GLOSSARY

**Colearn**: is a collaborative open learning network whose members are interested in open education and pen technologies

**Studente Club**: the club is an organization of students around learning experiences, developing activities associated with a common theme. Who proposes are the students, who are appreciated by the school manager.

**AVACED**: Virtual Learning Environment from the state government of Ceará to develop training courses with teachers, students and managers.
APPLICATION OF THE THEORY OF PLANNED BEHAVIOUR IN ENTREPRENEURSHIP DOMAIN: THE MODERATING ROLE OF PERCEIVED BEHAVIOURAL CONTROL

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INTRODUCTION

The Theory of Planned Behavior (TPB) has gotten one of the most used hypotheses in clarifying and predicting practices and behaviours of people. It has been utilized to clarify and predict expectations and practices in different research fields like health sciences, marketing, organic food consumption, environment and entrepreneurship (see., Godin & Kok, 1996; Pavlou & Fygenson, 2006; Scalco, Noventa, Sartori, & Ceschi, 2017; Hongyun, Jian-gang, Daizhong, Shiping, Wei & Kaifeng, 2019; Kolvereid & Isaksen, 2006; Krueger & Reilly, 2000). However, despite the general usefulness and applicability of TPB in predicting behaviour in different domains, its sufficiency and application in predicting intention and behaviour has been debated by many scholars. One of the recently debated issue is on the areas of individual’s volitional control especially in areas of entrepreneurship were perfect behavioural control is rare (Tornikoski & Maalaoui, 2019). While the three predictors of intention are often considered independent factors in linear forecasting models, theoretically, PBC is more likely to be a moderator rather than a predictor of behavioural intention. This view has been supported in the recent interview with Ajzen where he indicated that PBC can moderate the effects of ATE and SN on entrepreneurial intention (EI) (Tornikoski & Maalaoui, 2019). This implies that instead of directly affecting intention, PBC might interact with attitude and subjective norms to affect intention. Hence, when entrepreneurs develop positive attitude and subjective norms, they are more likely to have intention when they have more control over entrepreneurship behavior.

In any case, regardless of this significant forward leap, little work has investigated when or under what conditions ATE and SN influences EI, especially in the entrepreneurship domain. While the moderating relationship has been previously tested, (Yzer, 2012) argued that they suffer from methodological issues and weak statistical power for interaction. Hence, this implies that PBC can serve as a moderator if appropriately tested. Moreover, the few moderating relationships tested where on other domains and not entrepreneurship. Testing the moderating effect in the entrepreneurship domain is important given the relative significance of ATE and SN as predictors of intention and the expectation that they will vary according to behaviour, population and time period (Tornikoski and Maalaoui, 2019). This study looks at the theoretical interaction between one of TPB main constructs (i.e., PBC) and the remaining two constructs (i.e. ATE and SN). This is
especially important going by the inconsistencies in the subjective norms effect on entrepreneurial intention. In order to address the existing theoretical gaps, as well as the inconsistencies in previous studies, this study assumes that perceived behavioural control can possibly interact with ATE and SN to predict EI. In addition, this study is among the first to adopt a multidimensional conceptualization of PBC from the composition of perceived autonomy and perceived capacity.

APPLICATION OF TPB IN PREVIOUS ENTREPRENEURSHIP STUDIES

Research in entrepreneurial intention formation and the factors that explain why some people engage in entrepreneurial activities, is particularly interesting to entrepreneurial scholars. The main agreement of the theory is that the individual's intention is determined by their attitude to behavior, subjective norms, and perceived behavioral control, which is preceded by a person's intention to act and perceive control of behavior (Ajzen 1991). Attitudes are described as the extent to which a person has a favorable or negative evaluation of the behavior in question, a subjective norm is an attitude of an individual to the importance of recognizing or disapproving of the execution of a given behavior, and a PBC refers to an individual's perception of the behavior of ease or difficulty (Ajzen, 1977). Tsordia and Papadimitriou (2015) argued that in the formation of entrepreneurial intention, the three constructs of TPB play different roles, and subjective norms has been found to be insignificant. For example, (Dink and Budic, 2016; Krueger, Riley, and Kasrud, 2000; Nishimura and Tristan, 2011) found partial support for TPB, because ATE and PBC are significant and subjective norms are trivial. Others like, (Wu, Ibrahim, Ahmed, and Wu, 2016; Kolvereid and Isaksen, 2006) found that both attitude and subjective norms had a significant impact on the intention of self-employment, while self-efficacy had little effect. Yang (2013) found attitude and subjective norms to be stronger on entrepreneurial intention than PBC. In summary, it can be concluded that most of the previous studies only succeeded in testing the direct relationship between the three constructs (ATE, PBC and SN) as predictors for intention. Thus, according to Ajzen's recommendations, the significance of ATE and SN vary according to behaviour, population and time period (Tornikoski and Maalaouï, 2019), the following hypotheses where formulated:

H1: Attitude towards Entrepreneurship is significantly related to Entrepreneurial Intention
H2: Subjective Norms is significantly related to Entrepreneurial Intention.

MODERATING ROLE OF PBC

The use of PBC as a new predictor of intention and behaviour marks an important advancement in the reasoned action theory, which led to the emergence of the present theory of planned behavior (Fishbein and Ajzen, 1975). Although, the predictors of intention are generally applied as independent variables, theoretically, it is argued that PBC could interact with ATE and SN to predict intention (Tornikoski & Maalaouï, 2019). In other words, a positive ATE and SN could lead to the intention to perform behaviors, as long as people believe in their ability to perform the conduct in question. However, it is conceivable that even if attitudes and perceptions of an act
are positive, individuals will be discouraged from participating in such behaviour if they think they cannot do so (Eagly and Chaiken 1993). Yzer (2007) adds that PBC may moderate the effect of attitudes and norms on intention, so that when perceived behavior control is higher, the relationship between attitude and perception norms and intent is stronger. While this may look feasible, there is little empirical evidence that PBC interacts with ATE and SN to affect intention. Although the hypotheses may not necessarily be conceptually flawed, there is inadequate statistical capacity to determine interactions (Yzer, 2007). Yzer (2012) believes that in most reasoned action studies, the statistical ability of interactive testing is weak. In fact, evidences indicate that interaction of PBC can be demonstrated if the statistical power of the interaction test increases.

The key to perceived behavior control is the argument that attitudes and norms do less to explain intent when the behavior is not under one person's control (Tornikoski and Maalaoui, 2019). Although entrepreneurship is an area where entrepreneurs have little or no perfect behavioral control, no study has investigated the moderating role of PBC as it impacts on ATE and SN relationship with intention to start a business. The few studies that have attempted such investigation where conducted in different domains, including; Yzer and van den Putte (2007) among smokers; Dillard (2011) among Patients in the Medical Field, Yzer (2012). What is clear regarding these studies is that, there exist methodological issues in the test for interaction such as weak statistical power (Yzer, 2012). Hence, improvement in the statistical power for interaction may demonstrate the moderation of PBC. Again, contrary to the previous application of PBC as a unidimensional construct, this study adopts a multidimensional approach to PBC were it is conceptualized by Yzer (2012) as perceived capacity (PC) and perceived autonomy (PA). He added that in order to capture the full image of PBC, the measures should include both PC and PA. Perceived capacity is the extent to which people believe they are capable of performing entrepreneurship behavior while Perceived autonomy is the degree to which people feel that entrepreneurship behavior manifests themselves under their own will. Hence, this study attempts to investigate the moderating role of PBC measured by (Perceived Capacity and Perceived autonomy) on the attitude and subjective norms relationship with entrepreneurial intention.

H3: Perceived Capacity Moderates the relationship between ATE and EI.
H4: Perceived Capacity Moderates the relationship between SN and EI.
H5: Perceived Autonomy Moderates the relationship between ATE and EI
H6: Perceived Autonomy Moderates the relationship between SN and EI
METHODOLOGY

Survey research design was adopted which is cross sectional. The population of 9,945 final year students at one of the largest public university in Nigeria and Africa (Ahmadu Bello University, Zaria) during the 2018/2019 session were considered in the study. The sample size was arrived at 370 using (Dillman, Smyth, & Christian, 2014) formula for determining an appropriate sample size. However, going by the suggestion of Israel (2013), 30% of the minimum sample i.e. 111 was added to the computed sample size giving a total of 481. Simple random was employed were each element is given equal chance to be selected in the sample. Out of the 481 questionnaires distributed, 40 were found unengaged and hence were discarded, leaving the study with 441 questionnaires. The university was chosen because it is one of the first to introduce entrepreneurship education into its curriculum in Nigeria, while students were chosen because they were found to be the ideal respondents for a futuristic entrepreneurial behaviour (Krueger, et. al., 2000). Hence, data was collected during their classes and they were given adequate time of 60 minutes to fill the questionnaire. Before the self-administration of questionnaire, the students were informed the purpose of the research and were assured of its voluntary and confidentiality nature, this according to (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) will minimizes the effect of common method biases.

Figure 1: Research Model
MEASURE AND INSTRUMENTATION

Liñán and Chen (2009) questionnaire was employed to measure ATE, SN, and EI, all questions were in placed on close ended format and responses were scaled on 5-point Likert scale, which includes: strongly agree(SA), agree(A), not sure(NS), disagree(D) and strongly disagree(SD). ATE consists of 5 items including; "the profession as a business person is appealing to me", "among various alternatives, I would prefer to be an entrepreneur". Subjective Norms consist of 3 items including; "My parents arranged towards my future profession as a business person", "My companions consider enterprise to be a logical decision for me". Once more, Entrepreneurial Intention is estimated by 6 items including "I am prepared to effectively be a business person", "I am focused on creating a business in the future".

Finally, the measure for perceived behavioural control was adapted from (Yzer, 2012). According to Yzer (2012), PBC reflects people's judgment of their ability to act and their autonomy in their decisions. He added that since the power of PC and PA are part of the same structure, there can be a distinction between capacity and autonomy empirically (Yzer, 2012). The instrument consists of 8 items with 5 items measuring perceived capacity and 3 items measuring perceived autonomy. Samples of the items include; “I am very confident of my ability to manage my business”, “I am certain/sure of my ability to own and manage an enterprise”. Some samples of the items that measure perceived capacity include; “few events are outside my control”, “I have complete control over my business”.

ANALYTICAL PROCEDURE

Prior to the main analysis, this study ensured assumptions about outlier check, normality and multicollinearity (Hair, Hult, Ringle & Sarstedt, 2017). After successfully satisfying all assumptions, we adopted the partial least squares (PLS) path modeling method. The research model depicted in figure 1 was tested using Partial Least Square (PLS) path modelling. The method is used because the study is aimed at predicting the dependent variable (Duarte & Raposo, 2010) and PLS is also a non-parametric technique (Ruiz, Mujica, Berjaga, & Rodellar, 2013). In order to validate and evaluate the research model, Hair, Sarstedt, Ringle, & Gudergan (2017) suggested using two stages of evaluation. They are measurement models (also called external models in PLS-SEM) and structural models (also called internal models in PLS-SEM).

MEASUREMENT MODEL

In order to evaluate the measurement model of this study, the researchers evaluated the reliability of the individual items measuring each potential structure, the internal consistency reliability (i.e, the composite reliability), the discriminant validity, and the convergence validity of each reflective construct (Hair et al., 2017). Although, Hair et al. (2017) recommends using an outer loading of 0.70 as reliable and acceptable, they argued that an indicator should be deleted only if deleting the item increases the constructs AVE or Composite reliability. Only one item on
PC i.e PC1 was deleted for having loadings less than 0.70. The remaining 21 items were found reliable with loading greater than 0.70.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Indicators</th>
<th>Item Loadings</th>
<th>Cronbach’s Alpha</th>
<th>Composite Reliability</th>
<th>Average Variance Extracted (AVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude towards Entrepreneurship</td>
<td>ATE1</td>
<td>0.90</td>
<td>0.94</td>
<td>0.95</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>ATE2</td>
<td>0.87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ATE3</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ATE4</td>
<td>0.91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ATE5</td>
<td>0.90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entrepreneurial Intention</td>
<td>EI1_1</td>
<td>0.88</td>
<td>0.91</td>
<td>0.92</td>
<td>0.66</td>
</tr>
<tr>
<td></td>
<td>EI2_1</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EI3_1</td>
<td>0.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EI4_1</td>
<td>0.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EI5_1</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>EI6_1</td>
<td>0.83</td>
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<tr>
<td>Perceived Autonomy</td>
<td>PA1</td>
<td>0.74</td>
<td>0.78</td>
<td>0.87</td>
<td>0.70</td>
</tr>
<tr>
<td></td>
<td>PA2</td>
<td>0.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PA3</td>
<td>0.86</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Capacity</td>
<td>PC2</td>
<td>0.79</td>
<td>0.92</td>
<td>0.94</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>PC3</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC4</td>
<td>0.93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PC5</td>
<td>0.93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective Norms</td>
<td>SN1</td>
<td>0.91</td>
<td>0.86</td>
<td>0.92</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>SN2</td>
<td>0.93</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SN3</td>
<td>0.82</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In addition, the composite reliability and Cronbach’s alpha value were evaluated to determine the internal consistency of the reflective structure (between 0 and 1), the higher values represent higher reliabilities. In conclusion, all of these constructs are reliable because their respective composite reliability and Cronbach alpha values are above the threshold of 0.70. Again, the convergent validity was also met as all the AVE values were all above 0.50.
Furthermore, to ascertain the discriminant validity, Duarte and Amaro (2018) proposed the use of multitrait-multimethod (HTMT) matrix as a more adequate and sensitive approach to detecting discriminant validity.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>ATE</th>
<th>EI</th>
<th>PA</th>
<th>PC</th>
<th>SN</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EI</td>
<td>0.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>0.21</td>
<td>0.38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC</td>
<td>0.14</td>
<td>0.32</td>
<td>0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SN</td>
<td>0.07</td>
<td>0.18</td>
<td>0.59</td>
<td>0.58</td>
<td></td>
</tr>
</tbody>
</table>

As can be seen from Table 2 above, the HTMT statistics are given based on the correlation between their reflective construction items. Since the HTMT value is lower than the 0.85 threshold proposed by (Hair et al., 2017), the reflective latent variable of this study has discriminant validity.

**STRUCTURAL MODEL**

After all the requirements of the measurement model are met, the structural model is evaluated. The first part of the structural model evaluation involves the testing of theoretical relationships. Specifically, the direct and moderating effect was assessed on 441 cases using 5000 bootstrap samples (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014).

<table>
<thead>
<tr>
<th>Relationships</th>
<th>Beta Values</th>
<th>Std Dev.</th>
<th>T Statistics</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE -&gt; EI</td>
<td>0.40</td>
<td>0.04</td>
<td>9.59</td>
<td>0.00</td>
</tr>
<tr>
<td>SN -&gt; EI</td>
<td>-0.09</td>
<td>0.04</td>
<td>1.93</td>
<td>0.05</td>
</tr>
<tr>
<td>PA*ATE -&gt; EI</td>
<td>0.19</td>
<td>0.06</td>
<td>3.64</td>
<td>0.00</td>
</tr>
<tr>
<td>PA*SN -&gt; EI</td>
<td>0.14</td>
<td>0.06</td>
<td>2.21</td>
<td>0.03</td>
</tr>
<tr>
<td>PC*ATE -&gt; EI</td>
<td>-0.06</td>
<td>0.06</td>
<td>1.19</td>
<td>0.24</td>
</tr>
<tr>
<td>PC*SN -&gt; EI</td>
<td>0.20</td>
<td>0.06</td>
<td>3.11</td>
<td>0.00</td>
</tr>
</tbody>
</table>

The bootstrapping result presented in table 3 shows that ATE has significant positive relationship with EI (Beta= 0.40, P=0.00) while SN has insignificant negative effect on EI (Beta= -0.09, P=0.05). On the moderating relationship, PA*ATE shows significant positive relationship with EI (Beta=0.19, P=0.00), PA*SN also shows a significant relationship with EI (Beta=0.14, P=0.03), PC*SN also shows a significant moderating relationship with EI (Beta=0.20, P=0.00). However, the moderating effect between PC*ATE and EI was negative and insignificant (Beta= -0.06, P=0.24). All the hypotheses were assessed at 5% level of significance.
SIMPLE PLOT

The moderation result is further illustrated in the simple plot analysis in smart pls. The middle line represents the direct relationship between the IVs and the DV, while the lower and the upper stands for low PA & PC and High PA & PC respectively.

As can be seen from figure 2 above, a high level of the moderator construct PA as depicted by the upper line and the lower line all have a positive and significant slope. Hence, our previous findings on the positive interaction was supported. This further implies that the relationship between ATE and EI is improved significantly when PA is high.

As can be seen from the simple plot in figures 3 above, a higher level of PA which is the moderator construct show a positive and significant slope in the upper line. Hence, the previous findings on the positive interaction was uphold. This further implies that SN interaction with PA significantly improve EI.
As can be seen from figures 4 above, a high level of the moderator construct PC and the lower line are all positive as shown by the upper line. However, the direct relationship is significantly higher than when the moderator comes into play. Hence, our previous discussion of the positive but insignificant interaction term was supported by the slope. This further implies that the relationship between ATE and EI is not improved significantly as a result of interaction.

As can be seen from the figures above, a high level of the moderator construct PC is positive and significant while the lower line is negative as shown by the upper line. Hence, the previous findings on the positive interaction was supported. This further implies that the relationship between SN and EI is improved significantly when there is higher PC.

**EFFECT SIZE AND PREDICTIVE RELEVANCE**

The effect size outlines the potential effects of specific exogenous latent variables on endogenous variables. The general criteria for evaluating $f^2$ includes the values of 0.02(small), 0.15(medium), and 0.35(large) (Cohen, 1988). However, Kenny (2016) recommends 0.005(small), 0.01(medium), and 0.025(large) as more realistic criteria when evaluating the moderator's effectiveness. The predictive correlation of the variables was assessed using a cross-validated redundancy criterion (Q2) (Hair et al., 2017).
As can be seen from table 4 above, based on the standards highlighted by Cohen (1988) and Kenny (2016) for direct and moderating relationship respectively, it can be seen that ATE, PA*ATE, PA*SN and PC*SN have medium effect size, while PA, PC and PC*ATE has no effect on EI. It also shows that all the variables accounted for 39% variance in entrepreneurial intention which is considered moderate according to Chin (1998). Consequently, since the Q² is greater than zero, it is assumed to have predictive relevance because higher Q² represents greater predictive relevance (Duarte & Roposo, 2010).

**IMPORTANCE-PERFORMANCE MAP ANALYSIS (IPMA)**

The importance performance graph shown below on the x-axis represents the (unstandardized) overall effect of ATE, PA, PC & SN on the dependent variable EI (i.e their importance). The y-axis represents the performance of ATE, PA, PC and SN.
All else equal, a one-unit increase in the performance of the predecessors, it will lead to increase in the target constructs performance by the size of the unstandardized total effect of the predecessor. The figure 3 above presented the relative importance and performance of the exogenous variables depicting ATE, PA, PC and SN having a score of 0.41 (59%), 0.10 (66%), 0.04 (65%) and -0.07% (50%) respectively. This shows that ATE is the most important variable having the highest value, followed by PA, then PC. However, SN was found to have a negative value in terms of its importance to EI. On the performance of the individual exogenous variables on the dependent variable, PA was the highest in terms of performance, followed by PC, then ATE and finally SN with the lowest value.

IMPLICATION

The findings of the study have some theoretical and practical implications. Theoretically, the study has increased our understanding of the domain of TPB by investigating the interaction of PBC with ATE and SN to predict EI. This study is one of the few to conceptualize perceived behavioural control as a reflection of people’s capacity to perform a behaviour and their autonomy over decision to perform a behaviour. The findings of the study is in agreement with the position of Ajzen who argued that PBC moderates the effects of ATE and SN on entrepreneurial intention. Although, the study looks at PBC as a multidimensional variable consisting of Perceived Autonomy and Perceived Capacity, almost all the interaction results were positive and significant, except one i.e (PC*ATE). This implies that PA improves ATE and SN when they interact while PC improves SN in order to predict intention. Hence, when entrepreneurs develop positive attitude and subjective norms, they are more likely to have intention when they have more control over entrepreneurship behavior.

Furthermore, this study can be a guide in fostering student entrepreneurship through behavioural change interventions in entrepreneurship education. This means that entrepreneurship-promoting education initiatives can focus on improving the PBC rather than building new businesses, which in turn enhances the positive impact of ATE and SN on EI. In other words, ATE
and SN lead to the intention to perform behaviors, when entrepreneurs believe in their ability to perform entrepreneurship act. Th initiative will encourage students to express their commitment publicly by focusing on specific behaviors rather than general behaviors. It will also strengthen student behavioral control in entrepreneurship, provide sustained support for students in overcoming difficulties, and encourage their efforts to develop entrepreneurial intentions.

LIMITATION AND DIRECTION FOR FUTURE RESEARCH

Although, the enormous contributions in theory and practice can be clearly seen, it is not free from some limitations. Based on such limitations, the study suggests further research is needed. Specifically, the cross-sectional nature of the study is a limitation were data were collected in a single time period. Hence, extra care should be taken in causal inference. Therefore, a longitudinal approach should be looked at by future researchers were data will be collected at two or more time points to compare and contrast with the findings of this study. Therefore, future research should be conducted longitudinally to investigate students who are still in school, and to expand the scope of the research after the student’s graduation. This will reveal the realization of the above intentions during school. In other words, research can confirm the transformation of EI into actual entrepreneurial behavior after graduation.

Secondly, the study is one of the first few to have looked at PBC as a multidimensional construct playing the role of moderators, future studies can look at each of the construct as independent variables in order to fully understand their individual impact on intention to venture into entrepreneurship. This is supported by Yzer (2012) that it is useful to separate perceived autonomy and perceived capacity in order to determine their relative importance in terms of variance. Therefore, future studies may investigate the impact of each construct (Perceived autonomy and perceived capability) on entrepreneurial intention in order to broadened the understanding of the constructs.

REFERENCES


INNOVATION CAPABILITY AND SME PERFORMANCE: MEDIATION EFFECT OF MARKET INNOVATION

Abubakar Ado Adamu, Nasiru Abdullahi, Mohammed Aliyu, Mohammed Yazeed, Idris Bashir Bugaje, Salisu Umar
Department of Business Administration, Ahmadu Bello University, Zaria, Nigeria

INTRODUCTION

It has become apparent that sustaining the performance of small and medium enterprises (SMEs) in developing countries comes with enormous challenges. This is due the fact that outside-in marketing and it seeming innovation from the competitive intensity prove costly for abruptly attaining SME performance. It is however undeniable the indicators and standards to a certain extent, attest innovation capabilities in SMEs have a direct effect from outside environment (Gu, Jiang & Wang, 2016). Market innovation could come into play, to trigger certain ability to achieve organisation success (Hussain, Mu, Mohiuddin, Danish, & Sair, 2020). This is because uncertainty surrounding the market opportunities for SMEs are very vast and impliedly need an interacting interventions to realise business performance.

However, literature suggests that, a clear measurement of performance is not unifying for SMEs to sustain survival in the long run (Didonet, Fearne, & Simmons, 2019; Rifat, 2017; Chen, Wang, Nevo, Benitez-Amado, & Kou, 2015). A number of schoolers have advocate a widespread of adaptation for the elements aimed to foster the SMEs operations particular in the developing economy (OECD, 2019; Judith & Robert, 2018). Firms operating from this environment particularly SMEs are challenged by market demands and consumer’s preferences to develop different product lines. In this regards, Rajapathirana, & Hui, (2017) comment that innovation in product process and creativity makes a sort of a paradoxical situations to obtain the desired level of performance for SMEs. Similarly, for SMEs to operate within the context of challenging environments, developing their innovation capability is vital (Saunila & Ukko, 2012; 2014). Accordingly, Storbacka, (2019) content the view that market innovation and its keys dimensional phenomenon (e.g., value innovation, business model innovation and institutional innovation), are the outcome of market shaping and could be the best antecedents to act as a mechanism to promote the homogenous products to different market.

In addition, innovation capability in Dian, (2017) views is the ability of firm to add value to the process innovation and the idea generation to move the innovativeness of the products. While the approaches content within the current literature shows that much work is consider as a holistic concept from both the market perspectives (Branstad, & Solem, 2020; Nenonen, & Storbacka, 2018), that promote this innovation. Notably, Kabiru, Lamido & Adamu (2020)
advocates that market innovation is the capacity of products and service for a particular firm to take the challenges post by the competitors and the changes in the environments. Turbulences of the markets, the demand and needs for the different customers, and the need to satisfy different market, force the SMEs to be highly innovative so as to accomplish success locally and on regional basis (Bass, Jueland & Wright, 2007).

Consequently, we argue that, entrepreneurial traits play the development of various appertaining concepts of innovations and market factors, to support the basis for SME innovation capacity at any level of business life cycle. This is by combination of traits at growth potentials, i.e. persistence, visionary, tolerance of ambiguity and resilience to attain performance (Al-Mamun, et al., 2018). Nevertheless, most small and medium enterprises in developing countries either do not have a specific capacity to sense the opportunities from the market or their inability to generate ideas and turn it into processes, is itself limited to the market innovations needs. Hence, we argue that market innovation can transmit the effect of innovation capability on SME performance.

This paper presents a new approach to the observation of innovation capability concepts with the intervening process of market innovation on market dynamism to SME performance. Entrepreneurs as owners/managers are the best experts to judge their traits proficiencies in the most direct proactive ways and consequently, sense the opportunities from the market and improve performance. Therefore, this study adds to the body of knowledge by identifying the abilities of owners/managers in the context of SMEs in developing economy like Nigeria, notably, in resources base view contents, thereby aligning the innovation capability generation and enable market innovation to improve performance.

LITERATURE AND HYPOTHESES DEVELOPMENT

Performance concept has inspired a number of academic researches and contemporary debates within the field of management literature on how to measure the performance of SMEs particularly, those that are face by the conceptual context from the build-up of this study. Such studies (e.g., Maldonado-Guzmn, et al., 2018; Saunila, & Ukko, 2014) not only highlight the weakness and reasons on why this measures fail to exclusively contribute to the SME performance in regard to the underdeveloped economy. But insufficiently taken into account in market innovation capacity (Silva, Styles, & Lages, 2017) and in contemporary entrepreneurial traits proficiency to the SMEs innovation capability (Tehseen, et al., 2019).

Furthermore, market innovation act as the building access for the development of SMEs innovation capability, through product innovations, firm’s market value creation activities and product development process (Callon, 2016; O’Connor & Rice, 2013). This can result to significant changes in existing market structure using the customer oriented approaches of value innovation and business model innovation. However, business models innovation measure value capture rather than value creation (West & Bogers, 2014; 2017), as intellectual protection are structure
through proportion of innovation process. Nevertheless, technological advancement and intense competition has driven institutional innovation to become increasing to central competitiveness (Lawson, & Samson, 2001).

Mainly, as managing these complex and risky processes of innovation in small firm become demanding (Kanter, 1989). This make the SMEs innovation capability to be very difficult and problematic, in essence, prior literature on innovation (e.g., Akaka, Vargo, & Wieland, 2017; Chen, 2015) have asserted that there is dyadic interaction in between innovation-creating firms to innovation-adopting customers through which value flows sequentially to attain the performance level. As such, it was argued by Halim, Ahmad, Ho and Ramayah (2017), that SMEs cannot be competitive, innovative and creative without certain entrepreneurial traits which can inspire the innovation capability towards market innovation. Thus market innovation could be the mechanism by which SMEs can adopt a creativity in producing new products or service and more advancing on their processes to adapting to the changing markets need. Because market innovation is closely linked with new markets as it expands through different variation (Pouwels, & Koster, 2017), changing existing market structure and innovating new business model (Kjellberg, 2015).

In essence as mentioned, the expansion of innovative capabilities is a severe test for the growth and survival of SMEs, as they are often frustrated by lack of proficiencies from the owners and outside-in marketing, couple with lack of attention to market trend events. Although there is a large amount of research on innovation capabilities, focusing on large organizations, while few studies as observed by (Forsman, 2011) opine that they are focusing on the innovation capabilities of SMEs and most of their findings are often conferred on the antecedents and consequences of innovation capabilities which shows a missing link, hard to specify directly and inconsistent (Love & Roper, 2015; Saunila, & Ukko, 2014). In addition, limited research on the innovation capabilities of SMEs has focused on internal factors (Gu, et al., 2016; Chen, et al., 2015; Camisón, & Villar-López, 2014). Nevertheless, previous empirical studies have not fully explored the impact of these capabilities (e.g., value creation) on innovation capabilities towards the market innovation of SMEs. Thus, research on the factors affecting SMEs' innovation capabilities in terms of obstacles, facilitators and moderators is rare (Kim, Park, & Paik, 2018).

Therefore, innovation capability, and its formation (i.e. the process innovation which is linked to product creativity) is vital to SMEs, this is because, recent research on networked and systemic approaches to innovation has begun to broaden the context of innovation (Akaka et al., 2017), beyond individual firm activities to the interactions and efforts of multiple actors, including “end-users” (Gunday et al., 2011; Möller & Rajala, 2007; Nelson & Nelson, 2002). Nonetheless, the key assumption here is whether the innovation activity modifies the accepted process, ways of doing the business or change the product or service through technologies from current method (Konietzko, Bocken, & Hultink, 2016; Adams, et al., 2020). It’s undeniable that SMEs are anticipated to respond positively from the variations brought by the market and face the intense competition (Imran, et al., 2019). However, even in this wider context innovation generally
remains one of the keys provision of providing new products, which limits the understanding of how new markets forms to attain performance level. Hence the study hypothesised the following;

H1 Product Creativity is related to SME performance
H2 Product Process Innovation affect SME performance
H3: Market innovation mediate the effect of product creativity on SME Performance
H4: Market innovation mediate the effect of product process Innovation on SME Performance

METHODOLOGY

This research followed a positivist approach and employed a survey method in order to respond to the hypotheses raised in this study. The data collection was obtained with a questionnaire created for the owners and managers of SMEs in Kaduna state in Nigeria. The population of the study was 2520 SMEs and as the study was unable to obtain the full sampling frame of the population, G*power was used to generate the sample size of the study (Memon et al., 2020; Faul, Erdfelder, Lang, & Buchner, 2007). The result from the G*power showed that the minimum size was 142 respondents with the predictors. However, 382 questionnaires were distributed utilizing the purposive sampling techniques, only 289 were consequently utilized for the study, which include 198 males and 91 females. PLS-SEM was used for data analysis for it robust and suitability to handle complex models to test the mediation process of the model.

MEASURE

All the measure was extracted from previous studies, with modifications were necessary, in order to suit the context of the present study. The items were measured using 5-point Likert type scale and based on the recommendation of Hair et al., (2012), four experts were given a set of all the items of the constructs of this study for validation and the final questionnaire consisted of 22 items. The following instruments were adapted from the previous literature to measure the constructs.

SME Performance uses an eight-item scale, and adapted from Santos and Brito, (2012) and these items were measured using a 5-point Likert scale. Innovation capability was measured using six items from Bullinger, Bannert and Brunswicker (2007) and calantone et al., (2002) and it was anchored using a 5-point Likert scale. Market innovation was measured using 8 items adapted from OECD (2005) and it was anchored using a 5-point Likert scale.

RESULT

This study analyse the interrelationship between the items loadings and their respective construct and report it in the following tables below. A structural equation model (SEM) was developed and used in order to answer the hypotheses formulated in this empirical study by using the partial least square path model (Hair et al., 2017).
Table 1.0 - *Reliability and Convergent Validity*

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Loadings</th>
<th>CA</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Innovation</td>
<td></td>
<td>0.887</td>
<td>0.911</td>
<td>0.597</td>
</tr>
<tr>
<td>MKI1</td>
<td>0.735</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MKI2</td>
<td>0.801</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MKI3</td>
<td>0.704</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MKI5</td>
<td>0.859</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MKI6</td>
<td>0.851</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>MKI7</td>
<td>0.783</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MKI8</td>
<td>0.654</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Creativity</td>
<td></td>
<td>0.778</td>
<td>0.873</td>
<td>0.699</td>
</tr>
<tr>
<td>PC1</td>
<td>0.710</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC2</td>
<td>0.875</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC3</td>
<td>0.910</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product Process</td>
<td></td>
<td>0.896</td>
<td>0.935</td>
<td>0.828</td>
</tr>
<tr>
<td>PR1</td>
<td>0.935</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>PR2</td>
<td>0.915</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PR3</td>
<td>0.879</td>
<td></td>
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<td></td>
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<tr>
<td>SME Performance</td>
<td></td>
<td>0.866</td>
<td>0.898</td>
<td>0.559</td>
</tr>
<tr>
<td>SP1</td>
<td>0.725</td>
<td></td>
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<td></td>
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<tr>
<td>SP2</td>
<td>0.654</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP4</td>
<td>0.749</td>
<td></td>
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<td></td>
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<tr>
<td>SP5</td>
<td>0.644</td>
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<td></td>
</tr>
<tr>
<td>SP6</td>
<td>0.817</td>
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<tr>
<td>SP7</td>
<td>0.827</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>SP8</td>
<td>0.836</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1.0, shows that the outer loadings of the individual items are well loaded, although few items were deleted (e.g. SP3, MKI4,). To satisfy the condition of reliability and convergent validity, the Cronbach Alpha (0.70), Composite Reliability (0.70) and the Average Variance Extracted (0.50) (Hair et al., 2019), were above the recommended threshold. Also the study tested the discriminant validity of all constructs using three criterions (Fornell & Lacker, Cross Loading and Heterotraits-Monotraits Ratio), and found well satisfied.

To test the hypothesised relationship the study use structural equation model using the bootstrapping techniques of 5000 sub sample and the result is reported in table 2.0
Table 2.
Size and Significance of the path coefficients

<table>
<thead>
<tr>
<th>Hypotheses Values</th>
<th>Beta</th>
<th>STDEV</th>
<th>T Statistics</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prod-Cr -&gt; MKI -&gt; SME-Perf</td>
<td>0.169</td>
<td>0.036</td>
<td>4.743</td>
<td>0.000</td>
</tr>
<tr>
<td>Prod-Pro -&gt; MKI -&gt; SME-Perf</td>
<td>0.274</td>
<td>0.049</td>
<td>5.626</td>
<td>0.000</td>
</tr>
<tr>
<td>Prod-Cr -&gt; SME-Perf</td>
<td>0.332</td>
<td>0.102</td>
<td>3.266</td>
<td>0.001</td>
</tr>
<tr>
<td>Prod-Pro -&gt; SME-Perf</td>
<td>-0.088</td>
<td>0.109</td>
<td>0.809</td>
<td>0.419</td>
</tr>
</tbody>
</table>

The R-squared value is $R^2$ is .558 or 56%

The result from table 2.0, shows that (H3) has a $\beta = 0.169$, T-value 4.743, $p < 0.05$, which indicate that market innovation has mediate the effect of product creativity on SME performance and hence, H3 is supported. The direct relationship between product creativity and SME performance was found to be positive and significant (i.e. H1) with a $\beta = 0.332$, T-value 3.266, $p < 0.05$, indicating that product creativity as a dimension of innovation capability improve SME performance. Similarly, (H4) with a $\beta = 0.274$, T-value 5.626, $p < 0.05$, indicate that market innovation has mediate the effect of product process on SME Performance, and therefore H4 was supported empirically. However, the direct relationship between product process and SME performance is negative and insignificant to SME performance (i.e., H2) with $\beta = -0.088$, T-value 0.809, $p > 0.05$. Thus, H2 was not supported.

DISCUSSION

The relationship between innovation capabilities and SME performance was established, although the result show that innovation capability in product creativity is empirically stronger that the innovation capability in product process in the study context. This is in line with the result of (Dian, 2017; Maldonado-Guzmn et al 2018) who confirmed that product creativity in SME is the determining factors of their existence within the market space. Market innovation through value creation and business model gives the SMEs competitive advantage to sense the trends in the market and hence produce better product though creativity as the result show that market innovation mediates the relation between the innovation capabilities of these SMEs to improve performance level. This paper explores the prevalence of mediation of market innovation in the relationship between innovation capabilities (product creativity and product process) and the SME performance within the context of an emerging economy of Nigeria.

Practical implications for this study is for the owners/managers of SMEs to develop a capacity in idea generation within it network partners, through product or service improvements that are capable to compete with its rivals in an existing or potential market. This could create not only the level of growth but increase the survival rate and improve the level of SME performance. Furthermore, the owners/manager can move from existing market segment to serves new
customers base on new different markets, because SMEs operate seemingly from vast niche market.

Theoretical implications of this study focused on the mediation effects of these constructs on the SME performance. As the study builds a mediation model in the perspective of innovations, market, and performance. Using the resources based theory (Barney, 1991), the study contributes to the debates that possessing the unique resources by firms are the prerequisite of their performance. These resources remain latent until the firms deploy their capabilities to extents it flexible competitive advantages. Nevertheless, resources aim in providing justification in innovation capability and aid in enhancing the performance level of SMEs can be built from small and medium businesses that lacks valuable, rare, inimitable and internal organised capabilities that are non-substitutable to overcome its weakness from the market innovations and traits profiles of the entrepreneurs. Theoretically, firms’ in marketplace depends on the different characteristics of the industries it operates and compete, hence, innovations, through persistent improvement with the links to market trends, may lead to sustainable competitive advantage and beat above average performance. Moreover, the results show that the relationship exists between the independent variable (product creativity and product process) which was mediated by market innovation, and further, this study finds a conditional view of the nexus of the mediating effect of market innovation from value creation to effect the innovation capability of SMEs. Interestingly, the mediating effect is significant, however its effect on the SME performance.

CONCLUSION

This study conclude that market innovation effect the relationship between innovation capability and SME performance. From the result it was revealed that product creativity has a significant relationship with SME performance, while the product innovation process was not significant in improving SME performance. This indicates that market innovation is one of the mechanism that explains the effect of innovation capability on SME performance, largely due to high intensity of the market. We argue that this study will lead way for further research to look into the process moderation at different stage of the firm life cycle. We propose studies to consider the mediation and interaction effect of market innovation and entrepreneurial trait on SME performance simultaneously. In addition, we suggest that further study should text how the customer centric view of market orientation affect this relationship. This is a because this present study look into the holistic view of market not on the specific view of customer, without taken cognisant of contextual gaps that exist within the formation of different SMEs in different settings.
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APPENDIX A. BOOTSTRAPPING RESULT OF INDIRECT EFFECT
CORPORATE SOCIAL RESPONSIBILITY INITIATIVES DURING COVID-19

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INTRODUCTION

For any business organization, Corporate Social Responsibility has been considered as an altruistic activity since ancient times. Businesses are responsible for running their operations in legal, ethical, economical, social and moral way to the stakeholders. Every business activity has an impact on society, natural resources, stakeholders and the nation as a whole. A responsible conduct of a business contributes towards sustainable development, brand image, competitiveness, social welfare, respect for human rights and adherence to legal standards. The aim of business should not be based on financial factors alone, but decisions reflect the considerations for society- creating a value and future prospects for them, improving political, bureaucratic accountability and overall good governance. Different countries have different approaches to apply CSR activities. Larger organizations contribute more towards promoting CSR activities than smaller or medium scale business organizations. Earlier the primary motive of corporations was the maximisation of profits and creation of shareholder’s value. With the emergence of multi-national corporations leveraging on cheap labour, lesser legal norms and accessibility of raw materials, Government of India issued voluntary CSR guidelines in 2009, updating the same in 2011 and finally making them mandatory in 2014 to safeguard the interests of society. In India, Companies Act 2013, replacing Companies Act 1956, has brought far reaching changes concerning companies’ formation and working along with incorporating section 135 that deals with corporate social responsibility for companies listed in India. India is the first country in the world to legislate CSR activities and making mandatory the submission of CSR initiatives report.

The concept of CSR is applicable to companies having an annual turnover of Rs.1000 Cr or more, or a net worth of Rs.500 Cr or more, or a net profit of Rs.5 Cr or more and companies are required to spend a minimum of 2% of its average net profits for its proceeding three financial years amount on CSR activities. Companies can invest their profits in areas complying Schedule Seventh of Section 135 of Companies Act which are as follows:

- Eradication of poverty, malnutrition and hunger
- Healthcare (preventive healthcare, sanitation, contribution to Swachh Bharat Kosh)
- Promotion of education (education and employment aiming at increasing vocational skills for children, women, elderly people and differently-abled)
- Gender equality and empowerment of women
- Homes and hostel facilities for women and orphans
- Old age homes and daycare centre
- Environmental sustainability, ecological balance- maintaining soil, water, flora and fauna
- Animal welfare
- Protection of national heritage, art and culture, setting up of public libraries, promotion of traditional art and handicrafts
- Conservation of natural resources
- Contribution to the Prime Minister’s National Relief Fund or any other fund set up by Central and State governments for socio-economic development
- Relief and welfare funds for Scheduled Castes, Scheduled Tribes, minorities, women and other backward classes
- Promotion of rural sports, Olympics, Paralympics and any other sport of national recognition
- Slum area development and other matters as prescribed

During COVID-19, Ministry of Corporate Affairs has notified that expenditure made by companies in promoting healthcare, sanitation and disaster management would be considered as valid CSR activities. Many companies in India are playing a vital role to support the society to overcome the challenging times of pandemic and being socially responsible by promoting social awareness. Assisting government by way of making donations, facilitating needs of persons especially marginalized sectors of the society by providing masks, gloves, sanitizers, necessary medicines, meals, thermal testers, ventilators, health checkups, educating the importance of staying indoors, maintaining hygienic conditions etc. are the measures taken up by the companies to fight against COVID-19. In the toughest time of COVID-19, business organizations are having the opportunity to prove their commitment towards society by even going beyond CSR expenditure. Businesses can utilize their technological capabilities, resources and formulate policies and strategies to support government, healthcare institutions, and vulnerable sections of the society with innovative solutions. Before COVID-19, companies have been channelizing their CSR efforts towards various areas to comply with the regulations of Schedule Seventh of the Act. Following table shows the expenditure incurred by various companies for CSR activities:

<table>
<thead>
<tr>
<th>Companies</th>
<th>CSR Expenditure (in Rs Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliance Industries Ltd</td>
<td>849.3</td>
</tr>
<tr>
<td>ONGC Ltd</td>
<td>614.6</td>
</tr>
<tr>
<td>IOC Ltd</td>
<td>490.61</td>
</tr>
<tr>
<td>HDFC Bank Ltd</td>
<td>443.80</td>
</tr>
<tr>
<td>Tata Consultancy Ltd</td>
<td>434.0</td>
</tr>
<tr>
<td>Infosys Ltd</td>
<td>342.0</td>
</tr>
<tr>
<td>Tata Steel Ltd</td>
<td>314.9</td>
</tr>
<tr>
<td>Vedanta Ltd</td>
<td>309</td>
</tr>
</tbody>
</table>
The above table shows that the funds contributed by various corporations on different sectors as a part of corporate social responsibility. These initiatives have been undertaken to develop health, rural, education, sanitation, skill building, care of destitute, maternity care, leprosy eradication, women empowerment, sports, culture, environment protection, malnutrition, technology adoption, disaster and waste management and many more measures for meeting the needs and raising the quality of life of stakeholders.

**OBJECTIVES**

- To study various CSR initiatives undertaken by corporations during COVID-19
- Brief information about earlier CSR steps.
- Challenges faced by corporations in undertaking CSR activities.

**METHODOLOGY**

Secondary data was collected from

- Various books on corporate social responsibility,
- Published thesis works, unpublished thesis works available on internet

**CRS INITIATIVES TAKEN BY DIFFERENT ORGANIZATIONS**

**Reliance Industries Ltd**

- For FY 2019-20, relief measures were initiated for floods/cyclone affected areas of Maharashtra, Bihar, Gujarat, Andhra Pradesh, Karnataka, Orissa, Kerala and Punjab benefiting around 10 Lakh people.
- Digital technology-based dissemination of awareness related to pre-and post epidemic controls has been administered.
• Reliance Foundation schools, Disaster management and energy response training measures, Jio Swachh Rail Abhiyaan, Skill development, Rural sports development, Animal healthcare etc. are measures for sustainable environment.

• ‘Recycle4 life project’ encourages employees to recycle plastic bottles for contributing towards making the environment clean and green.

• During COVID-19, Rs 556 Cr has been contributed to the PM CARES Fund and other state/relief funds.

• The company has initiated measures like distribution of masks, PPE for health workers and caretakers, provision of free meals, ration kits, coupons, cooked meals to marginalised sections of the society, free fuel to government notified vehicles and ambulances covering various states to serve the humanity.

• ‘Mission Anna Seva’ has also been initiated which aims to provide over 3 Cr free meals to the marginalized communities and other workers who have been facing difficulties during the lockdown.

• It has also taken up a three angled strategy to scale up CSR interventions:

  - **Direct Engagement:** Working with different communities to mutually create models of socio-economic development and empowering them to lead the change.
  - **Partnerships and Collaborations:** Working towards building an ecosystem of social development along with government, private institutions, academia and other agencies based upon partnership of knowledge, technology and infrastructure.
  - **Leveraging Technology:** Making knowledge resources easily available to communities by broadening the scale of technology, thus facilitating informed decision making.

**ONGC Ltd**

• Educate girl child, Asha campaign to help children below poverty line, gender and social equality, ethics, good governance, inclusive growth, contribution over Rs121 crore towards the construction of the ‘Statue of Unity’ (SOU)—a statue of Sardar Vallabhbhai Patel in Gujarat to preserve cultural heritage are a part of CSR initiatives.

• CSR funds have been allocated for 1758 projects spanning across the country to serve different sectors like health, hygiene, water, sanitation, sports, old age, skill development, river cleaning and education.

• Rs 300 Cr CSR Funds have also been contributed to PM CARES Fund to fight against the COVID-19 pandemic.

• This gas exploration company has been providing free meals to daily wage earners, ration kits to police personnel, distribution of sanitizers, gloves, face masks to slum dwellers, sanitary kits to sanitary workers, distribution of free food packets, engagement of fire tenders for sanitizing (sodium hydrochloride mixed with water) and Rs 1.53 Cr assistance to health institutions for PPE for health workers, underprivileged sections and assurance of LPG stock to masses.

• 35 projects worth Rs.4.59 Cr have been implemented during COVID-19.
IOC Ltd

- Various initiatives have been undertaken to support healthcare, sanitation, vocational skill development, empowerment of women and assistance to economic and socially weaker sections.
- Assistance has been provided in Leh, Jammu and Kashmir, Northern states, North-eastern states, backward districts and other affected areas.
- Mobile medical units have been set up in Mathura, UP, Assam, Orissa and Bengaigaon to reach marginalized and underprivileged people belonging to Scheduled Castes, Scheduled Tribes and physically disabled people.
- IOC has arranged necessities across various locations in the country to help migrant labour going back to their homes due to lack of transportation in lockdown.
- Contactless sanitizers dispensing systems, provision of water, testing equipment kits has also been provided to assure safety measures.

Vedanta Ltd

- Health care, Children Education, Agriculture, Animal husbandry, Skill development for youth, Environment protection, Disaster mitigation, Women empowerment, Poverty alleviation, building strong communities, improvement in quality of life and many more are the focus areas for inclusive and integrated development of the nation.
- Vedanta Group has contributed Rs 5 Cr to Tamil Nadu CMs Public Relief Fund and has also been taking up relief activities across 7 states contributing a total of around Rs 151 crores.
- In Gurugram, the company has undertaken the manufacturing of PPE (Personal Protective Equipment) for supporting health workers and doctors during COVID-19.
- ‘Grain Bank’ scheme caters to the needs of daily wagers by providing grains and pulses conducted at village level by SAKHI SHG (self-help group) women.
- 24x7 helpline to assure timely healthcare advice in association with Apollo Hospitals, disinfectant sprays, markings, setting up of isolation wards, provision of masks, soaps, sanitizers, humanitarian touch for employees and meeting needs of rural and marginalised sections of the society are other steps for the society.
- Educational programs such as Shiksha Sambal and Unchi Udaan are being promoted online with the help of technology based apps like Google classroom, Zoom and WhatsApp.
- Sports tutorials are also sent regularly to the Zinc Football Academy to ensure children’s daily drills.
Infosys Ltd

- Infosys is addressing the development challenges of the economy such as Education, Poverty, Employment, Healthcare, Gender equality, Malnutrition, Culture, Women empowerment, Rural development, Environment sustainability, Smart infrastructure etc.
- Infosys Foundation (the CSR arm of Infosys) has committed Rs 100 Cr towards fighting the COVID pandemic in India out of which Rs 50 Cr has been contributed to PM CARES Fund to support government efforts.
- Infosys, along with Narayana Healthcare is planning to set up a 100-room quarantine facility aiming at serving and accommodating patients, offering regular monitoring by doctors, nurses and providing necessary medication and supplies free of cost in Bengaluru.
- Supporting various NGOs, expanding hospital capacities for economic and weaker sections, provision of ventilators, testing kits and PPE for Healthcare workers, food and nutrition to underprivileged humans are other initiatives for well-being of the community.
- Infosys has been facilitating the procurement of PPE Equipment and other medical supplies for various military and government hospitals, doctors and police.

HDFC Ltd

- CSR initiatives taken by Financial Services Conglomerate HDFC Group is related to Rural development programs, Water, Sanitation, Education, Skill development, livelihood enhancement, Financial inclusion, Healthcare, Smart schools with clean toilets, Environment sustainability and creating sustainable communities.
- HDFC Bank’s CSR policy is also aligned with Sustainable Development Goals (SDG) relating to renewable and clean energy. It has been regularly using the renewable energy to power ATMs in areas facing an irregular power supply.
- HDFC has contributed Rs 150 Cr to PM CARES Fund in order to support the Central and state Governments, paramilitary forces, doctors, frontline workers and others involved in the fight against COVID.

Tata Steel Ltd

- ‘Samvaad’, Tribal Leadership Programmes, Maternal and New Born Survival Initiatives (MANSI), Regional Initiative for Safe Sexual Health by Today’s Adolescents (RISHTA) are the prominent CSR programmes being undertaken by Tata Steel.
- Health, education, drinking water, infrastructure, upliftment of communities focussing on SDGs (Sustainable development goals) are also the thrust areas.
- Tata steel Foundation has rolled out ten-point #Combat Covid19 CSR initiative to fight the pandemic. It includes administering food supplies, hand wash, cloth masks, online teaching and counselling sessions etc. to the vulnerable people.
• It has set up mobile toilets, isolation and quarantine cabins through its brand ‘Nest-in’.
• Tata Steel has also been using Fibre Reinforced Polymer (FRP) to produce isolation units which is first-of-its-kind in India.
• The Tata Steel Medica Hospital, Kalinganagar has been designated as a COVID Hospital by the Odisha Government which is ensuring the safety of all healthcare workers, doctors and nurses along with giving world class treatment to all patients.

Several renowned brands have come up with innovative strategies, changing logos, offering home delivery services, short term messaging to raise COVID related awareness among the people. Some of the brand’s initiatives are as:

• **Lifebuoy:** Hindustan Unilever through its printed advertisement has been providing valuable information to the people to wash hands frequently and use tissues, sanitizers and not only Lifebuoy but promoting other brands Lux, Santoor, Dettol etc. also.

• **Amul:** Gujrat Cooperative Milk Marketing Federation Ltd, Amul has been rolling out various messages with an aim to encourage people to use the no-contact Namaste method, wash hands regularly (Better Saaf than Sorry) and work from home etc. giving specific messages on Covid-19 prevention. Three step cartoon description –covering one’s mouth, washing hands, avoiding physical contacts is another creative social message.

• **McDonald’s:** It has rolled out its social media campaign i.e. splitting the letter ‘M’ in its logo to promote the message of social distancing among masses. The iconic Ronald McDonald statues making a strong statement will be seen wearing masks across all outlets in order to encourage people to follow safety protocols during the pandemic.

• **Audi:** To raise awareness regarding social distancing norms and to encourage unity during the pandemic, Audi has decided to separate its traditional circles in its logo, thus showing solidarity and empathy along with social distancing.

• **Coca Cola:** The Company has put its commercial advertising on hold and has re-directed its funds towards COVID-19 relief efforts like provision of beverages and protective equipment for health workers, necessary support to small retailers, packed foods and hydration needs of vulnerable families.
CHALLENGES

- Steps taken by corporations during COVID-19 pandemic will have a drastic impact on the traditional CSR measures and surrounding environmental systems dependent on it.
- Making donations to PM CARES FUND and to other relief measures to mitigate the COVID-19 effect by companies will result in the exhaustion of current budgets being allocated for CSR activities. NGOs will also be affected due to negligible support and funding cuts from companies and partners for undertaking CSR activities. They will face difficulty in restructuring their operations and carrying off earlier commitments.
- In future there will be reduction in CSR budgets due to the slow growth of business activities and low generation of profits resulting in not keeping their verbal or informal commitments.
- Companies are not in a position to check the reliability, diligence and ethical behavior of third parties while collaborating for undertaking pandemic relief measures. Due to paucity of time, complexity and tediousness of checking third parties’ past record, companies are prone to financial and reputational risks.
- To serve the immediate need of COVID related measures, corporations are giving backseat to other critical social issues such as water security, unpaid domestic labor for women, reverse migration, reduction in cash income of rural workers, employment, sanitation, reduction in profits, nutrition, non-COVID health issues, domestic violation, education, fostering innovation processes etc. NGOs are not in a position to reach marginalized sections of society during this crisis.
- Companies are prioritizing to allocate resources for COVID-19 to enhance their social image and community goodwill over the interest of their own employees. Locks down conditions have brought almost every activity to a standstill resulting in failure of employer’s / business owners to discharge their obligations. Salary cuts, job layoffs, no future security, work from home issues, data security, non-statutory benefits etc. are the issues that have emerged.
- Due to broken chain supplies, no use of ration cards for migrant labor if staying outside hometown and no social support from states, millions of poor people are left untouched by the responsible actions taken by companies during COVID-19. Moreover, companies are reluctant in making traditional CSR commitments for future.
- India’s Corporate Affairs Ministry has clarified that contributions made by companies towards State Relief Fund for COVID-19 would not be considered as CSR activity.
CONCLUSION

Covid-19 has changed the meaning of organisational goals, operations, policies, strategies of earning of profits. Throughout the world, efforts are focussed on meeting needs during pandemic crisis to get back to normalised functioning of economies and societries. Covid-19 has forced the corporations to become smart, flexible, adoption of risk-mitigating and automated technologies, understanding of remote work, digitisation of services and development of new business models. With all safeguards, new social norms, digital platforms, business resilience, conscious efforts are required to resume business operations in more productive and efficient way. CSR activities and deployment of funds towards meeting social obligations will make a brand image among public for longer period of time. Corporations in association with government authorities in their concerned areas should work and formulate projects to assist the needs of the specific areas. Aspirational Districts Programme is an example of synergised efforts of –the district administration, NGOs, Corporations for channelizing CSR activities in underdeveloped local areas. CSR is the vital drive to introduce novel ideas in almost every sector of the economy and can help in plugging gaps where massive central/state/local infrastructure cannot reach.

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GREEN CONDUCT: ASPECT OF PRICE CONSCIOUSNESS AND ECOLOGICAL CONCERN IN INDIAN
Consumer Behaviour

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Faridabad, Haryana, India
2 Professor, Faculty of Management Studies, Manav Rachna International Institute of
Research Studies, Faridabad, Haryana, India

INTRODUCTION

Green Conduct has been seen as an instrument towards economical turn of events and for
fortifying brand picture (Banyte et al., 2010). As rising ecological concerns are urging buyers to
have more noteworthy consciousness of their buying choices, firms are executing estimates
equipped to offer green substitutes for customary items. Buyers and organizations the same are
therefore all the more ready to follow through on premium costs for green other options (Laroche
et al., 2001) This would agree well with what (Maxwell et al., 2000) referenced that taking
everything into account, buyer would lean toward a green product over the one that is less well
disposed to nature with a developing number of individuals ready to pay a premium for the
previous – from natural nourishments to vitality effective apparatuses (D Souza et al., 2004).

With the environmental change and progressively genuine ecological issues, there has been
expanding open worry about ecological issues. Green consumption is a naturally dependable
conduct described by upholding nature and securing the biology, which has pulled in endeavors'
and customers' consideration lately. Buying green items in day by day consumption is viewed as
a powerful method to take care of ecological issues.

Existing exploration has primarily centered around the impact of corporate social responsibility
(CSR) or corporate environmental responsibility (CER) on master green conduct and thought
about that green promoting is the wellspring of economical upper hand for ventures. In any case,
little examination has investigated the impact of buyer natural obligation on green conduct. The
standard initiation model states that an awareness of others expectations is the ethical quality
and mental condition of a person for charitable conduct under the imperative of individual
standards. In the field of green conduct, natural duty is viewed as the most fundamental and
significant mental variable when people take part in green conduct. Ecological duty will drive
people to give close consideration to natural issues, inspire them to step up to the plate and
assume liability for ecological assurance and advance their constructive act of master natural
conduct. The hypothesis of attribution of obligation, began from the standard initiation model,
gives knowledge into the shaping and driving of green consumption conduct.
The “Green conduct” is usually viewed as a prompt precursor to green consumption aim, which alludes to the level of individual consideration for biology and the condition. Nonetheless, the aftereffects of past examinations are to some degree conflicting about the size of the connection between ecological concern. This examination places that earlier exploration disregards a significant directing variable, price consciousness which may apply a significant impact on buyers' green product choices. It is uncontested that the price of green items, as a proportion of individual penance, has a solid impact on customers' green buying choices.

LITERATURE REVIEW AND HYPOTHESES

The intention to purchase is the precursor of actual purchase behaviour, in line with the theory of reasoned action (TRA) and theory of planned behaviour (TPB) (Ajzen, 1991). In essence, TPB states that attitude towards behaviour; subjective norms and perceived behaviour control will build behaviour intention leading to actual behaviour.

THEORY OF REASONED ACTION

TRA depicts the psychological procedure behind conscious human behaviour and plans to explore its determinants (Ajzen and Fishbein, 1980). According to the TRA, behavioural intention of an “individual affects the performance of his behaviour, and his attitudes to behaviour and subjective behavioural standards are two precedent factors that determine the behaviour of an individual.” Behavioural intention measures “how hard people are willing to try, and how much of an effort they are planning to exert, in order to perform the behaviour” (Ajzen, 1991).

THEORY OF PLANNED BEHAVIOUR

The TPB is TRA’s extension. The main difference between TPB and TRA is that it includes perceived behavioural control (Ajzen, 1991). Ajzen’s TPB gives a predictive persuasive model linking beliefs and behaviours. In essence, the TPB says that attitude towards a behaviour, subjective norms and perceived behaviour control (or capacity/ self-efficacy for that behaviour) will build individual behaviour intention and lead to actual behaviour.

Consumer behaviour is guided by three considerations:
1 ‘Behavioural beliefs or attitudes’, which is defined as the degree of favourableness (or unfavourableness) of a person’s evaluation of a behaviour.
2 ‘Normative beliefs’ or ‘subjective norm’ is the individual perception that approval and disapproval of his behaviour by significant others. The direct influencers may be family, friends, colleagues, or immediate proximity neighbours.
3 Control beliefs or ‘perceived behavioural control’ is the perception of an individual’s ease or difficulty the conduct of interest, linked to resources, opportunities and self-confidence.

A green customer is a person who wants and knows how to fulfil his or her daily needs, allowing
the environment to have as little effect as possible. The pioneers of profiling green customers, (Anderson and Cunningham; 1972), described them as individuals who not only aim to meet their personal needs, but are also concerned about the welfare of society and the environment, belonging to a socio-economic class above the average and professional occupations of recognition and status. Green consumers have been found differing in their profiles across countries (Chan, 1999; Diamantopoulos et al., 2003).

Green consumer behaviour is the behaviour of an individual who considers environmental or social issues while making purchasing or non-purchasing decisions.

Green consumerism is also addressed as a type of consumer 'pro-social' action (Wiener and Doesher, 1991). Socially aware or socially responsible behaviour (Antil, 1984) that contains a 'environmentalist' viewpoint (Schlossberg, 1991) and can therefore be referred to as 'environmentally concerned consumption' (Henion and Wilson, 1976). (Henion and Wilson, 1976) describes them as ‘environmentally concerned consumers’. Under the broad definition of green consumerism, consumers voluntarily contribute to environmental interests by making rational decisions in their purchase, usage and disposal (Pettit and Sheppard, 1992).

These rational decisions are tempered through varying degrees of influences and interests (Peattie et al., 1992). Green products (eco-products or environmentally friendly products) are considered as products that do not pollute the earth or damage natural resources and can be recycled or conserved (Shamdasani et al., 1993)

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Standard</th>
<th>Authors</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The primary branch investigates the contrasts between green purchasers to distinguish the personal attributes of green buyers through market division</td>
<td>Chekima, B.; Syed. K. Wafa et al. 2016</td>
<td>Past investigations shows that there are critical contrasts in the green utilization conduct of various buyers such as Age, Gender, Education, Occupation, Income</td>
</tr>
<tr>
<td>2.</td>
<td>The subsequent branch investigates the Psychological instrument of buyers’ green conduct</td>
<td>Diamantopoulos , A.; Schlegelmilch et al. 2003</td>
<td>Past investigations show that psychological variables as Perceived Green Value, Perceived Self-Identification as to TPB</td>
</tr>
</tbody>
</table>
ECOLOGICAL CONCERN

Ecological concern is regularly viewed as a significant prescient variable of ecologically cordial conduct and legitimately persuades ecological buy expectation, which is generally utilized to clarify star green conduct & practical conduct. Examination on ecological concern can be followed back to the 1960s. In the early years, researchers didn't unmistakably characterize ecological concern in any event & comparing natural worry with natural mentalities.

A few researchers accept that ecological concern is an undeniable idea, while others think that it's hard to give a theoretical idea of natural concern. Hence, the idea of natural concern is for the most part an operational definition, & distinctive examination had diverse operational ideas. (Dunlap and Van Liere; 1978) built up the New Ecological Paradigm (NEP) scale, which viewed as the most punctual quantitative meaning of natural concern.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Ecological Concern</th>
<th>Authors</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Specific Ecological Issues</td>
<td>Stern, et al. 1999</td>
<td>Attitude towards disposal of garbage, plastic and chemical waste</td>
</tr>
<tr>
<td>2.</td>
<td>Comprehensive and Universal</td>
<td>Stone, G.; Barnes, et al.</td>
<td>Assortment of ecological emergency issues and perspectives towards the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1995</td>
<td>connection among people and the earth</td>
</tr>
</tbody>
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(Sadachar et al.; 2017) showed that individuals with higher ecological concern gave more consideration to natural issues and upheld green items since they accepted that people are answerable for the development of natural issues. (White and Simpson et al.; 2013) additionally contended that people with a high feeling of natural duty will in general spot on natural advantages, and they will in general believe that individuals are firmly associated with the earth, especially when they are liable for the delicate biological condition, and would be bound to take care of ecological issues. As indicated by the contention over, a higher the ecological obligation causes a further extent of natural concern. Subsequently, we propose:
**Hypothesis 1:** Green conduct is positively associated with green consumption.

Past investigations have set that ecological concern can have an immediate constructive outcome on green consumption. As a rule, individuals with a further extent of ecological concern are all the more ready to react to green conduct and take activities. (Mostafa; 2007) underlined the significance of ecological concern in the factors of foreseeing buyer’s green consumption and found that there was a noteworthy distinction in natural worry between green buyers & non-green buyers. Additionally, buyers’ ecological concern had a significant effect on their ability to pay for earth well disposed items. As per these investigations, natural concern positively affects green consumption. Subsequently, we propose:

**Hypothesis 2:** Green conduct is positively associated with ecological concern.

In light of the above relationship among green conduct, ecological concern & green consumption, this investigation accepts that ecological accountability can impact green conduct. As indicated by a review of Swiss purchasers, (Kaiser and Scheuttle., 2006) demonstrated that adding obligation to the first Theory of Planned Behavior (TPB) model incredibly upgraded the illustrative intensity of the demeanor factors, showing that the awareness of others expectations was a viable indicator of natural perspectives, and along these lines green conduct was affected by ecological mentalities. (Young et al., 2010) likewise inspected buyers who had an awareness of others expectations for current ecological issues and found that these purchasers were more worried about ecological issues and were bound to purchase items. Subsequently, we propose:

**Hypothesis 3:** Ecological concern is decidedly connected with green consumption.

**Moderating Role of Price Consciousness**

Price consciousness is the degree to which people contrast in their response to price changes & price contrasts of the item. A great part of the examination views price consciousness as an immediate or roundabout forerunner of the buying aim of a naturally cordial item, yet less investigations investigate its directing position between buyers’ green conduct or ecological concern and green consumption. Truth be told, in spite of the fact that buyers guarantee they are worried about the earth, they may not receive professional green conduct in real buys on the grounds that the price of green items is commonly higher than that of traditional items. (Cicia et al., 2009) indicated that when the price of green items didn’t surpass 25% of the normal cost of agrarian items, up to 70% of the respondents would purchase natural items, in actuality. At the end of the day, customers with an uplifting mentality toward green consumption may not turn this positive attitude into original consumption behavior, reasoning the cost of the green consumption behavior is too high. As per past investigations, buyers with a serious extent of price consciousness affectability might be less inclined to force their natural awareness and convictions on green consumption. Henceforth, we propose:
Hypothesis 4: Price consciousness plays a negative moderating role between green conduct and green consumption.

Hypothesis 5: Price consciousness plays a negative moderating role between ecological concern and green consumption.

RESEARCH METHODOLOGY

In the research methodology data was collected from the consumers of India and the questionnaire was shared on emails. Telephonic discussion was done to make them understand the questions as they were segregated into two sections.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Variables</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Green Conduct</td>
<td>Gender</td>
</tr>
<tr>
<td>2</td>
<td>Ecological Concern</td>
<td>Age</td>
</tr>
<tr>
<td>3</td>
<td>Price Consciousness</td>
<td>Education</td>
</tr>
<tr>
<td>4</td>
<td>Green Utilization</td>
<td>Income</td>
</tr>
</tbody>
</table>

A 5-point Likert scale was used ranging from strongly disagree to strongly agree. The measurements of the four constructs were as follows.

Table 4: Green conduct is measured with a 4 -item scale

<table>
<thead>
<tr>
<th>S.No</th>
<th>Author</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stern et.al</td>
<td>My actions impacts the health of ecology</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>I have power to protect the ecology</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>I can learn how to improve the ecology</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>I will work to make my surroundings better place</td>
</tr>
</tbody>
</table>
Table 5: Price Consciousness

<table>
<thead>
<tr>
<th>S.No</th>
<th>Author</th>
<th>Price Importance</th>
<th>Price Search Intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lichtenstein et al.</td>
<td>when I choose a product, the price is the most important factor</td>
<td>before making a purchasing decision, I will enter more than one store to compare prices in order to find a lower price</td>
</tr>
<tr>
<td>2</td>
<td>Sinha and Batra</td>
<td>when I buy a product, I will select the cheapest</td>
<td>I think it's worthwhile to spend energy on many stores and find low-priced products</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>I always buy the lowest price</td>
<td>I think it is worth it to take time to go into a number of stores to look for a low-cost product</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>I rely on the price to judge the worth of something I buy</td>
<td>I think it’s worthwhile to spend energy on many stores and find low-priced products and before making a purchasing decision, I need to collect a lot of information on the price of the product</td>
</tr>
</tbody>
</table>

Table 6: Green Consumption intention

<table>
<thead>
<tr>
<th>S.No</th>
<th>Author</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sheng et al</td>
<td>I intend to collect and learn more about green products</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>I intend to recommend an healthy green product to my relatives and friends</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>I intend to introduce and recommend an healthy green product to my family</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>I will buy healthy green product if I need it</td>
</tr>
</tbody>
</table>
Consequently, our investigation results could add to the benefit of developing markets. Questionnaires were sent to 500 individuals through emails out of which we received 420 responses and among 420 responses 33 respondents didn’t fill up all the responses so we had to remove that data. In total we left with 387 responses. As appeared in Table 7, we can see 49.4% were females and 50.6% were male and respondents between the ages of more than 25-less than 35 years were 42.6%, Postgraduate respondents were 57.4% and respondents use to monthly utilize in between 2000-3000 rs were 28.4%.

<table>
<thead>
<tr>
<th>Items</th>
<th>Classification</th>
<th>Sample</th>
<th>Percentage of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>191</td>
<td>49.4</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>196</td>
<td>50.6</td>
</tr>
<tr>
<td>Age</td>
<td>Below 25 years</td>
<td>77</td>
<td>19.9</td>
</tr>
<tr>
<td></td>
<td>More than 25-Less than 35 years</td>
<td>165</td>
<td>42.6</td>
</tr>
<tr>
<td></td>
<td>More than 35-Less than 45 years</td>
<td>78</td>
<td>20.2</td>
</tr>
<tr>
<td></td>
<td>More than 45 years</td>
<td>67</td>
<td>17.3</td>
</tr>
<tr>
<td>Education</td>
<td>12th</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Graduation</td>
<td>100</td>
<td>25.8</td>
</tr>
<tr>
<td></td>
<td>Post Graduation</td>
<td>222</td>
<td>57.4</td>
</tr>
<tr>
<td></td>
<td>Vocational</td>
<td>1</td>
<td>.3</td>
</tr>
<tr>
<td></td>
<td>Doctrate/PhD</td>
<td>60</td>
<td>15.5</td>
</tr>
<tr>
<td>Monthly Utilized</td>
<td>Less Than Rs. 1000</td>
<td>80</td>
<td>20.7</td>
</tr>
<tr>
<td></td>
<td>Between Rs. 1000- Rs. 2000</td>
<td>98</td>
<td>25.3</td>
</tr>
<tr>
<td></td>
<td>Between Rs. 2000- Rs. 3000</td>
<td>110</td>
<td>28.4</td>
</tr>
<tr>
<td></td>
<td>Between Rs. 3000- Rs. 4000</td>
<td>63</td>
<td>16.3</td>
</tr>
<tr>
<td></td>
<td>Above Rs. 4000</td>
<td>36</td>
<td>9.3</td>
</tr>
</tbody>
</table>
RELIABILITY AND VALIDITY ANALYSIS

To identify the reliability of study we did Cronbach's α coefficients of each item of the constructs. As the value of Cronbach's α coefficient is 0.7. Table 8 shows that Cronbach's α coefficient of green conduct was 0.823, ecological concern was 0.740, price consciousness 0.879 and green consumption was 0.889. It shows that the reliability measurement was acceptable.

Table 8: Reliability, Confirmatory Factor Analysis and Discriminant Validity Analysis

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Cronbach’s α</th>
<th>Composite reliability (CR)</th>
<th>Average variance extracted (AVE)</th>
<th>Square Root of AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Conduct</td>
<td>0.823</td>
<td>0.848</td>
<td>0.524</td>
<td>0.763</td>
</tr>
<tr>
<td>Ecological Concern</td>
<td>0.740</td>
<td>0.757</td>
<td>0.426</td>
<td>0.623</td>
</tr>
<tr>
<td>Price Consciousness</td>
<td>0.879</td>
<td>0.889</td>
<td>0.473</td>
<td>0.642</td>
</tr>
<tr>
<td>Green Utilization</td>
<td>0.889</td>
<td>0.892</td>
<td>0.675</td>
<td>0.728</td>
</tr>
</tbody>
</table>

Content validity was ensured by adopting the existing scales, which have been empirically tested and proven to be reasonable. Criterion validity was examined using correlation analysis, as shown in Table 9, which indicated the constructs perform in a credible way.

Study was further assessed through validity by means of construct validity, content validity and criterion validity. Construct validity of scale was analyzed by using discriminant validity and convergent validity. As indicated by (Fornell and Larcker.,1981) proof for discriminant validity is available when the square root of the AVE for each construct surpasses the relating correlations among that and some other constructs. The outcomes show the biggest correlation between any pair of constructs was .471 while littlest square root AVE was .623. Therefore, DV measurements were acceptable. AVE > 0.5 & CR >0.7 then its convergent validity. As we can see that AVEs were roughly 0.5 or surpassed 0.5 & CRs were all above 0.7, demonstrating it is CV.

Content validity was guaranteed by receiving the current scales, which have been exactly verified to be sensible. Criterion validity inspected utilizing correlation analysis as appeared in Table 9.
Table 9. Descriptive statistics and correlation analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>S.D</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Conduct</td>
<td>4.172</td>
<td>.032</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecological Concern</td>
<td>4.184</td>
<td>.021</td>
<td>.254</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Consciousness</td>
<td>3.169</td>
<td>.038</td>
<td>.272</td>
<td>-.051</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Green Utilization</td>
<td>3.012</td>
<td>.041</td>
<td>.462</td>
<td>.221</td>
<td>.312</td>
<td>1</td>
</tr>
</tbody>
</table>

Shows that constructs had fit indices which met recommended values: CMIN = 306.684, DF=53, CMIN/DF = 5.786 < 5, GFI = .845 > .9, AGFI = .814 > .9, CFI = .869 > .9 & RMSEA = .072 < .08. It further shows that correlation coefficient of green conduct was positive with ecology concern (r=.254, p<.1) & green consumptions (r=.462, p<.1) & ecology concern was positive correlated green consumption (r=.221, p<.01)

HYPOTHESES EFFECT ANALYSIS

Green Conduct, Ecological Concern and green consumption relationship was tested by regression analysis in AMOS. Table 10 shows the results of the main effects analysis in our study.

H1 green conduct is positively associated with ecological concern β = .463, p < 0.001. H2 ecological concern is decidedly connected with green consumption β = .223, p < 0.001. H3 ecological concern assumes an interceding position between green conduct and green consumption β = .236, p < 0.01, which supports H3.

Table 10: Effect Analysis

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Proposed Effect</th>
<th>Path Coefficient</th>
<th>S.E</th>
<th>t-value</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>+</td>
<td>.463</td>
<td>.045</td>
<td>10.379</td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>+</td>
<td>.223</td>
<td>.028</td>
<td>7.132</td>
<td>Supported</td>
</tr>
<tr>
<td>H3</td>
<td>+</td>
<td>.236</td>
<td>.072</td>
<td>2.542</td>
<td>Supported</td>
</tr>
</tbody>
</table>
MODERATING EFFECT ANALYSIS

Hayes approach was used for analyzing moderating effects of price consciousness. Results showed that green conduct and price consciousness included zero 95% UI = -.043 to .018, so therefore it does not support H5 as price consciousness between green conduct and green consumption doesn’t bolster. Notwithstanding, ecological concern & price consciousness didn’t show zero i.e 95% UI = -.431 to -.151 & the coefficient of association was negative β = -.269 showing that price consciousness moderated the connection between ecological concern and green consumption and it subverted the positive effect of ecological concern on green consumption. So H6 is supported.

<table>
<thead>
<tr>
<th>Model 15</th>
<th>Coefficient</th>
<th>SE</th>
<th>t-values</th>
<th>p-values</th>
<th>LLCI</th>
<th>ULCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-3.024</td>
<td>.722</td>
<td>-3.721</td>
<td>.000</td>
<td>-4.598</td>
<td>-1.430</td>
</tr>
<tr>
<td>Green Conduct</td>
<td>.322</td>
<td>.122</td>
<td>3.037</td>
<td>.002</td>
<td>.144</td>
<td>.529</td>
</tr>
<tr>
<td>Ecological Concern</td>
<td>1.189</td>
<td>.232</td>
<td>5.341</td>
<td>.000</td>
<td>.658</td>
<td>1.630</td>
</tr>
<tr>
<td>Price Consciousness</td>
<td>1.317</td>
<td>.243</td>
<td>5.112</td>
<td>.000</td>
<td>.718</td>
<td>1.821</td>
</tr>
<tr>
<td>Green Conduct &amp; Price Consciousness</td>
<td>.013</td>
<td>.024</td>
<td>.437</td>
<td>.557</td>
<td>-.043</td>
<td>.081</td>
</tr>
<tr>
<td>Ecological Concern &amp; Price Consciousness</td>
<td>-.269</td>
<td>.051</td>
<td>-4.396</td>
<td>.000</td>
<td>-.431</td>
<td>-.152</td>
</tr>
</tbody>
</table>

CONCLUSION & IMPLICATIONS

This examination intended to reveal insight into how ecological duty builds eagerness to pay for earth amicable items in the buying choice procedure. The information investigation results uncover that buyers’ natural duty fundamentally influences green consumption aim, that is, the purchaser with more grounded ecological duty will be bound to purchase earth amicable items. In the meantime, price consciousness assumes a negative directing position in the connection between ecological concern and green consumption. That is, with the increment of ecological concern, people with low price consciousness are bound to buy green items than those with significant expense affectability. Be that as it may, the positive connection between green conduct and green consumption is not moderated by the price consciousness consumers.

This investigation likewise has some reasonable ramifications for strategy originators. To help green consumption, policymakers could incorporate ecological instruction into the national training framework to develop the natural benefit of taking care of the connection among humans.
and nature accurately. In the meantime, policymakers can improve buyers’ ecological obligation and natural worry through different correspondence channels to show different ecological issues. Our discoveries additionally give another viewpoint to administrators to create green promoting technique which targets decreasing the value affectability of buyers. The policy makers should also share knowledge with the consumers about the beneficiary points of utilizing the green products such as healthy, pesticides free, low-carbon, eco-friendly etc. Furthermore, setting a value correlation impact for shoppers between various green items as showing green results of various brands independently as opposed to contrasting and non-green items, is significant so customers can concentrate on looking at the distinctions and get slight contrasts in costs between various green brands. They should also educate the helpers in stores so that while a customer is buying the product and gets confused the store operators should guide the consumers about its positive impact.

LIMITATIONS AND FUTURE RESEARCH OPPORTUNITIES

This research has two particular limitations.

First we have yet to validate the generalisation of our results. In the green products in India the modifiability logical relationship between ecological concern, green conduct, price consciousness and green conduct is empirically checked. However, it is important to evaluate the applicability of the findings to other green goods and to other countries. Samples from other or a broader range of green goods in different countries can be gathered in future research to investigate the general process of social responsibility affecting green consumption.

Secondly, the point of convergence of this investigation was to discover the green conduct of consumer behaviour with aspects of price consciousness and ecological concern. So we can see that cost assumed a negative role while purchasing or using green items. Furthermore, investigation can be directed by taking with regards to various items and various segments of individuals. Sample size can be extended up by considering culturally diverse perspectives. The role of mediating effect can be additionally concentrated by mulling over various constructs.

REFERENCES


INFLUENCE LEVEL OF INDIAN WORKING WIVES AND HOUSE WIVES IN FAMILY PURCHASE DECISION-MAKING PROCESS- A COMPARATIVE STUDY BASED ON THE CITY OF KOLKATA

Dr Anupam Karmakar, Assistant Professor
New Alipore College, University of Calcutta, Kolkata, West Bengal, India

INTRODUCTION

The number of women working in the service sector of Kolkata has increased during the last few decades and the financial independence that they developed due their working in different fields of service sector is giving them the required confidence to participate whole-heartedly in the family purchase decision-making. The increased participation of women in workforce is due to good infrastructure and flexibility in jobs, maternity leave, no longer holding the idea that women are meant for household works, expanding service sector, adequate family support, and government sponsored scholarship schemes. Such financial independence also generates a feeling of freedom from dominance of their husbands and other members of the family. It also prompts them to show increased participation in the family purchase decision-making. Similarly, housewives are also participating in the family purchase decision-making but their level of participation is different from the working wives as they are not financially independent. In this backdrop the study attempts to analyze the behaviour of working wives and housewives.

REVIEW OF LITERATURE

Study relating to behaviour of working and non-working wives in family purchase decision-making was mostly carried out in the United States and UK during the last five decades. Those studies were aimed at developing models of consumer behavior and understanding their complex decision making process. But no such studies were conducted in India except a few. Subramanian (2016), the behaviour of women and their preferences have huge impact on the purchase behaviour of home appliance products.

Samsinar (2013) in his study found that majority of purchases by families are made jointly and husbands are more dominant in the purchase outcome stage of the decision making process. Piron (2002) in his study found that when working wives start working outside the home then they start dominating the purchase decision-making of durables.

According to Rena Bartos (1989), marketers have ignored the purchase behaviour of working women which represent an opportunity segment and behaviour of this segment according to her
needs to be investigated thoroughly. This study is very much relevant and useful to understand the purchase behaviour of working and non-working wives in the Indian context.

Davis and Rigaux (1974) identified three stages of decision-making: Recognition of the problem, search for information and purchase decision. They observed that husband becomes the dominant decision maker in the first two stages and the decision-making becomes joint in the third stage.

RESEARCH GAP

In India no previous studies were conducted to analyze the behaviour of working and non-working wives and compare their family purchase decision-making behaviour from consumer behavior perspective in the conservative and patriarchal society of India.

OBJECTIVES OF THE STUDY

- To examining whether working wives of kolkata exert more influence in consumer decision-making than housewives.
- To analyze the level of participation of working wives and house wives in family purchase decision-making as decision-makers.

RESEARCH METHODOLOGY

Data Source: The primary data was collected for this paper on the basis of questionnaire and secondary data was collected from published sources (Malhotra, 2006).

Time Period of Study: Data for this research work was collected from February, 2019 to December, 2019.

Sample Size: The study is based on primary data where personal interviews using a structured questionnaire were used for collecting data from 300 working wives and 300 housewives from 141 wards of Kolkata. This questionnaire survey based empirical research was carried out on convenience sample of 300 working wives and 300 house wives in the 141 wards of Kolkata in the age-group of below 25-55 years. The working wives sampling is collected from female faculty and staff of colleges, few schools and universities of Kolkata and also female staff of companies and private firms were selected from 141 wards of Kolkata for the purpose of this study. The sample of house wives is taken from the non-working female family members of students studying in different colleges, schools and universities of Kolkata region, with focus on the women in the family who stay at home and devote their hundred percent time in taking care of their family. The purpose of selecting 300 working wives and 300 house wives is to make the sample representative and probabilistic by collecting responses from 3 working wives and 3 housewives from various...
socio-economic backgrounds from each of the 141 wards of Kolkata and finally responses of 300 working wives and 300 housewives were retained in the study by rejecting biased responses.

**Sampling Technique:** Simple Probability Sampling.

**Statistical Tools Used**
In this study the following statistical techniques were used to analyze the collected data:
1. Bar Chart, 2. Line Chart, 3. Likert Scale 4. Chi-square Test, 5. t-test and 6. Mean. In this study variables used are measured on the basis of Likert Scale, which are all ordinal variables and chi-square only considers the association between the two ordinal or nominal variables (attributes) and for that reason chi-square was specifically used in this study.

**Statistical Package:** SPSS (V.20)

**PLAN OF WORK**

The data for this research paper was collected by visiting the families of 141 wards of Kolkata in order to make the sample representative, probabilistic and to incorporate working and non-working wives from various socio-economic backgrounds. The metropolitan city Kolkata is the most advanced and economically prosperous region and has a higher education level and employment among females which provides a formidable rationale to conduct this study in the 141 wards of Kolkata.

**ANALYSIS AND FINDINGS**

a. **Profile of the Respondents**
The total sample size in this study is 600 which is divided into 300 working wives and 300 housewives. The respondent’s profile is given in Table 1.

<table>
<thead>
<tr>
<th>Table 1: Profile of the Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working wives</td>
</tr>
<tr>
<td>Housewives</td>
</tr>
</tbody>
</table>

In this study the 300 working wives constitute nearly about 50% of the total samples and 300 housewives constitute 50% of the total samples.

b. **Socio-economic Characteristics of Working wives and Housewives**
Table 2 of the Section 7.2 of the study aimed at exploring the socio-economic profile of the 300 working wives and 300 housewives. For this purpose, five demographic predictors are included in the research design. They are: Age, Nature of Family (nuclear vs. joint), Education (high school or
less vs. some college or more), Occupation and Income. Working wives are mostly between 25 to 59 years of age and come from the families with an average size of three to five people. The survey data reveals that 80% of the working wives (includes Graduates and Post–Graduates) have at least attended college or more, and the remaining 20% of the working wives have qualification up to High School or less. The corresponding percentages in case of housewives are 58% and 42%. Almost 92% out of 80% of the working wives held managerial, administrative, supervisory, teaching and other professional jobs. Hence, the study sample represents a mixture of an upscale and mid-scale urban segment of the Kolkata’s working wives. According to survey more than 50% of the working wives can be placed under middle income and residing in the various wards for generations and have the heritage of pure Kolkata cult.

Table 2: Socio-economic Profile of the Respondents (n=600)

<table>
<thead>
<tr>
<th>Socio-economic Characteristics</th>
<th>Working Wives (WW)</th>
<th>House Wives (HW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Below 25 Yrs</td>
<td>45</td>
<td>15</td>
</tr>
<tr>
<td>25-35Yrs</td>
<td>144</td>
<td>48</td>
</tr>
<tr>
<td>36-45 Yrs</td>
<td>72</td>
<td>24</td>
</tr>
<tr>
<td>46-55 Yrs</td>
<td>39</td>
<td>13</td>
</tr>
<tr>
<td>Nature of Family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>225</td>
<td>75</td>
</tr>
<tr>
<td>Joint Family</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to High School or Less</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>Some College or More</td>
<td>240</td>
<td>80</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>276</td>
<td>92</td>
</tr>
<tr>
<td>Others</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>Monthly Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 20,000</td>
<td>84</td>
<td>28</td>
</tr>
<tr>
<td>20,000 to 50,000</td>
<td>117</td>
<td>39</td>
</tr>
<tr>
<td>50,000-1,00,00</td>
<td>75</td>
<td>25</td>
</tr>
<tr>
<td>Above 1,00,000</td>
<td>24</td>
<td>8</td>
</tr>
</tbody>
</table>

c. Influence level of Indian Working Wives and House Wives in Family Purchase Decision-making on the basis of data collected from 141 wards of Kolkata

For examining the distribution of purchase decision roles of working wives and non-working or housewives the following null hypothesis has been proposed.

H1: Working wives of kolkata exert more influence in consumer decision-making than Housewives.
Table 3: Distribution of Family Purchase Decision Roles as reported by Working Wives (WW) and House Wives (HW) of Kolkata

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Decision-maker</th>
<th>The Right Time to buy the Product (?) (%)</th>
<th>The amount of money to be spend? (%)</th>
<th>From which outlet to buy the product? (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>WW</td>
<td>HW</td>
<td>WW</td>
</tr>
<tr>
<td>FMCG</td>
<td>Husband</td>
<td>18</td>
<td>21</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Working/ House Wife</td>
<td>42</td>
<td>55</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Joint</td>
<td>40</td>
<td>24</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>χ² = 5.973</td>
<td>The chi-square statistic is 5.973. The p-value is .050463. The result is not significant as p &gt; .05.</td>
<td>The chi-square statistic is 9.8745. The p-value is .007174. The result is significant as p &lt; .05.</td>
<td>The chi-square statistic is 3.6101. The p-value is .164463. The result is not significant as p &gt; .05.</td>
</tr>
<tr>
<td>Furniture</td>
<td>Husband</td>
<td>13</td>
<td>29</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Working/ House Wife</td>
<td>24</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Joint</td>
<td>63</td>
<td>49</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>χ² = 7.9322</td>
<td>The chi-square statistic is 7.9322. The p-value is .018947. The result is significant as p &lt; .05.</td>
<td>The chi-square statistic is 20.4956. The p-value is .000035. The result is significant as p &lt; .05.</td>
<td>The chi-square statistic is 5.0249. The p-value is .081071. The result is not significant as p &gt; .05.</td>
</tr>
<tr>
<td>Domestic Appliances/Routing Housekeeping</td>
<td>Husband</td>
<td>30</td>
<td>39</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Working/ House Wife</td>
<td>27</td>
<td>30</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Joint</td>
<td>43</td>
<td>31</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>χ² = 3.2778</td>
<td>The chi-square statistic is 3.2778. The p-value is .194198. The result is not significant as p &gt; .05.</td>
<td>The chi-square statistic is 12.4603. The p-value is .000065. The result is significant as p &lt; .05.</td>
<td>The chi-square statistic is 11.6517. The p-value is .00295.</td>
</tr>
<tr>
<td></td>
<td>Husband</td>
<td>70</td>
<td>80</td>
<td>70</td>
</tr>
<tr>
<td>------------------</td>
<td>---------</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Automobies</td>
<td>Working/House Wife</td>
<td>8</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Joint</td>
<td>22</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>$\chi^2 =$</td>
<td>2.7302</td>
<td>The chi-square statistic is 2.7302. The p-value is 0.25536. The result is not significant as $p &gt; .05$.</td>
<td>5.1827</td>
</tr>
<tr>
<td>TV/Mobile/Laptop</td>
<td>Husband</td>
<td>42</td>
<td>45</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Working/House Wife</td>
<td>11</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Joint</td>
<td>47</td>
<td>36</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>$\chi^2 =$</td>
<td>3.6946</td>
<td>The chi-square statistic is 3.6946. The p-value is 0.157661. The result is not significant as $p &gt; .05$.</td>
<td>5.0433</td>
</tr>
<tr>
<td>Women’s Clothing</td>
<td>Husband</td>
<td>4</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Working/House Wife</td>
<td>88</td>
<td>71</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>Joint</td>
<td>8</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>$\chi^2 =$</td>
<td>9.5036</td>
<td>The chi-square statistic is 9.5036. The p-value is 0.008636. The result is significant as $p &lt; .05$.</td>
<td>29.0693</td>
</tr>
</tbody>
</table>
H1 (Alternative Hypothesis) posits that working wives of Kolkata exert more influence in family purchase decision-making compared to housewives. Findings presented in Table 3 generally support this hypothesis. Results show that 9 out of 18 tests identified a significant relationship between wives’ work status and the influence in family purchase decision-making.

A careful examination of results in Table 3 reveals an interesting pattern. In case of FMCG products, there is no difference in the influence level of working wives and housewives in sub-decisions like, “The right time to buy the product” (p>.05 and \( \chi^2=5.973 \)) and “From which outlet to buy the product” (p>.05 and \( \chi^2=3.6101 \)) but the influence of working wives is high compared to housewives in taking the sub-decision, “The amount of money to be spend” (p<.05 and \( \chi^2=9.8745 \)) because they are financially independent.

Compared to housewives the influence of working wives is much higher in case of purchase decision of furniture, for taking two sub-decisions like, “The right time to buy the product” (p<.05 and \( \chi^2=7.9322 \)) and “The amount of money to be spend” (p<.05 and \( \chi^2=20.4956 \)) because the null hypothesis has been rejected in these two cases. But in case of sub-decision, “From which outlet to buy the product” (p>.05 and \( \chi^2=5.0249 \)) there is no difference between working wives and housewives. So it is evident that working wives exert greater influence in case of first two sub-decisions because they are financially independent and have more say in furniture purchase decision in the family compared to housewives. It means that housewives are lagging behind working wives. However, in the case of Domestic appliances/Routine Housekeeping sub-decisions like, “The amount of money to be spend” (p<.05 and \( \chi^2=12.4603 \)) and “From which outlet to buy the product” (p<.05 and \( \chi^2=11.6517 \)) the influence of working wives is greater than housewives but in case of sub-decision “The right time to buy the product” (p>.05 and \( \chi^2=3.2778 \)) there is no difference between working wives and housewives.

But in case of automobiles purchase the dominance of husband is evident (see Table 4.3) in all the three sub-decisions and the influence of working wives is higher compared to housewives in taking sub-decision like “From which outlet to buy the product” (p<.05 and \( \chi^2=7.2421 \)). But in case of first two sub-decisions “The right time to buy the product” (p<.05 and \( \chi^2=2.7302 \)) and “The amount of money to be spend” (p<.05 and \( \chi^2=5.1827 \)) there is no different between working wives and housewives regarding their influence in purchase decision-making. It indicates that automobile purchase decision is still dominated by husbands.

In the case of TV/Mobile/Laptop purchase decision in the family there is no significant different between working wives and housewives because the null hypothesis has been accepted in all the three sub-decisions as in all the three cases p>.05. In case of electronic goods like TV/Mobile/Laptop obviously the role of husband is important but working wives are also playing a crucial role in purchase decision of electronic goods and also show increasing involvement in the form of joint decision-making. However only in the case of women’s clothing the working
wives exert greater influence than housewives in all the three sub-decisions because null hypothesis has been rejected as $p<.05$ in all the three sub-decisions.

d. **Working wives vs. Housewives as Influencers and Impact of Communication in the Family Purchase Decision-making**

In Kolkata’s family both working and non-working wives play their traditional roles. In this part analysis is made regarding how far they have assumed the role of decision makers beyond their traditional roles and to what extent such a role has been legitimized in the Kolkata’s family structure. In this part attempt is made to analyze the participation of working wives and housewives in family purchase decision making on the basis of Likert Scale. Participation in family purchase decision-making of working wives vs. housewives has been ascertained on the basis of three variables (i) Inclination to express view, (ii) Inclination to provide information and (iii) Level of communication. All these three factors contain 22 statements. And the researcher has tried to find out the reasons behind participation and non-participation of the working wives and housewives.

Inclination to express view reflects the following roles of working wives’ and housewives’ in the family purchase decision-making process:

- The level of importance given on the opinion by her spouse and children
- To what extent the thinking of other family members is impacted by her decision
- Extent of different criteria used in taking final purchase decision in the family
- To what extent the suggestion of working and non-working wives were accepted by other family members
- To what extent the product purchased reflects views of working or non-working wives

Inclination to provide information reflects the following roles of working wives and housewives in the family purchase decision-making process:

- Eagerness in providing information
- Providing suggestions and information for the purpose of purchasing product and selection of retail outlets
- Assuming the role of a good information provider regarding product purchase
- Suggesting best retail outlet and shopping malls for getting the best buy.

The following hypotheses have been constructed in order to assess the participation of working wives and non-working wives i.e. housewives in family purchase decision-making and their behavior as consumers.

**H$_2$**: There is significant difference between working wives and housewives as regards inclination to express view.

**H$_3$**: There is significant difference between working wives and housewives as regards inclination to provide information.

**H$_4$**: There is significant difference between working wives and housewives as regards their communication in family purchase decision-making.
In order to test the above three hypotheses a questionnaire on an interval scale is developed. The scale is developed for the identified variables of propensity to express view, propensity to provide information, and degree of communication of working wives and housewives with other family members on the basis of the 5-point Likert Scale. Pre-testing was done with 50 respondents in Kolkata to check the reliability of the scale used in the questionnaire. The results of reliability test are given in Table 4.

### Table 4: Reliability Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Questionnaire</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclination to express view</td>
<td>6</td>
<td>.84*</td>
</tr>
<tr>
<td>Inclination to provide Information</td>
<td>4</td>
<td>.66</td>
</tr>
<tr>
<td>Level of communication with other family members</td>
<td>12</td>
<td>.62</td>
</tr>
</tbody>
</table>

*Cronbach’s alpha value of 0.6 or less generally indicates unsatisfactory internal consistency reliability.

### RESULTS

T-test is found to be appropriate for the purpose of comparing means between two groups i.e., working wives and housewives. After adequate elaboration done with Levene’s test results on SPSS (Statistical Package for the Social Sciences, v20) package for the T–test, the researcher tried to compare computed t value and the associated significance of support for the null hypothesis of no difference between mean of working wives and housewives.

In the present study the computed t-value is 1.436 with 497.453 degrees of freedom with the associated significance level of .014 for propensity to express view. In other words, working wives and housewives differ significantly in expressing their views in the family purchase decision-making.

### Table 5: Results of t- Value with significance level

<table>
<thead>
<tr>
<th>Variable</th>
<th>t</th>
<th>df.</th>
<th>Significance (2- tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclination to express view (V1)</td>
<td>1.436</td>
<td>497.453</td>
<td>0.014</td>
</tr>
<tr>
<td>Inclination to provide Information (V2)</td>
<td>2.188</td>
<td>478.185</td>
<td>0.031</td>
</tr>
<tr>
<td>Level of communication with other family members (V3)</td>
<td>0.226</td>
<td>497.982</td>
<td>0.821</td>
</tr>
</tbody>
</table>

*(If p<0.05 at 5% level, Null Hypotheses are rejected)*
For inclination to provide information the computed t-value is 2.188 with 478.185 degrees of freedom with the associated significance level of 0.031. It leads to an interpretation that working wives and housewives differ significantly in providing information regarding family purchase. In other words, both provide information at a different level. It can be concluded that null hypothesis is not supported and significant difference exists in their (i.e., working wives and housewives) role in the family purchase decision-making.

Further, in the present study the computed t-value for the degree of communication with other family members between working wives and housewives is 0.226 with 497.982 degrees of freedom with an associated significance of 0.821. The interpretation led to the conclusion that regarding degree of communication with other members of the family, working wives and housewives do not differ significantly and both are treated at par with other members of the family. Thus, the null hypothesis is accepted and consequently alternative has been rejected.

CONCLUSION

This research paper has found that housewives of Kolkata exert less influence in different sub-decisions relating to consumer purchase decision-making compared to working wives and the level of socialization could be one of the factors for the same. Moreover, in the Kolkata’s society social mores play an important part in the influencing role measures of working wives and housewives. The study concluded that working wives and housewives differ significantly regarding inclination to express view and inclination to provide information but they do not differ regarding degree of communication with other members of the family. This is obvious in the Kolkata’s context because working wives are now more informed, educated and earning a handsome salary every month. Not only that they collect information from Internet, TV, social media and books regarding new products. Moreover, the traditional attitude towards female has also changed in today’s context. Thus, the conclusion of this study is that a significant difference exists between Kolkata’s working wives and non working wives in the family purchase decision-making. The responses of both the working and housewives are similar regarding degree of communication with other members of the family that is why the study found no difference between them in this context. This study is not suitable for generalization as the study was conducted on a small sample and the findings are preliminary which can be overcome by taking large samples in future research.
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ENERGY SCENARIO IN NORTH-EAST INDIA: A SWOT ANALYSIS

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Department of Economics, Gargaon College, Assam, India

INTRODUCTION

Energy is considered as the life blood of the modern world. It acts as a crucial input for better provision of cooking, lighting, heating, cooling, entertainment, transport, agriculture, industrialization, urbanization, Information and Communication Technology (ICT) etc. It not only affects education, income, environment, health, water, sanitation and other basic amenities of human life but also economic growth and well-being of nations. Clean energy is vital for the existence of modern life. Energy poverty leads to income poverty, low education and threats to employment opportunities. According to Peter Voser, Energy can be called as ‘Oxygen of the Economy’ (Lakshmi, 2016). India’s energy sector is the most diversified energy sector in the world which comprises of both conventional and non-conventional energy sources such as firewood, agriculture and domestic waste, coal, lignite, natural gas, oil, hydro electricity, wind, solar and nuclear power etc. India is endowed with various sources of renewable energy such as biomass, water, wind and sunlight.

The North Eastern Region (NER) comprises of eight states i.e. Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland, Sikkim and Tripura. This region is full of bio-geographic and ethno-geographic diversities. In North East India, the demand for energy is increasing day by day but the capacity to generate energy is limited. To fill up the mismatch between demand and supply of power, the Region will need to import electricity by 2030. In this region, the potential hydropower capacity is 58 GW and the demand for electricity will increase 3 times from 2015 to 2030 (V. Anbumozhi et al, 2019). The energy status of the region is not so good as compared with other states of the country. Therefore, the present study is an attempt to study the Energy scenario in North-East India: A SWOT Analysis.

OBJECTIVES OF THE PAPER

The objectives of the present paper are:

➢ to study the Energy scenario in North-East India;
➢ to identify the Strengths, Weaknesses, Opportunities and Threats of energy status of North-East India.
REVIEW OF LITERATURE

The survey of literature of the present paper is presented below-
H. Panda (2011) mentioned that India's per capita energy consumption is less than one tenth of other developed countries of world due to disparities in region wise development, unbalanced development in rural and urban sectors. It is unfortunate that those regions which are rich in fossil and renewable energy sources have low per capita energy consumption.

Kolhe and Khot (2015) mentioned that India’s energy demand is increasing from 450 million tons of oil equivalent (toe) to 770 million toe in 2012. Regarding renewable energy, India is at an infancy stage. But India's electricity Sector, especially wind energy is an active player in renewable energy utilization as compared with other countries of the world.

Chabukdhara & Singh (2016) pointed out that energy demand is increasing in India due to population growth, a quest for better quality of life and due to growing economy.

V. Anbumozhi et al. (2019) analysed connectivity of energy between Northeast India and its neighbours and found that the states of North East India are rich in various resources. Assam and Tripura are blessed with petroleum resources. Mizoram is rich in biomass. Arunachal Pradesh and Sikkim have hydro-power potential. Arunachal Pradesh and Assam have solar energy potential. The study analyses cross-border energy trade between border countries and North-East India. The NER is currently a net importer of electricity, with about 30% of its electricity supply imported from Bhutan and Other India. The largest sources of power generation in the NER are gas and hydropower.

METHODOLOGY

This paper is analytical in nature which is based on secondary sources. Secondary data were collected from various Government Reports such as Statistical Year Book of India, Statistical Year Book of Assam, Economic Survey of Assam, NEDFI, Census Report of India Energy Statistics of India, dissertations, books, periodicals & journals and online sources of data.

ANALYSIS AND DISCUSSION

Demographic Status of the North East India:
The North East India is endowed with topography, natural resources including mineral and water resources, cultural diversity, rich bio-diversity, forests and wildlife reserves and climatic conditions. The border countries of the region are Nepal, China, Bhutan, and Pakistan. The region covers an area of 262179 sq. km which is 7.98 percent of the total area of India. The demographic status of the North East India is shown in table 1.
The North–Eastern region comprises of 3.76 percent population of the country. The literacy rate of the region is 78.84 percent. Among all the states of NER, literacy rate is highest in Mizoram (91.33%). Arunachal Pradesh has the lowest density of population i.e. 17 among all states of India.

Energy Scenario of the North East India:
The status of Energy Scenario reflects the development of a country or region. The NE Region is well blessed by primary energy sources such as coal, petroleum crude oil and natural Gas. The maximum amount of coal, oil and natural gas is found in Assam. The estimated reserves of coal, crude oil and Natural Gas in various states of the NE Region are presented in table 2:

<table>
<thead>
<tr>
<th>North Eastern States</th>
<th>Coal (in Billion Tonne)</th>
<th>Crude Petroleum oil (Crude Million Tonnes)</th>
<th>Natural Gas (Billion Cubic Meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arunachal Pradesh</td>
<td>0.09</td>
<td>0.09</td>
<td>1.64</td>
</tr>
<tr>
<td>Assam</td>
<td>0.52</td>
<td>0.52</td>
<td>165.91</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>0.47</td>
<td>0.58</td>
<td>-</td>
</tr>
<tr>
<td>Nagaland</td>
<td>0.32</td>
<td>0.32</td>
<td>2.38</td>
</tr>
<tr>
<td>Sikkim</td>
<td>0.10</td>
<td>0.10</td>
<td>-</td>
</tr>
<tr>
<td>Tripura</td>
<td>-</td>
<td>-</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Source: NER Databank, databank. nedfi.com
From the above table, it is clear that in 2016, coal reserves is maximum in Meghalaya (0.58 Billion Tonne); Natural Gas (Billion Tonne) and Crude Petroleum Oil is maximum (160.79 Million Tonnes) in Assam. The North Eastern states are rich in coal reserves, Natural Gas, Crude Petroleum Oil and other energy sources. But these resources are not properly utilised in this region.

The state wise availability of energy power in North-East India is shown in table 3.

### TABLE 3
**AVAILABILITY OF ENERGY POWER IN NORTH EAST INDIA**
(MILLION UNITS NET)

<table>
<thead>
<tr>
<th>North Eastern States</th>
<th>2014-15</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assam</td>
<td>7926</td>
<td>8271</td>
<td>8692</td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>610</td>
<td>591</td>
<td>713</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>1634</td>
<td>1724</td>
<td>1714</td>
</tr>
<tr>
<td>Manipur</td>
<td>678</td>
<td>810</td>
<td>738</td>
</tr>
<tr>
<td>Mizoram</td>
<td>425</td>
<td>455</td>
<td>499</td>
</tr>
<tr>
<td>Nagaland</td>
<td>661</td>
<td>738</td>
<td>743</td>
</tr>
<tr>
<td>Sikkim</td>
<td>399</td>
<td>399</td>
<td>474</td>
</tr>
<tr>
<td>Tripura</td>
<td>1048</td>
<td>1146</td>
<td>1621</td>
</tr>
<tr>
<td>Total</td>
<td>13381</td>
<td>14134</td>
<td>15194</td>
</tr>
<tr>
<td>All India</td>
<td>1030785</td>
<td>1090851</td>
<td>1135334</td>
</tr>
</tbody>
</table>

Source: NER Databank, databank.nedfi.com

It is seen from the above table that in 2016-17, the availability of energy power in North East India is 15194 MU which is 1.24 percent of the country. Among all the states of North Eastern Region, Assam has maximum availability of energy power i.e. 8692 MU. The availability of energy power is increasing from 13381 MU in 2014-15 to 15194 MU in 2016-17.

The state wise installed capacity of power in North-East India is shown below:

### TABLE 4
**State Wise Installed Capacity of Power in North-East India (MEGA WATT)**

<table>
<thead>
<tr>
<th>North Eastern States</th>
<th>2014-15</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assam</td>
<td>1263.14</td>
<td>1369.45</td>
<td>1599.65</td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>261.15</td>
<td>257.86</td>
<td>273.84</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>494.80</td>
<td>510.45</td>
<td>518.32</td>
</tr>
<tr>
<td>Manipur</td>
<td>199.82</td>
<td>206.11</td>
<td>233.38</td>
</tr>
<tr>
<td>Mizoram</td>
<td>160.93</td>
<td>119.42</td>
<td>136.92</td>
</tr>
<tr>
<td>Nagaland</td>
<td>131.34</td>
<td>140.04</td>
<td>154.87</td>
</tr>
<tr>
<td>Sikkim</td>
<td>323.48</td>
<td>414.48</td>
<td>758.14</td>
</tr>
<tr>
<td>Tripura</td>
<td>627.05</td>
<td>676.50</td>
<td>727.33</td>
</tr>
</tbody>
</table>
It is seen from the above table that Assam has highest installed capacity of power in three consecutive years as compared to other states of North-East India. Fig 1 exhibits it.

The distribution of households by source of lighting in North-east India is shown in table 5 -

**TABLE 5**

<table>
<thead>
<tr>
<th>India/ North-Eastern States</th>
<th>Total number of HHs</th>
<th>Electricity</th>
<th>Kerosene</th>
<th>Solar Energy</th>
<th>Other Oil</th>
<th>Any Other</th>
<th>No Lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDIA</td>
<td>246692667</td>
<td>67.3</td>
<td>31.4</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.5</td>
</tr>
<tr>
<td>Sikkim</td>
<td>128131</td>
<td>92.5</td>
<td>6.6</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.5</td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>261614</td>
<td>65.7</td>
<td>18.5</td>
<td>2.9</td>
<td>0.3</td>
<td>2.1</td>
<td>10.5</td>
</tr>
<tr>
<td>Manipur</td>
<td>507152</td>
<td>68.4</td>
<td>25.1</td>
<td>1.9</td>
<td>0.4</td>
<td>3.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Mizoram</td>
<td>221077</td>
<td>84.2</td>
<td>13.5</td>
<td>1.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Tripura</td>
<td>842781</td>
<td>68.4</td>
<td>29.1</td>
<td>1.9</td>
<td>0.2</td>
<td>0.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>538299</td>
<td>60.9</td>
<td>37.0</td>
<td>0.8</td>
<td>0.3</td>
<td>0.2</td>
<td>0.8</td>
</tr>
<tr>
<td>Assam</td>
<td>6367295</td>
<td>37.1</td>
<td>61.8</td>
<td>0.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**Source:** Census of India, 2011
The table 5 reveals that in Sikkim, maximum number of households i.e. 92.5 percent use electricity as primary source of lighting which is much more than all other states of North East India as well as India. In Assam, only 37.1 percent households use electricity as primary source of lighting. In Arunachal Pradesh, Solar energy is 2.9 percent which is larger than all India average i.e. 0.4 percent. In Arunachal Pradesh, 10 percent doesn’t have any lighting facility which reflects the energy poverty of the state.

The source of energy for domestic lighting in urban household of North East India is shown in table 6.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>INDIA</td>
<td>78865937</td>
<td>53692376</td>
<td>92.7</td>
<td>87.6</td>
<td>6.5</td>
<td>11.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Sikkim</td>
<td>35761</td>
<td>13015</td>
<td>98.7</td>
<td>97.1</td>
<td>0.9</td>
<td>2.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>65891</td>
<td>48114</td>
<td>96.0</td>
<td>89.4</td>
<td>3.2</td>
<td>9.4</td>
<td>0.4</td>
<td>0.5</td>
<td>0.4</td>
<td>0.7</td>
</tr>
<tr>
<td>Nagaland</td>
<td>115054</td>
<td>66716</td>
<td>97.4</td>
<td>90.3</td>
<td>2.1</td>
<td>8.3</td>
<td>0.3</td>
<td>0.5</td>
<td>0.2</td>
<td>0.9</td>
</tr>
<tr>
<td>Manipur</td>
<td>171400</td>
<td>101302</td>
<td>82.4</td>
<td>82.0</td>
<td>11.2</td>
<td>17.3</td>
<td>5.9</td>
<td>0.5</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Mizoram</td>
<td>116203</td>
<td>81604</td>
<td>98.1</td>
<td>94.4</td>
<td>1.5</td>
<td>5.2</td>
<td>0.3</td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Tripura</td>
<td>235002</td>
<td>122343</td>
<td>91.6</td>
<td>86.4</td>
<td>7.0</td>
<td>13.0</td>
<td>1.2</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>116102</td>
<td>90568</td>
<td>94.9</td>
<td>88.1</td>
<td>4.4</td>
<td>10.9</td>
<td>0.3</td>
<td>0.5</td>
<td>0.3</td>
<td>0.5</td>
</tr>
<tr>
<td>Assam</td>
<td>992742</td>
<td>715185</td>
<td>84.1</td>
<td>74.3</td>
<td>15.2</td>
<td>25.0</td>
<td>0.5</td>
<td>0.6</td>
<td>0.3</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Source: Census of India, 2011

The table shows that in Sikkim, maximum number of households’ i.e. 98.7 percent urban households use electricity as primary source of lighting, whereas in Assam 84.1 percent urban households use electricity as primary source of lighting which is less than the national average. It is seen from the above table that the use of electricity as primary source of energy is increasing from 2001 to 2011 whereas the use of kerosene as primary source of energy is decreasing from 2001 to 2011 in all the states of North-Eastern Region as well as in India. This reflects that the demand for clean energy is increasing day by day.

The source of energy for domestic lighting in rural household of North East India is shown in table 7.
TABLE 7
SOURCE OF ENERGY FOR DOMESTIC LIGHTING IN RURAL NORTH-EAST INDIA

<table>
<thead>
<tr>
<th>India/ North Eastern States</th>
<th>Total households</th>
<th>Rural Percentage of households having</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2011</td>
<td>2001</td>
</tr>
<tr>
<td>INDIA</td>
<td>167826730</td>
<td>138271559</td>
</tr>
<tr>
<td>Sikkim</td>
<td>92370</td>
<td>91723</td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>195723</td>
<td>164501</td>
</tr>
<tr>
<td>Nagaland</td>
<td>284911</td>
<td>265334</td>
</tr>
<tr>
<td>Manipur</td>
<td>335752</td>
<td>296354</td>
</tr>
<tr>
<td>Mizoram</td>
<td>104874</td>
<td>79352</td>
</tr>
<tr>
<td>Tripura</td>
<td>235002</td>
<td>122343</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>116102</td>
<td>90568</td>
</tr>
<tr>
<td>Assam</td>
<td>992742</td>
<td>715185</td>
</tr>
</tbody>
</table>

Source: Census of India, 2011

From the above table, it is clear that according to 2011 census, 94.9 percent of household use electricity as primary source of lighting in Meghalaya, whereas in Assam 84.1 percent of household use electricity as primary source of lighting. It is seen that the use of electricity as a domestic lighting in rural North East India is increasing from 2001 to 2011 in all the states of North-East India. But the use of kerosene as a domestic lighting in rural North East India is decreasing from 2001 to 2011 in all the states of North-East India.

Availability of separate kitchen reflects the energy consumption scenario of a household. If there is separate kitchen, then there is less possibility of bad impact of pollution from fuel. In North East India, most of the people use firewood as cooking fuel.

The distribution of households by use of cooking fuel in North-east India is shown in table 8.

TABLE 8
DISTRIBUTION OF HOUSEHOLDS BY USE OF COOKING FUEL AS PER 2011 CENSUS

<table>
<thead>
<tr>
<th>India/ North-Eastern states</th>
<th>Households (excluding institutional households)</th>
<th>Firewood</th>
<th>Crop residue</th>
<th>Cowdung cake</th>
<th>Coal, lignite, charcoal</th>
<th>Kerosene</th>
<th>LPG</th>
<th>Electricity</th>
<th>Biogas</th>
<th>Any other</th>
<th>No cooking</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDIA</td>
<td>246692</td>
<td>49.0</td>
<td>8.9</td>
<td>8.0</td>
<td>1.5</td>
<td>2.9</td>
<td>28.6</td>
<td>0.1</td>
<td>0.4</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Sikkim</td>
<td>128131</td>
<td>52.5</td>
<td>0.6</td>
<td>0.2</td>
<td>0.1</td>
<td>4.4</td>
<td>41.3</td>
<td>0.3</td>
<td>0.1</td>
<td>0.0</td>
<td>0.6</td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>261614</td>
<td>68.7</td>
<td>0.7</td>
<td>0.1</td>
<td>0.0</td>
<td>0.7</td>
<td>29.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Nagaland</td>
<td>399965</td>
<td>77.9</td>
<td>0.8</td>
<td>0.1</td>
<td>0.0</td>
<td>0.6</td>
<td>20.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Manipur</td>
<td>507152</td>
<td>65.7</td>
<td>1.1</td>
<td>0.2</td>
<td>2.1</td>
<td>0.2</td>
<td>29.7</td>
<td>0.1</td>
<td>0.2</td>
<td>0.6</td>
<td>0.1</td>
</tr>
<tr>
<td>Mizoram</td>
<td>221077</td>
<td>44.5</td>
<td>0.3</td>
<td>0.1</td>
<td>0.4</td>
<td>1.8</td>
<td>52.6</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Tripura</td>
<td>842781</td>
<td>80.5</td>
<td>0.8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.6</td>
<td>17.6</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>538299</td>
<td>79.0</td>
<td>0.9</td>
<td>0.3</td>
<td>2.3</td>
<td>3.7</td>
<td>11.9</td>
<td>1.6</td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Assam</td>
<td>367295</td>
<td>72.1</td>
<td>6.4</td>
<td>0.9</td>
<td>0.1</td>
<td>0.6</td>
<td>19.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.4</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Source: Census of India, 2011, Govt of India
The above table shows that in North East India, 80.5 percent households use firewood as cooking fuel in Tripura, followed by 79.0 percent by Meghalaya, 77.9 percent by Nagaland, 72.1 percent by Assam, 68.7 percent by Arunachal Pradesh, 65.7 percent by Manipur, and 52.5 percent by Sikkim which is much higher than all India average i.e. 49 percent. The use of LPG is highest in Sikkim i.e. 41.3 percent which is higher than all India average i.e. 28.6 percent.

Among all other energy sources, electricity is the most clean energy source. The Per Capita Consumption of Electricity shows the energy status of a state, region or a country.

The Per Capita Consumption of Electricity in various states of North- East India as well as other develop states is shown in table 9.

### TABLE 9
**Per Capita Consumption of Electricity (KWH)**

<table>
<thead>
<tr>
<th>States/ India</th>
<th>*Per capita consumption of Electricity in 2017 (kwh)</th>
<th>**Per capita consumption of Electricity in 2019 (kwh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arunachal Pradesh</td>
<td>503.27</td>
<td>703</td>
</tr>
<tr>
<td>Assam</td>
<td>209.20</td>
<td>341</td>
</tr>
<tr>
<td>Manipur</td>
<td>207.15</td>
<td>371</td>
</tr>
<tr>
<td>Mizoram</td>
<td>429.31</td>
<td>617</td>
</tr>
<tr>
<td>Tripura</td>
<td>223.78</td>
<td>514</td>
</tr>
<tr>
<td>Nagaland</td>
<td>242.39</td>
<td>356</td>
</tr>
<tr>
<td>Sikkim</td>
<td>845.4</td>
<td>873</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>613.36</td>
<td>881</td>
</tr>
<tr>
<td>NER</td>
<td>249.65</td>
<td>-</td>
</tr>
<tr>
<td>Goa</td>
<td>2004.77</td>
<td>2274</td>
</tr>
<tr>
<td>Puducherry</td>
<td>1864.5</td>
<td>1745</td>
</tr>
<tr>
<td>Punjab</td>
<td>1663.01</td>
<td>2046</td>
</tr>
<tr>
<td>Gujrat</td>
<td>1558.58</td>
<td>2378</td>
</tr>
<tr>
<td>Haryana</td>
<td>1491.37</td>
<td>2082</td>
</tr>
<tr>
<td>All India Total</td>
<td>778.63</td>
<td>1184</td>
</tr>
</tbody>
</table>

*Source: *track.in (2017), **Source: PIB, Ministry of Power, Govt. of India, 21 NOV, 2019

The above table shows that per capita consumption of all the states of North East India is less than all India’s per capita consumption of Electricity as well as other developed states of India which is shown in the following figure.
SWOT ANALYSIS OF THE ENERGY SECTOR OF NORTH-EAST INDIA

The Strengths, Weaknesses, Opportunities and threats to the energy sector of North-East India can be analyzed in the following way:

**STRENGTHS**

The region has abundant natural resources. The North East Region Specially Assam is the world's largest tea-growing region. In 1889, for the first time in India, oil was in struck in North Eastern Region. The oldest refinery in the country is found in Digboi of Assam state. Assam produces 15 percent of India’s Crude Oil. The region produces tea which accounts to 51 percent of India’s tea production and one sixth of the world’s tea production. Tripura is the second largest rubber producer of the country and third largest rubber producer of the world. Regarding natural gas, Assam has a good share of country’s total natural gas production. Northeast India contributes 1597 Million Tons of coal in India’s total coal reserves. These are the strengths of North-East India.

**WEAKNESSES**

The region has various weaknesses such as bad road communication dense forests, disasters like earthquake, floods and land sliding, poor infrastructure, lack of basic amenities for modern life as compared to the front ranking states of the country.

**OPPORTUNITIES**

The region has abundant natural, mineral resources and water resources such as water falls, rivers, lakes, gushing streams etc. There are great potentials of harnessing hydroelectricity in this
region. There is a great potential of food processing industries in the region. Proper exploitation of potential resources as well as proper infrastructure will lead many opportunities to this region. Only then the region will be able to contribute a lot to the energy development of the country. There is potentiality of energy trade of North-east India with other neighbouring countries of India such as Bangladesh, Bhutan, and Myanmar, China etc. Northeast India is the gateway to these neighbouring countries.

THREATS

Many parts of the North-East India are untouched to the other parts of the country till now. If the central government as well the state governments will not be able to utilize the abundant resources of North-East, then the region will have to import energy sources from other countries which will ultimately leads to energy poverty in near future. As the population as well as energy demand is increasing day by day, the region will face more problem in gaining education, job opportunities which may ultimately lead to low socio-economic development of the region.

CONCLUSION

In North East India, there are so many potentialities of development of energy. Although access to improved energy has been an important component of development of a country, government has also taken various initiatives to reduce energy poverty; still rural people are deprived from so many facilities of modern energy. Energy access to every people will truly improve the lives of rural households which ultimately reduce income poverty. The development gap of the region can be bridged by better infrastructure, proper energy policies and planning, proper transport and communication connectivity. These gap needs to be addressed for proper development of the country. Once the resources are utilized, it will be very easy for the region to keep pace with the development process of the country. Then the region will definitely emerge at the forefront of India’s developmental journey!

Hope for the best Future.

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URL

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3. https://www.rtrackin
INTRODUCTION

To appreciate the good, you need to experience the bad. Covid 19, was one such disease that made the world take cognizance of many issues. India too, received a jolt when it was hit with the pandemic called Covid -19 –a deadly and infectious disease that first originated in China’s Wuhan region causing acute respiratory and other complications in the affected person. Due to the precarious nature of the labour job in India, specially the finance capital of India (Mumbai) many migrant workers lost their jobs due to the lockdown. This created issues of starvation, separation of family members, no alternative source of employment (source: Al Jazeera News Channel). Many migrant labourers from Bihar and UP have built business networks in Mumbai which finds customers even in adverse situations— such as milk supply, grocery stores, vegetables, flowers & fruits vending, private security etc. There are also many NGOs such as YUVA or Ajeevita Bureau that have been working with these labour forces. Over half of India’s migrant populations earns just ₹200 to ₹400 a day much below the present minimum wages (₹ 692,629 and 579) but in Mumbai a daily wage worker makes anywhere between ₹900 to ₹3000 per month. Strangely when the Mumbai Government arranged for trains for these workers to travel back to their respective hometowns, they admitted on missing the ‘high income’ in Mumbai.
OBJECTIVE

The Objective of this paper is primarily: 1) To evaluate the problems faced by Migrant workers in India pre and post Covid 19 era 2) To explore the reasons why Mumbai is the most desired destination of India 3) To list the steps taken for the well-being of the workers during lockdown and investigate the efficacy of the migrant crisis in Mumbai.

APPROACH

To arrive at the above mentioned objectives, this paper will be divided into 3 parts, Part 1) the macro scenario of migrant workers in this country – It’s important to understand the history behind migrant workers and what were the reforms and policies reserved for Migrant workers that led to this lot becoming so vulnerable. Part 2) Micro Scenario will enumerate reasons why Mumbai attracts more migrant workers than rest of India. It will also include a short survey of migrant workers such as skilled workers (plumbers/carpenters) and unskilled workers such as construction and infrastructure workers in a pre and post Covid situation in the city. Part 3) Conclusions, Findings & Recommendations.

PART 1

Macro Scenario
The concept of migration cannot be fully understood without the reference of 3 historical phases

1) Ancient phase. At the beginning of human civilization, man was a hunter, had to wander in search of food- known as primitive migrant

2) The Aryans who migrated to India as a personal tribe, followed by refugees

3) British phase - East India companies’ trading enterprises in India who were in search of the ‘land of promise’, established trade.

The history of Indian migration is divided into three periods 1) From the abolition of slavery and recruiting of unskilled labour under indenture to the consolidation of the laws regarding the migration of such labour. This period extends over the 75 years 1833-1908; 2) The dawn of a national policy, 1908- 1922 stopped slavery/indentured labour 3) In 1922, the law removed the evils of coolieism. 4) The national policy in a way brought some relief to the ancient exploitation of indentured labour.
Out of all places in India, Mumbai being the glamorous and a city with better prospects city it attracts more migrant labourers in the construction site, households work, railways, docks, (Mathadi), Angadias (diamond carriers) etc.

Current scenario (Pre-COVID)
Following gives you an idea of the migration of labourers in India. As many as 8 states are involved in sending manual labourers across the country. These include UP, Bihar, MP, Odisha and more recently the North Eastern States.

Amongst the biggest employers of migrant labourers is the construction sector (40 million); domestic work (20 million); textile (11 million); brick kiln work (10 million), transportation, mines, quarries and agriculture also add to the work force. Maharashtra alone accounts for 2.3 million migrant labourers with Mumbai accounting for as much as 70% labourers. Migrants, unfortunately due to their lack of critical skills and bargaining power often get short-changed by their employers. They often work in low-end, low value hazardous work. Lack of identity and legal protection further aggravate their problems. And their problems further increase when they cross boundaries of States. Left with bare minimum shelter and food, they work under grave situations. Mumbai being the big city attracts the flow of migrant labourers. Although they work for big companies who build buildings, metro and bridges yet when on March 22nd the honourable Prime Minister of this country announced the nationwide lockdown, migrant labourers faced the maximum brunt. In Mumbai, lakhs gathered at railway and bus terminuses on the same night to go back to their homes. This was mainly because they knew they would lose their wages and their families would be stranded without any food. This caused major chaos.

6 Source: Migrant labour in India article in ajveeka.org

Research Papers Presented at the 7th LSME International Research Conference on ‘Role of Management, Education and Social Sciences in Responsible Research and Innovations: Challenges and Realities’
While 50% of the labourers left the city on March 23\textsuperscript{rd} while the borders were still not sealed, the rest were trapped.

BUT!\textsuperscript{7} The above could have been avoided if migrant workers aggressively made use of the – The Mahatma Gandhi National Rural Employment Guarantee Act 2005 (MNREGA).

“The MGNREGA was initiated with the objective of "enhancing livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year, to every household whose adult members volunteer to do unskilled manual work".

The Aim of the Act was to leverage this employment to build infrastructure in the rural areas (such as roads, canals, ponds and wells). Employment is provided in the vicinity of the worker’s residence, and minimum wages are to be paid. If the worker/applicant fails to secure employment under this scheme, then he or she is entitled to unemployment allowances. Thus, employment under MGNREGA is a legal entitlement. There’s no involvement of any middlemen or contractors and is put into execution by the gram panchayats.

MGNREGA is to be implemented mainly by \textit{gram panchayats} (GPs). The involvement of contractors is banned. This Act has been lauded ever since its launch due to the financial security it provides rural people, helps in sustaining the environment, empowering women and reducing the rural-urban migration.

Flaws in MGNREGA that couldn’t avert the migrant worker’s crisis.

- Migrant workers move to city since the minimum wages is way to less than the city’s wages.
- Workers, who do not own lands and don’t get employed are happy to get the unemployment wages and at the same time travel to other cities for additional employment. This results in double income at times.
- Corruption and leakages in the proper implementation haven’t been able to control the migration problem.

\textsuperscript{7} Source: \url{https://nrega.nic.in/netnrega/home.aspx} (MNRega website)

Research Papers Presented at the 7\textsuperscript{th} LSME International Research Conference on ‘Role of Management, Education and Social Sciences in Responsible Research and Innovations: Challenges and Realities’
PART 2

Methodology
The interviews were conducted to evaluate the respondents’ reasons for migration to Mumbai and what was the effect of the pandemic on the migrant workers in Mumbai?

One on one interviews were conducted with 35 migrant workers – Out of which 15% were skilled workers such as plumbers, carpenters, drivers and 85% were unskilled workers namely construction workers, maids, milkman, security guards etc. No locals (who possessed domiciles of Mumbai) were interviewed. The purpose of the questions was to elicit responses about the main reason for migration and what were their plans in this pandemic scenario.

A 70:30 gender ratio was maintained for the survey (70% Males and 30% for Females)

Questionnaire – the Questionnaire was divided into 2 sections for ease of response.
Section 1 – Pre-COVID TABLE NO. 1

- Reasons for Migration to Mumbai

<table>
<thead>
<tr>
<th>Reasons</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>High wages than rest of India</td>
<td>35</td>
</tr>
<tr>
<td>Want to join Bollywood</td>
<td>30</td>
</tr>
<tr>
<td>Meet Bollywood Stars (Bachchan/SRK)</td>
<td>15</td>
</tr>
<tr>
<td>Roll over Projects – Long term jobs</td>
<td>15</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
</tr>
</tbody>
</table>

- How long have you been living in Mumbai?
  a. How many members are there in your family?
The response for this question as recorded was –

- 42% were living in Mumbai for over 10 years and 32% were living for less than a year
- No. of family members in each migrant household peaked at 45% with 5-10 members in each household.

Where do you live? (Migrant workers who are in the city for less than a year; less than 5 years; more than 10 years)

| Table 2 |
|---|---|---|
| Chart Title |
| < than a year | < than 5 years | > 10 years |
| Shanties | Rented | on Site |
| 0% | 100% | 50% |

- Note – Rented means – those who lived in chawls or rented shanties.
- What’s the split of your monthly expenses?
  a. It was noted that Workers living in the city for less than a year spent their income mostly on rent depleting their savings and those living in the city for more than 10 years had heightened savings of nearly 40%

Section 2 – Post COVID

a) Did you leave the city during the pandemic? If Yes, Why? (Table 3)

<table>
<thead>
<tr>
<th>Reasons</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Income</td>
<td>25</td>
</tr>
<tr>
<td>Fear of catching the pandemic/rumours of being killed</td>
<td>30</td>
</tr>
<tr>
<td>Schools are shut so best time to leave</td>
<td>15</td>
</tr>
<tr>
<td>Lack of Ration cards denied option to avail food</td>
<td>25</td>
</tr>
<tr>
<td>Best time to return to village for harvesting season</td>
<td>5</td>
</tr>
</tbody>
</table>
b) Will you be returning to the city post lockdown? If Yes, Why? If No, Why? (table 4)

If Yes, Why?

<table>
<thead>
<tr>
<th>Reason</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Income in native State</td>
<td>25</td>
</tr>
<tr>
<td>Pandemic is temporary</td>
<td>22</td>
</tr>
<tr>
<td>More scope for unskilled workers like maids/laundryman etc. in city</td>
<td>35</td>
</tr>
<tr>
<td>More opportunities to expand biz</td>
<td>18</td>
</tr>
</tbody>
</table>

If No, Why? (table 5)

Source: The Times of India newspaper

Additionally, respondents added the following reasons about why they felt vulnerable in Mumbai – (THE GOOD AND THE BAD)

- Daily wages earned by an average labourer in Mumbai is more than the other states. They can save more and even send home money.
- There’s rolling work involved in Mumbai which means when one project gets over these labourers are immediately employed for another project.
- This rolling employment has enabled many labourers to start a family and live in shanties so that they don’t miss out on the jobs.
- They receive no benefits or protection from the local contractor who give them the jobs hence they aren’t direct employees of the bigger companies for whom they work such L&T, Godrej, Reliance and so on.
Some of these workers got double income 1) being subsidies offered by the State government such as ration 2) They also received unemployment allowances offered by the MNrega scheme.

The lockdown completely paralyzed their lives since they were left deserted and the government had to intervene to set up temporary shelter and arrange food for them.

Crammed in tiny rooms also posed health risks to these labourers and their families. Also, most had large families as many as 4 kids per family.

Food and Shelter homes were put up at many places but due to a dense population many were left starving for lack of sufficient food supply.

They left the city since free transport were being arranged at some places but many of them also returned within 4 weeks.

PART 3 – FINDINGS/CONCLUSIONS AND RECOMMENDATIONS

FINDINGS

India, a country that houses 1.3 billion people was bound to experience a crisis due to the pandemic on account of its dense population, but the migrant workers throw some important points to ponder -

1. MNRege job card holders who could have been in the comforts of their homes opted to migrate from rural areas to urban areas for the lure of money and big city adventure.

2. Migrant workers who lived in the city for more than a year (less than 5 years and/or more than 10 years) have on an average 4 kids thus making their incomes insufficient to take care of their families in times such as the lockdown where daily income came to a standstill.

3. While, migrant workers opted to stay on in Mumbai to avail the rolling projects employment very few had proper documents such as ration cards to avail the free ration offered by the Government.

4. Migrant workers who returned to their hometowns started small time work on their own due to all the experience gained in the big cities. This was evident in the increase in the rural economy post Covid.

5. The mass exodus of migrant workers made cities like Mumbai realize their importance and take cognizance of training local workers for big infrastructural projects.

6. Rumours, fear and anxiety that was felt by these migrant workers weren’t addressed by the Government resulting in a crisis-like situation.

7. Except for a few NGOs (YUVA, Ajeevika) who are in touch with these migrants they are not part of any unions.
CONCLUSIONS

After a detailed analysis of the history of Migrant workers, analysis of the workings of the MNrega Schemes, and the pandemic situation we conclude that the lockdown induced crisis proved to be a boon rather than a crisis since migrant workers realized the importance of working in an organized set up that assures good income, hygienic living conditions and well-being of one’s family. Unfortunately, this boon came at a price!

- Migrant workers who returned were ready to return after they negotiated their salaries with their respective employers.
- Migrant workers came to terms with the benefits of working in one’s home town if one doesn’t have adequate savings
- The Government of Maharashtra took notice of this crisis and the infrastructural crisis it posed. Housing and Metro projects came to a standstill. They announced affordable housing for migrant workers due to this crisis. “The Affordable Rental Housing Complexes (ARHCs) scheme under the ministry of housing and urban affairs will be a sub-scheme under the Pradhan Mantri Awas Yojana (Urban) with an estimated expenditure of around Rs 600 crore. The scheme aims to cover nearly 3 lakh beneficiaries initially.” Source: The Hindustan Times.
- The methodology used in surveying migrant workers on the field and researching India’s various labour reforms helped us see the real picture.

RECOMMENDATIONS

- Revive the State migrant workers act 1979 and update it to include all benefits to migrant labourers.
- Revise MNrega and introduce more social audits to ensure rural workers get benefits from the scheme. And those who take advantage of the scheme need to penalized. Minimum wages should also be increased to match Big city wages to control the migration.
- Make employers and labour contractors accountable for the migrant labourers and ensure their welfare and job security.
- Monitoring the work of the Shramik Ekta Mahasangh that has 110 labour unions. This will ensure a much organized approach in safe-guarding the interests of the migrant labourers. These unions need to be supported more in a way to reach out to the labourers and not be supported for any kind of disputes that will give rise to a law and order situation.
- If each State Government ensures employing local unskilled workers, then migration can be reduced to a large extent. This will make each State government self-sufficient in ensuring employment to its people.
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AN EMPIRICAL ANALYSIS OF THE FINANCIAL PERFORMANCE OF THE INDIAN AVIATION INDUSTRY

Stesa Elsie Pereira
Department of Economics, VVM’s Shree Damodar College of Commerce & Economics, Goa, India

INTRODUCTION

Air transport is a vital component of transport infrastructure of a nation. It features a major contribution to the process of development by generating employment opportunities, improving productivity and providing more efficient transportation of products and services. The Indian aviation industry has proven to be one among the fastest growing industries within the country’s economy. India has become the third largest domestic aviation market in the world.

The Indian aviation sector was liberalised in the late nineties, following which it has witnessed a spell of personal service airlines joining the industry. The aviation industry is the business sector that caters to operating and manufacturing all types of aircrafts. Indian Airlines faced strong competition as competitors like Jet Airways, East-West Airlines, Air Sahara, Skyline NEPC and ModiLuft entered the Indian aviation industry. Yet till 2005 in India, after Jet Airways, Indian Airlines was the second largest airline. Jet Airways Ltd. founded by Naresh Goyal which operates international airlines is currently a bankrupt and grounded Indian international airline.

Jet Airways was the leading Indian commercial passenger airline with a 22.6% passenger market share from the third quarter of 2010 onwards. However, due to rival airline companies like SpiceJet and IndiGo reducing their ticket fares in the subsequent years, Jet Airways was compelled to follow suit. This led to deterioration in the overall performance which caused sharp financial losses. In October 2017, it plummeted to second place after IndiGo, with a 17.8% passenger market share. It continued sliding downhill and finally resulted in bankruptcy and is undergoing insolvency proceedings under Insolvency and Bankruptcy Code, 2016.

REVIEW OF LITERATURE

Sarkar, P., & Chandra, A. (2020) conducted a case analysis on the downfall of Jet Airways Ltd. From the secondary data collected, the descriptive method identified reasons that led to the collapse of Jet airways. The reasons for Jet Airways facing difficulties were as follows: it was a full-service airline, there was an emergence of low cost carriers, the acquisition of Air Sahara, rebranding of Sahara airlines, cash crunch, lavish payment of employees, shift of focus towards international services, mismanagement, poor leadership, failure to crack major deals, crude prices and financial...
crisis of 2008 which led to the bankruptcy of Jet Airways. The study found in order to revive airlines, the regulatory mechanism must be made transparent.

Rossi, M., Festa, G., Kolte, A., & Gunardi, A. (2019) aimed to study the financial turbulence and structure of Jet Airways. A combined evaluation using Altman’s Z score, Piotroski’s F score and Beneish’s M score indicated financial instability as a bankruptcy predictor and potential earnings manipulation as financial malpractice in the governance and management of the company. It was concluded that the company’s financial position prior to the bankruptcy was terrible, the bankruptcy could be predicted and there was no manipulation of earnings in the financial communication of the company.

Sonpal, S. (2019) studied the effect of poor leadership on business management of Jet Airways. The study analysed what went wrong and explored effective solutions for the same. It was found that low performance, shortage of resources, negative workplace environment, lack of direction, lack of communication, lack of vision and coordination by the leader, loss of morale and lack of transparency and ownership were the main causes for the downfall of the company. The study suggested that government intervention, aid by banks and invitation of bids were required to overcome the crisis.

Bharath, K.A. (2017) conducted a comparative study on the growth and financial performance of Indigo Airlines, Jet Airways and SpiceJet. The study explored current and future evolvement of the airline industry through ratio analysis. ANOVA was used for testing of hypothesis and analysis of the financial problems of these airlines. It is concluded that from 2012-2016 these aforesaid airlines were not doing too well except for Indigo Airlines which was using a good strategy and with respect to the performance was ahead of the competition.

OBJECTIVES

1. To evaluate the performance of the Indian Airline Industry
2. To assess the crisis plaguing Jet Airways.

RESEARCH METHODOLOGY

The present study which aims to assess the performance of the Indian Airline Industry in general and Jet Airways in particular is entirely based on secondary data collected from annual reports, publications and research papers. The present study considers data for a period of five years from 2013-14 to 2017-18. Ratio analysis has been used to evaluate select performance indicators of Jet Airways for the study period.
DATA ANALYSIS

Table 1: Performance indicators

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Profitability Ratios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Profit Ratio</td>
<td>(8.58)</td>
<td>(0.59)</td>
<td>10.46</td>
<td>7.03</td>
<td>0.10</td>
</tr>
<tr>
<td>Gross Profit Ratio</td>
<td>(13.64)</td>
<td>(4.48)</td>
<td>5.75</td>
<td>3.92</td>
<td>(2.56)</td>
</tr>
<tr>
<td>Net Profit Ratio</td>
<td>(21.19)</td>
<td>(9.26)</td>
<td>5.54</td>
<td>6.87</td>
<td>(3.29)</td>
</tr>
<tr>
<td><strong>Liquidity Ratios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Ratio</td>
<td>0.44</td>
<td>0.49</td>
<td>0.53</td>
<td>0.47</td>
<td>0.55</td>
</tr>
<tr>
<td>Liquid Ratio</td>
<td>0.53</td>
<td>0.63</td>
<td>0.63</td>
<td>0.45</td>
<td>0.53</td>
</tr>
<tr>
<td><strong>Management Efficiency Ratios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debtors Turnover Ratio</td>
<td>14.46</td>
<td>15.15</td>
<td>14.11</td>
<td>14.57</td>
<td>17.82</td>
</tr>
<tr>
<td>Investments Turnover Ratio</td>
<td>21.53</td>
<td>21.11</td>
<td>20.16</td>
<td>43.21</td>
<td>48.40</td>
</tr>
<tr>
<td>Total Assets Turnover Ratio</td>
<td>2.88</td>
<td>3.36</td>
<td>3.60</td>
<td>30.42</td>
<td>(11.84)</td>
</tr>
</tbody>
</table>

*Source: Computed Figures*

**PROFITABILITY RATIOS**

Profitability Ratios measure the earning capacity of a business and help in assessing the overall efficiency with which a business is being managed. From Table 1 it is evident that Jet Airways has suffered the maximum loss of (8.58)% in the year 2013-14 and made the maximum profit of 10.46% in the year 2015-16 as indicated by the Operating Profit Ratio. Except for the years 2015-16 and 2016-17, the Gross Profit Ratio and Net Profit Ratio of Jet Airways indicate a negative tendency for the rest of the study period.

**LIQUIDITY RATIOS**

Liquidity ratios help to assess the company’s ability to meet its short-term financial obligations. The current ratio of Jet airways has been unfavourable for the period of the study indicating that the company does not have sufficient assets to meet its liabilities. The liquid ratio of Jet Airways for the period of the study has been unfavourable indicating the company’s inefficiency in maintaining the balance between liquid assets and liquid liabilities.
MANAGEMENT EFFICIENCY RATIOS

Management Efficiency Ratio is a financial ratio used to measure the efficiency of the management in controlling and utilising the resources used by the business. Debtors Turnover Ratio which depicts the relationship between net credit sales and average trade receivables is the highest i.e. 17.82 times in the year 2017-18 followed by 15.15 times in 2014-15, 14.57 times in 2016-17, 14.46 times in 2013-14 and 14.11 times in 2015-16. Investments Turnover Ratio is the highest i.e. 48.40 in the year 2017-18 indicating that the company has utilized the money it has invested to generate sales most efficiently. This is followed by 43.21, 21.53, 21.11 and 20.16 in the years 2016-17, 2013-14, 2014-15 and 2015-16 respectively. Total Assets Turnover Ratio is the highest i.e. 30.42 in the year 2016-17 followed by 3.60 in the year 2015-16, 3.36 in 2014-15 and 2.88 in 2013-14. The Total Assets Turnover Ratio for 2017-18 was (11.84) indicating inefficient usage of assets during the financial year.

CONCLUSION

The present study is centered around obtaining a broader view of the challenges and performance of the Airline Industry in general and of Jet Airways in particular. The expert opinions and published reports indicate that the aviation sector has been affected by two major problems, namely increasing Air Turbine Fuel prices and the volatile exchange rates. Apart from these two problems, the sector faces competition due to predatory pricing strategies adopted by dominant players. The special case of Jet Airways faces deep troubles in terms of liquidity problems which hinders them in paying off their liabilities. From a managerial point of view, it seems evident that the failure of Jet Airways was not due to a malfunctioning of the commercial model, but most probably due to the incapacity of managers about making the finance model work.

The following conclusions can be drawn from the study:

• The performance of Jet Airways seems to be varied as the company has been generating profits as well as losses over the study period. This resulted in improper utilisation of its resources to the maximum extent which eventually disturbed the overall efficiency of the business.
• We can also conclude that although the management efficiency ratios were on the positive side, the rising debt within the company coupled with rising operational cost and lower profitability led to the collapse of Jet Airways.
REFERENCES


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The purpose of this publication is to provide an equitable platform that enables the dissemination of research findings, geared towards the transformation of education, as a catalyst for societal growth and modernisation. The publication represents a further extension of our commitment to providing a platform for researchers at all stages of their research career to share their learning in support of cross-cultural and social understanding.

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