



Marian Quest



A Bi annual Multidisciplinary Research Journal

May 2022

Volume 13

ISSN 2249-7145



St.Mary's College (Autonomous)

(Re-accredited with 'A+' Grade by NAAC)

Thoothukudi



Marian Quest
A Bi-annual Multidisciplinary Research Journal
St. Mary's College (Autonomous)
(Re-accredited with 'A+' Grade by NAAC)
Thoothukudi



May 2022

Volume 13

ISSN 2249 – 7145

Patron

Rev. Sr. Dr. A.S.J. Lucia Rose
Principal, St. Mary's College (Autonomous)
Thoothukudi

Associate Editors

Dr.B. Kamatchi Kala

Assistant Professor of Botany
SriParasakthi College for Women, Courtallam,
Tenkasi

Dr. Lily

Assistant Professor of Zoology,
Rani Anna Government College for Women,
Tirunelveli

Dr. C. Manivannan

Assistant Professor of Chemistry,
Bannari Amman Institute of Technology,
Sathyamangalam

Dr. P. Muthukumar

Assistant Professor of Chemistry,
Bannari Amman Institute of Technology,
Sathyamangalam

Dr.P.Patchamuthu

Assistant Professor of Chemistry,
Bannari Amman Institute of Technology,
Sathyamangalam

Dr. G.Jeevarani Thangam

Associate Professor of Physics,
Popes College, Sawyerpuram

Dr. V. Valliammal

Associate Professor & Head
PG & Research Department of Economics
V.O.Chidambaram College, Thoothukudi

Dr. Anita Albert

Assistant Professor of English
V.O.Chidambaram College, Thoothukudi

Dr. J. Elizabeth vijaya

Assistant Professor of Commerce
PG & Research Department of Commerce
Holy Cross Home Science College, Thoothukudi

Dr. T. Chellammal

Assistant Professor of Commerce
A.P.C. Mahalakshmi College, Thoothukudi



Editorial

Editorial Board

Dr. P.J. Joslin
Research Coordinator
Department of Zoology

Dr.M.Mary Hepsibai
Assistant Professor
Department of History

**Dr.Sr.A.Arockia
Jenecius Alphonse**
Assistant Professor
Department of Botany

Dr. K. Vinitha
Librarian
Department of Library

Dr. A.Lakshmi
Assistant Professor
Department of Chemistry

Dr. J.Arul Jesti
Assistant Professor
Department of Mathematics

Dr. R. Mary Shanthi
Assistant Professor
Department of Botany

Dr. P.Subavathy
Assistant Professor
Department of
Zoology

Dr. D.Shunmugajothi
Assistant Professor
Department of English

**Dr.C.C.Siluvai Kirubagari
Aneeshia**
Assistant Professor
Department of Microbiology

Dr.P.Anuradha
Assistant Professor
Department of Economics

The Marian Quest is a biannual multidisciplinary research Journal that reflects the research contributions of our faculty, scholars and PG students. This Journal attempts to impart to the Marians the actual means of research, taking into serious consideration the new accents, knowledge explosion and the growing challenges. In the new digital era, an initiative for growth, development and research in science and technology is an emerging task. Marian Quest publishes articles about various aspects of arts, science and humanities. It aims to bring up interdisciplinary communication and promote understanding of current significant issues. The Journal seeks to publish strategic, applied and interdisciplinary studies in all aspects of arts and science. It also publishes significant and novel research concerned with multidisciplinary approaches.

The continued support of the management and Principal has encouraged the successful publication of Marian Quest. We wholeheartedly thank the reviewing panel for their valued expertise. We acknowledge the contributions made by the research forum for their meticulous effort to make this issue of Marian Quest.

The success of this Journal is mainly by the efforts of our team of editors, reviewers, authors and readers for the continued and substantial assistance with the successful release of the new volume of this Journal.

Best wishes,

The Editors

Marin Quest, Marian Research Forum

smcreserchforum@gmail.com



Guidelines for Submission of Articles

Marian Quest the Bi-annual Multidisciplinary Research Journal of St. Mary's College (Autonomous), Thoothukudi, publishes articles of high reputation and innovation. The articles intended for publication must be typed in A4 size format, 1.5 line space and Times New Roman Font 12. Tamil papers should be in Bamini Font. The latest writing manual for MLA Hand book should be followed in Literature articles. Footnotes, References, Citation Marks should also be included in the research paper.

For reviewing and correction purpose, kindly send one hard copy with the soft copy. Full paper generally consists of the title, pictures, charts, graphs etc., along with Footnotes.

Instructions to contributors (for Science Articles)

Title : It should be short & informative

Keywords : Five or six keywords indicating the contents of the manuscript.

Address of Authors : It includes author's name, institution name, telephone number (office only), and e-mail address. Author for correspondence should be indicated with an asterisk (*).

Main Heading : Each article should be divided into the following main headings: Abstract, Introduction, Materials and Methods, Results and Discussion, Conclusion, Acknowledgement and References.

All articles are, as a rule, referred to experts in the subject concerned. Those recommended by the referees alone will be published in the journal.



TABLE OF CONTENTS

Sl.No	Name of the Author(s)	Page.No
1	Racism In Sports: A Study Of The Textual And The Film VersionsOf Michael Lewis' The Blind Side Yegova Fibi. S	1
2	Disquisition Of Murder Mystery In Donna Tartt's <i>The Secret History</i> Qunista. A	6
3	Augumenting The Innerself: A Psychoanalytical Study Of Ruskin Bond's The Room On The Roof R. Rachel	16
4	Dystopic Vision In H. G Wells Novel <i>The Time Machine</i> K. Ramya	25
5	Search For Self-Identity In Meena Alexander's Nampally Road S. Selva Ramya	32
6	Family Dysfunctions In Jonathan Franzen's Novel <i>The Corrections</i> Sharmila	37
7	The Crumbling Down Of Gender Stereotypes In Montgomery's <i>Anne Of Green Gables</i> And Dahl's <i>Matilda</i> : A Comparative Analysis Smeha John Machado	45
8	Ethnocentrism And The Issue Of Unhomeliness In Chimamanda Ngozi Adichie's <i>Americanah</i> D. Nancy Carmel	52
9	Portrayal Of New Women In Jaishree Misra's <i>Afterwards</i> M. Suba Nanthini	61
10	Voyage Into Chitra Banerjee Divakaruni's <i>The Forest Of Enchantments</i> S. Tancy	69
11	Nature And Man: A Study Of Amitav Ghosh's <i>The Hungry Tide</i> J. Theres Rahina	80
12	Parsi Migration And Their Elusive Past In Gieve Patel's Poems L. Jacqueline Leo	88
13	A Study On Environmental Impact Of Solid Waste Management In Koottudankadu Of Thoothukudi District A. Sudha and M. Magisha	96
14	An Economic Analysis In Buying Pattern On Consumer With Special Reference To Indra Nagar In Thoothukudi Town; Thoothukudi District P. Anuradha and M. Nisha Preethi	104
15	An Automated Smart Irrigation System Using Node Mcu Micro-Controller Module For Monitoring The Agricultural W. Jenslin Divona, P. Padmavathy and P. Rajesh Kumar	118
16	Ultrasonic studies of zno-distilled water nanofluids B. Sangeetha and R. Monica	127



17	Synthesis And Characterization Of Bioplastic From <i>Avena Sativa</i> And <i>Eleusine Coracana</i> M. Amirtha and J. Antony Rajam	132
18	Green Synthesis And Characterisation Of Copper Oxide And Tellurium Doped Copper Oxide Nanoparticles Using <i>Bauhinia Purpurea</i> Leaf Extract V. Malini and G. Murugeswari	141
19	Synthesis Of Paper Pulp From Agricultural Wastes Using Soda Pulping S. Mareeswari and D. Carolin Jeniba Rachel	152
20	Morphological Studies On Selected Species Of Tiliaceae Dr. S. Beulah Jerline and C. Eruthaya Abisha	161
21	Phytochemical Screening And Anti-Bacterial Activity Of <i>Carica Papaya</i> Leaf And Stem Y. Abinaya and P. Hermalin	166
21	Evaluation Of Antioxidant And Antibacterial Properties Of Marine Puffer Fish <i>Arothron Immaculatus</i> From Thoothukudi Coast S. Ananthaselvi and S. Selvi	173
22	Isolation And Characterization Of Actinomycetes From Salt Samples R. Raja Rajeswari and R. Sri Priya	184
23	Antimitotic, Antiproliferative And Antibacterial Activity Of <i>Phallusia Nigra</i> Savigny, 1816 S. Sherine and M. Paripooranaselvi	194
24	Isolation Of Antibiotic Producing Microorganisms From Soil N.R.Sutha and A. Maria Heartina Adlin Vaz	202
25	An Analysis On The Usage Of Ott Platforms In Thoothukudi Fernando Alexandria and K. Anushiya	212
26	A Study On Consumer Preference Towards Online Purchase Of Myntra Products In Thoothukudi District Fernando Alexandria and B. Athiba	219
27	A Study On Passenger's Satisfaction Towards Railway E-Ticket Reservation In Tirunelveli P. Banumathi and A. Augustina Jeniba	225
28	Analysis About Small Scale Garments Manufacturing Business In Puthiamputhur B. Rathi Meena and A. Saleth Mary Vetriselvi	231
29	A Study On Consumer Behaviour Towards Bottled Drinking Water In Thoothukudi Fernando Alexandria and B. Jannathul Firthouse	237
30	A Study On Problems And Challenges Faced By Women Workers In Thoothukudi D. Daisy Bai and Jesu A Ithaya	244
31	A Study On Attitude Of College Students Towards E-Learning During Covid-19 Pandemic Period D. Daisy Bai and D. Mahalakshmi	250
32	A Study On Impact Of Lockdown In The Business Of Street Vendors In Thoothukudi District G. Stella Beatrice Nirmala and T. Maria Antony Shamili	256
33	A Study On Impact Of Covid-19 Vaccination In Thoothukudi District D. Daisy Bai and J. Maria Packia Jeya	264



Marian Quest
A Bi-annual Multidisciplinary Research Journal
St. Mary's College (Autonomous)
(Re-accredited with 'A+' Grade by NAAC)
Thoothukudi



34	A Study On Stress Management Of Bank Employees In Thoothukudi M. Maria Sandra and A. Saleth Mary Vetriselvi	272
35	A Study On The User Behaviour And Impact Of YoutubeOnCollege Students R. Mary Rethuniya and O.Sony Fernando	279
36	A Study on The Attitude Of General Public Towards E-Payment Systems In Thoothukudi City Mary Judith Reese Fernando and E. Nandhini	286
37	An Analysis of Crypto Currency Bitcoin And Its Future A. Amora and B.Phebeyal	294
38	A Study on Customer Satisfaction Towards Zomato Food Delivery App Service In Thoothukudi Fernando Alexandria and A.Piskila	300
39	Young Customers Preference Of Mobile Wallets Gateway for Cashless Payment Mary Judith Reese Fernando and G. Ponmani	306
40	A Study on Assessment of DTC Pharmaceutical Advertisements on Patients 'Drug Consuming Behaviour In Thoothukudi City M. Ramalakshmi and A. MaryAnugraga	313
41	A Study On Consumer Perception Towards Online Shopping Via Meesho D. Daisy Bai and T.Vijaya Lakshmi	320
42	A study on employee welfare facilities among employees In velan salt private limited, Thoothukudi M. Fatima Lucia Sheeba and R. Deepika	326



RACISM IN SPORTS: A STUDY OF THE TEXTUAL AND THE FILM VERSIONS OF MICHAEL LEWIS' THE BLIND SIDE

Yegova Fibi. S

PG & Research Department of English, St. Mary's College (Autonomous), Thoothukudi.

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

The problem of racialism and relationship of the black and the white people in America can be seen through this novel. The Blind Side is a novel adapted from the experience of National Football League player Michael Oher. While the readers understand the success story of this black athlete through the novel, they are also subtly instilled with Westerncentrism, and thus form the Identity and worship to the Western world. Said pointed out in 'Orientalism' that the East is the Orientalized East, the East oppressed by the West with the help of discourse authority, and Orientalism is a manifestation of the cultural hegemony dominated by the West. This problematic relationship with the truth is evident in both the book and the film, and it is particularly evident in the narrative techniques. They both tell the story of Michael Oher's journey from homeless black son of a crack-addicted mother to being adopted by wealthy, white parents, and a career in the National Football League, but it is striking that they both tell the story through the perspective of others. Rarely do we hear or see the perspective of Oher himself.

Keywords: Emotions, Psychological Approach, Moral value, stereotype threat, The Blind Side

Introduction:

Literature is interpreted as reflecting norms and values, as revealing the ethos of culture, the process of class culture, the process of class struggle, and certain types of social "facts". Literature is the reflection and reproduction of the life of the people. It has existed ever since the invention of the art of writing, which enabled men to keep an account of the things, they wished to remember. The literature of the past helps understand the lives of the people of the past. English literature tells us about the life of the people who speak of the English Language. It is the record of the thoughts and the feelings and the acts of the English-speaking race. To extend that the literature has been thought of as an art then the kinds of features identified have been closely associated with prominent features of arts in general.

American Literature need become more and more like the British Literature. American history is bounded by emergence of the United States as a world power 2 and the

trauma of the stock market and the depression. It is divided by the First World War. The literature of the period kept pace with the history and the range of the literature is comparably great. Writers looked outside America more readily and inside America more critically than before.

Michael Monroe Lewis was born on October 15, 1960 in New Orleans, Louisiana, and remains deeply interested and involved in the city. He lived in Berkeley California with his wife, Tabitha Soren and their children; Quinn, Dixie and Walker. His education includes attending Princeton University, where he received his Bachelor of Arts degree in art history, and later earning a Master's Degree in Economics from London School of Economics. In 2009 he published *Home Game, An Accidental Guide to Fatherhood* about his attempts to raise them. In the magazine *Houston Chronicle*,

The *Blind Side* published in 2006, tells us the story of Michael Oher, a poor, illiterate African-American kid living on the streets of Memphis whose life is transformed after he is adopted by the Evangelical Christians. Before he wrote *Money Ball*, this is book ostensibly about baseball, but also the way markets value people. Both of his books about sports became movies, nominated for Academy Awards, as did his book about the 2008 financial crisis, *The Big Short*.

The *Blind Side* film was adapted from Michael Lewis novel, *The Blind Side: The Evolution of the Game*. It was released in the United States in November 2009 and was nominated for the Academy Award for Best Picture in 2010. It visualised the story of a poor African American boy, Michael Oher, who was taken care of by a white family, Tuohy's family, which changed his destiny and eventually grew into a National Football League (NFL) player. After the film was released, it received extensive attention and discussion. The movie's box office exceeded \$309 million.

Jay Hancock states about the novel *The Blind Side* as, 'It's not a joke book. It's not a sociology book. It's a storybook about modern society, ancient virtues, and the power of love, money and talent to do a little good'(24). The images of white people in *The Blind Side* are mostly positive, which conveys the idea of Western white society that white people are the incarnations of kindness and justice, heroes and saviours, and can help people in the world escape from suffering, including the black teenager from the bottom of society who has no birth certificate, no identity certificate, and lack of file records.

In this study, the researcher uses *The Blind Side Movie 2009* directed by John Lee Hancock. The story of this movie is taken from the novel *The Blind Side: Evolution of a Game* by Michael Lewis. This movie was realized in 2009 with a duration of 128 minutes.

The descriptive qualitative method was used in this study. A descriptive study's goal is to characterize phenomena and their characteristics (Nassaji, 2015). In this case, the study used a psychological approach to describe Anne Tuohy's emotions and moral value in *The Blind Side* Movie. The researcher gathered data for this study by watching the film *The Blind Side* Movie directed by John Lee Hancock, and then analyzing talks from Anne Tuohy. The data for this study is descriptive qualitative and originates from both primary and secondary sources. 1) Primary Information: *The Blind Side* Movie, directed by John Lee Hancock in 2009, is the primary source of information for this study. The plot is based on a genuine story from Michael Lewis' work *The Blind Side: Evolution of a Game*. This film was made in the United States. 2) Secondary Information: The secondary data in this study comes from publications and journals about *The Blind Side* Movie that may be found on the internet (2009). Data collection methods in this study are as follows: 1) Researchers watch movies repeatedly and carefully in order to understand the movie story better. 2) The researcher screenshots the movie showing Anne Tuohy's emotions and moral value. 3) The researcher made some notes in the notebook to help her remember the important points found in *The Blind Side* Movie. 3) The researcher reading some related research papers, articles, journals to find out the related theory.

Meanwhile, the Moral values of giving include respect, love, and compassion, as well as being kind and pleasant, as well as being fair and humane. This value of giving depicts the moral importance of giving truly to everyone. In this movie, Anne Tuohy's character teaches us a lot about the meaning of giving and honesty, and it will have a beneficial affect on people who receive it, making them feel at ease and at peace with what she has done with her sincerity. Like Michael Oher, who became one of Anne Tuohy's positive influences, he felt his adoptive mother's genuine love and compassion, which helped him succeed in his job and schooling.

The author chose *The Blind Side* as the subject of his research. *The Blind Side* was written by John Lee Hancock and is based on Michael Lewis' book *The Blind Side: Evolution of a Game*. *The Blind Side* had its world premiere on November 17, 2009, in New York, and was released on November 20, 2009 in the United States. The author then takes a psychological approach, especially in relation to the understanding of emotions. The writer finds that Anne Tuohy's emotions are Love, Gratitude, Happiness, Anxiety, Anger. In this movie, the role of his adopted son, Michael Oher, has the power to evoke the emotions of this second character, Anne Tuohy. Michael Oher influences his perception and produces behavioral patterns that emerge as happiness, love and gratitude as positive emotions. On the

other hand, Anne Tuohy's anger is a negative emotion. Most of Anne Tuohy's answers express happiness and gratitude for Michael Oher's success and football scholarship at Ole Miss. This can provoke emotional attachment. Her sad face shone with tears of happiness as she happily hugged Michael Oher. As a result, She experiences some of her emotions as a result of her struggles in raising her children to become successful adults. Furthermore, the movie's moral ideals are divided into two categories: the value of being and the value of giving. Being present has moral significance in terms of honesty, belief, and potential, as well as the ability to make peace. This moral value of being a better person and becoming successful is demonstrated by this value of being. The implication of this movie is that it depicts a black adolescent living among white people in America. He has potential and talent as a football player, and he works tirelessly to ensure his future success.

The *Blind Side* novel is adapted from the experience of National Football League player Michael Oher. While the readers understand the success story of this black athlete through the novel, they are also subtly instilled with Westerncentrism, and thus form the Identity and worship to the Western world. Said pointed out in "Orientalism" that the East is the Orientalised East, the East oppressed by the West with the help of discourse authority, and Orientalism is a manifestation of the cultural hegemony dominated by the West. In today's world, the competition of comprehensive national power is not only reflected in the political, economic, and military aspects. Cultural competition also plays an important role. The United States uses movies and other cultural products to export Western centralism and cultural hegemony in order to seek global cultural hegemony, and even world hegemony. Therefore, when we accept films and other foreign cultural products, we must take a critical attitude, take the essence and discard the dross. Oher was neither famous nor was his story public knowledge before the book was published, although he was making a name for himself in the world of sports due to his athletic abilities around the time of publication. Yet, as Michael Lewis' research for the book showed, his story is traceable, and after the publication of the book, it was featured in several newspaper articles in the three years leading up to the release of the film. However, despite articles in *The New York Times Magazine*, *Reader's Digest* and *People Magazine*, far from everyone knew the story before watching *The Blind Side* in theatres, and the lack of knowledge of the original also influenced the adaptation.

Michael, himself, was a homeless traumatic poor boy who is quiet and his face does not look friendly. He does not have parents who take care of him until he 57 meets the Tuohy's and becomes their adoptive children. Due to the Tuohy' s supports, love, all



facilities given to him, and his skill and efforts in football, he becomes a successful football player and a member of National Football League team in 2009. Through all his traumatic past made him living a poor life before, he tries to get up and fight for the better future and he gets it. Therefore, he has completed the process of social mobility through his efforts and luck.

References

Barnet, Sylvan, et al. *An Introduction to Literature*. United States of America, Foresman and Company. 1989.

Lewis, Michael. *The Blind Side*. WW Norton, 2007.

Oher, Michael, and Don Yaeger. *I Beat the Odds: From Homelessness, to the blind side, and beyond*. New York, Gotham Books, 2011.

The Blind Side. Created by John Lee Hancock, performance by Sandra Bullock. Warner Bros, 2009.

Jackson, Ronald L. *Scripting the Black Masculine Body: Identity, Discourse, and Racial Politics in Popular Media*. Albany, State U of New York P, 2006.



DISQUISITION OF MURDER MYSTERY IN DONNA TARTT'S *THE SECRET HISTORY*

Qunista. A

PG & Research Department of English, St. Mary's College (Autonomous), Thoothukudi.
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

A Secret History by Donna Tartt is a mind-boggling novel. The main body of the novel is indeed a 'history' of sorts in that the narrator recounts the events of one academic year in chronological sequence. Problem of student groupism at the elite Hampden College Vermont lead to alcoholism, series of crime, murder and suicide. They were studying Greek at a college in Vermont where two of them actually die. There is a lot going on from a mental standpoint of these characters. Henry then relates to Richard the details of a Bacchanalian ritual that the characters had performed in the autumn, inspired by one of Julian's lectures. The lecture had dealt with notions of the self and how the ancient Greeks had been able to throw themselves into a trance which would release their primitive, subconscious selves.

Keywords: Murder Mystery, Bacchanal, Regret and Realisation

Introduction:

The Murder mystery encountered by Richard Papen among his classics friends in Vermont College and also after discovering of murder done by his friends which led to the development of guilt and apprehensiveness. That Bunny's elimination was not only an attempt to prevent him from revealing the murder of the farmer. Bunny's behaviour had shaken the cohesion of the group and undermined the importance and success of the Bacchanalian ritual.

Tartt reveals the murder of Bunny in the first page. "The snow in the mountains was melting and Bunny had been dead for several weeks before we came to understand the gravity of our situation.... It was one of the biggest manhunts in Vermont history" (1). Richard senses a tangible tension within the group which, as Richard learns, originates in a brutal, yet accidental murder of a local farmer committed during a successful attempt to perform an ancient Bacchanalian ritual. At this point in the novel, Bunny, who did not participate in the ritual but has learned about it later, is on the verge of cracking. He has begun to harass and blackmail the others, taking advantage of their

financial wealth and emotional weaknesses. When it appears that he might go public with his knowledge of the murder, plans for his elimination are made.

The narrator in the novel is Richard Papen, a bookish loner, intelligent, sensitive, and ambitious. He recapitulates the events of some eight years previously with a detachment innate to his personality and reinforced by the lapse of time. A twenty year-old Californian, who in search for meaning in life and a sense of belonging leaves his uninspiring working-class home, his narrow minded, unsupportive, and distant parents and the dreary atmosphere of Plano, California, and heads to Hampden College in Vermont, attracted by its dream-like environment and the image of inexhaustible opportunities. Richard lived his whole life in Plano California, a hot, dusty place, full of harsh, transparent light that exposed reality for what it was. Richard's hatred of his birthplace and desire for change of home explain his lengthy descriptions which he found in a passage in an old notebook, written when he was eighteen,

There is to me about this place a smell of rot, the smell of rot that ripe fruit makes. Nowhere, ever, have the hideous mechanics of birth and copulation and death – those monstrous upheavals of life that the Greeks call *miasma*, defilement – been so brutal or been painted up to look so pretty; have so many people put so much faith in lies and mutability and death death death. (9)

Richard excelled in Greek language in California and won a award from the classics department. It was his favourite class because that was one held regularly. By the trick of fate Richard came upon to see the brochure of Hampden College, Hampden, Vermont, which was two years old brochure in his closet. Indeed Richard doesn't know why he saved that letter, because it was pretty. He spent many hours staring at the photography, even to the late years Richard can remember those pictures, it was "like pictures in a storybook one loved as a child. Radiant meadows, mountains vaporous in the trembling distance; leaves ankle-deep on a gusty autumn road; bonfires and fog in the valleys; cellos, dark windowpanes, snow" (10).

Richard tore the information form at the back of the brochure and started to fill it. The following month went by endless dreary battle of paperwork. His father refused to complete the financial aid paper; consequently he stole the tax returns from the small cupboard in a car in front of the passenger seat. Meanwhile some sort of guerrilla

warfare was taking place for eight months. As long as many years have passed still Richard didn't know how he ended up in Hampden.

At first Richard was bored of studying biology, his grades were very poor. Then Richard switched to English literature without the knowledge of his parents, he felt like “cutting his own throat by this” (8). After switching to literature Richard feels much better. When Richard finally makes it and goes to study at Hampden he realises that the actual campus does not fall short of his expectations, at least at first sight. In a very telling excerpt Richard explains how he could not sleep his first night at Hampden dormitories:

I sat on the bed during the twilight while the walls went slowly from gray to gold to black, listening to a soprano's voice climb dizzily up and down somewhere at the other end of the hall until the last light of day was completely gone ... and I can't remember the air ever seeming as high and cold and rarefied as it was that night, or ever feeling farther away from the low-slung lines of dusty Plano. (12)

Adopting a false identity of a son of a wealthy oil baron, “On leaving home I was able to fabricate a new and far more satisfying history, full of striking, simplistic environmental influences; a colorful past, easily accessible to strangers” (5). Richard gradually becomes acquainted with the group: Henry Winter, Bunny Corcoran, Francis Abernathy and the fraternal twins Charles and Camilla Macaulay. The false identity of Richard was identified by Henry, “Don't worry. You hide it very cleverly,' he said, going back to his book. Then he looked up again. 'The others really don't understand that sort of thing, you know” (92).

The backgrounds of Richard's companions at Hampden are similarly tragic in a mundane way. In the opening pages of the novel, when Richard is detailing the shortcomings of his own life in Plano, he contrasts it with the upbringings of his friends at Hampden. “Charles and Camilla are orphans... and Francis' mother had him at seventeen and was largely absent from his childhood” (6). But where Richard takes the issue primarily with the poor aesthetics of his background over his insufficient support of his parents, Charles, Camilla, and Francis find fault with certain attributes of themselves, and seeks to conceal them. Charles and Camilla have been engaged in an incestuous relationship for a significant period of time, and Francis is gay, but only partially open about it, something that is particularly understandable given the novel's 1980s setting. The tragic impact that these circumstances have on these characters is

relatively less clear compared to Richard’s own circumstances, given that the novel is narrated exclusively from Richard’s perspective.

Henry Winter was said to be wealthy; and spoke a number of languages, ancient and modern, and had published a translation of *Anacreon*. A penchant for translating *Paradise Lost* into Latin verse in his spare time and keeping a Latin diary, but also has a talent, as it later turns out, for ruthless manipulation. He maintains a furtive and iconoclastic existence.

Bunny also comes from a family that has the appearance of wealth, but does not have access to any money and relies on everyone around him to subsidize his expensive lifestyle. “Bunny Corcoran was his name, Bunny being somehow short for Edmund. His voice was loud and honking, and carried in the dining halls” (17). Bunny starts studying ancient Greek to help with his dyslexia; his parents and teachers thought that it might help to read a different alphabet; he is more or less forced to take the subject.

Richard gains access to the close-knit group by showing off his knowledge of Greek. The students are in the College Library-the realm of knowledge-where Richard overhears them troubling themselves over which case of a noun to use in a translation of an English text to Greek. He provides them with the correct answer as if giving them a secret password through which he proves he is worthy of their attention and entrance into the group,

‘It’s not place whither, it’s place to. I put my money on the ablative case.’

There was a confused rattling of papers.

‘Wait,’ said Charles. His voice was a lot like his sister’s – hoarse, slightly southern. ‘Look at this. They’re not just sailing to Carthage, they’re sailing to *attack* it.’...

Suddenly something occurred to me. I closed the book and put it on the shelf and turned around. ‘Excuse me?’ I said. Immediately they stopped talking, startled, and turned to stare at me.

‘I’m sorry, but would the locative case do?’

Nobody said anything for a long moment.

‘Locative?’ said Charles.

‘Just add *zde* to *karchido*,’ I said. I think it’s *zde*. If you use that, you won’t need a preposition, except the *epi* if they’re going to war. It

implies “Carthage-ward,” so you won’t have to worry about a case, either.’ (21)

Charles started to look at the pages and Camilla was asking whether it is ‘exists for Carthage.’ Richard was confused by the sudden glare of attention. Bunny came grasped the Richard’s hand and asked how long he has been studying Greek. Though studying Greek for two years in California, Richard didn’t have the chance to get into classics group in Vermont. But Richard had been trying to get into the group, then Charles, Camilla and Bunny said to meet Julian again and instruct to “Take him some flowers and tell him you love Plato and he’ll be eating out of your hands” (22).

Julian is a mysterious professor, wealthy man who is deeply passionate about his subject. He teaches classics in Hampden College. Julian only teaches very small classes of handpicked students, he places his students on a pedestal, certain that they cannot do anything wrong, while he himself might have fallen under the scrutiny of the federal government. Julian has a mysterious past, and when he finds out that his students have killed Bunny, he abruptly leaves the college and moves away. He proves to be cold and indifferent to Henry’s death, and never sees any of his students again. Julian always insists his students need only one teacher, and, most importantly, they are geographically separated from the rest of the college since their class is situated in the far end of the campus, in a building which is abandoned. This place is called “the Lyceum” (15), “some sort of Platonic microcosm of what he thought a classroom should be” (34), and (sarcastically) “the Inner Sanctum ... The Holy of Holies” (579). Julian’s world reminds one of a quaint little verse of unknown origin: “When eras die their legacies are watched by strange police and professors in New England guard the glory that was Greece.”

The Lyceum is a reference to Ancient Greek Academics, most commonly associated with Aristotle. The Lyceum at Hampden is located near a plantation of trees exactly like the original Lyceum in Classical Athens. While Richard wants to take a Greek class, as he went to see Julian in the Lyceum,

.... I walked along briskly, looking at the closed doors for numbers or names until I came to one that had a brass card holder and, within it, an engraved card that read JULIAN MORROW.... A face looked out at me. It was a small, wise face, as alert and poised as a question; and though certain features of it were suggestive of youth – the elfin

upsweep of the eyebrows, the deft lines of nose and jaw and month –
it was by no means a young face, and the hair was snow white. (15)

Henry comments on this to Richard in his garden. He says: ““you don’t feel a great deal of emotion for other people, do you? ... matter, ... ‘I don’t either’” (556). After noting that the knowledge of these It doesn’t two characters, Henry and Julian, is as esoteric as it is, the fact that they are the leaders of the group based on this knowledge becomes interesting. Seen in this light, the knowledge that the others admire is not real knowledge but the illusion of knowledge.

After petitioning the professor and inserting himself into the group of five on several occasions, Julian Morrow accepts Richard as his student on the condition that he drops all of his other classes; Richard is accepted into the programme. He is the keen observer of the students, Richard says, “Four boys and a girl, they were nothing so unusual at a distance. At close range, though, they were an arresting party – at least to me, who had never seen anything like them, and to whom they suggested a variety of picturesque and fictive qualities” (17). Henry Winter, a dark-haired, dark-suit-wearing, tall student appears to Richard as the genius and leader of the group. Twins Charles and Camilla appear to Richard at first as though they are boyfriend and girlfriend, but when Richard realises that they are siblings, Camilla becomes his unrequited love interest.

Although Richard gradually becomes accepted into the group, he continues to feel like an outsider. This sensation is boosted by the increasing tension within the group which Richard witnesses but for which he cannot find a reason. Richard is puzzled by the odd behaviour of others. Richard also occasionally noticed strange details, such as items out of place, and herbs and plants strewn about the house, but never took any of this too seriously. The first oddity was discovered by Richard, “One afternoon, of a large copper pot bubbling on the back burner of the stove, a peculiar smell emanating from it... The pot was filled with limp, almond-shaped leaves, boiling away in about half a gallon of blackish water” (102).

Bacchanalia celebrations were in honour of the god Bacchus in ancient Rome. They involved heavy drinking and wild behaviour, as Bacchus is the god of wine. Bacchanalia evolved in Southern Italy and had spread to Rome by the second century BCE.

Only this. To receive the god, in this or any other mystery, one has to be in a state of *euphemia*, cultic purity. That is at the very center of Bacchic mystery. Even Plato speaks of it. Before the Divine can

take over, the mortal self– the dust of us, the part that decays – must be made clean as possible. (184)

Henry then relates to Richard the details of a Bacchanalian ritual that the characters had performed in the autumn, inspired by one of Julian’s lectures. The lecture had dealt with notions of the self and how the ancient Greeks had been able to throw themselves into a trance which would release their primitive, subconscious selves. Particularly Henry had been fascinated by the idea of losing oneself, as he experienced his life as a constraint. The whole Bacchanal thing is described as something sublime, spiritual, purging, being worth of sacrifice – the blood was spilled. There is only a slight hint on the part of the author that the bacchanal could not have been complete without bloodletting. The characters, then, had decided to attempt the ritual.

Henry encourages the twins and Francis to regularly sneak out of Francis’ old family home in the countryside to which the students retreat on weekends in the middle of the night to attempt a Bacchanalian revelry. Apparently, Richard is too new to the group to have been invited to participate at all, and Bunny is left out of the group’s activities after his lack of seriousness destroyed the group’s effort to enter into the altered state they were working to achieve on previous occasions.

On the first day of Julian class after the winter break, Richard was stunned and relieved to see Charles, Camilla, Francis and Henry. Once Richard discovered that four of them Charles, Camilla, Henry and Francis had booked the tickets to Argentina. Without the money the group decided to cancel their trip. Henry then confessed to Richard that they killed someone. As he says that they tried many times to achieve a state of transcendence through intoxication, group sex, music, and generally removing all social constraints. One night on the country house, the four revellers successfully reached the altered state they have been seeking, and they accidentally killed a farmer just off the edges of the estate property. Over the next days and weeks, the farmer’s murder was in the news.

They initially included Bunny in the plan, but became annoyed with him not taking the rituals seriously enough, and started leaving him out. After many false attempts, Henry, Charles, Camilla, and Francis finally achieved a sort of trance-like state in which they ran through the woods, having visions and attaining a kind of spiritual enlightenment. However, when they came to, they realised that they had somehow killed a farmer, although no one has a clear idea of how it happened. They

were not sure of what to do and, they fled, leaving the body in the woods. Henry told Richard that they had almost gotten away with their crime, but Bunny intervened.

Henry and Francis also explained how Bunny found out about the crime. On the night of the bacchanal, Bunny and Richard had gone to the movies. Afterwards, Bunny decided to go to Henry's apartment to frighten him when he got home. Bunny realised that this was the same night he saw the other students returning in bloody clothes, and began to tease and taunt them with the idea that he knows they have killed someone. When Henry woke up, he realised that Bunny had read his diary, in which he had written about the crime. Bunny now had his suspicions confirmed, and began to be more annoying than ever. Exhausted and desperate to get away, Henry abruptly left Bunny in Rome and travelled back to America by himself.

Bunny begins to tease the four revellers about their possible involvement in the killing. Bunny does not know, but he suspects, that they are culpable. Henry, unable to bear the teasing and heckling, convinces Francis, the twins and Richard that Bunny must be eliminated for their own protection. A plan to poison Bunny with mushrooms is scratched for a more opportunistic plan of pushing him over a ledge while he is on one of his regular hikes in the secluded woods. Bunny, who is the 'bad student' and functions as their foil in their Secret History is nothing but a hindrance to them. They see no other solution but to get rid of him. In this respect, it is particularly ironic when they discuss killing him in the college's dining room which is called the Commons; the dining room is named the Commons to denote the democratic spirit of the University, a place commonly shared by people who are intellectually equal.

Richard is in part attracted to the other students in Greek class because they seem mysterious and standoffish. Richard will later learn that the secrets closely guarded by the group include murder, addiction, blackmail, and incest. The other students are placed in a position of peril as Bunny blackmails them with the information that they killed the farmer, and after he participates in Bunny's murder, Richard's whole future is in jeopardy if the crime is ever exposed. Richard also has to carry the weight of these terrible secrets, including witnessing Henry's suicide, burned into his psyche forever. The important point, though, is that they are paranoid and fearful that they will be caught; they are not guilty or remorseful about the killing. The murder of the farmer is quickly forgotten; however Bunny's disappearance drew attention of the authorities.

While all the friends gathered together at the hotel, Charles stormed into the room with a gun. He threatened to kill Henry, and while the other struggled to intervene, Richard was shot in the stomach. The noise had by then attracted hotel staff and other guests, who were in the process of trying to break into the room. Henry was able to get a hold of the gun, and then to everyone's shock, he shot himself in the head. Henry shoots himself, Charles falls to alcoholism, the group falls apart and Richard ruminates on how relatively unchanged his life remains.

Richard spent several weeks in hospital recovering from the gunshot wound, missing Henry's funeral. Richard started dating Sophie a fellow student in Hampden. They both moved back to California, where Richard went to graduate school to study Jacobean tragedy. After certain days they broke up. While Richard was studying in California, he received a letter from Francis, clearly indicating Francis's intention to commit suicide. Francis explained that he had hidden his identity as a gay man from his conservative family, but his grandfather had found out and threatened to cut Francis off financially unless Francis married a woman. Francis reluctantly got engaged, but the strain of the secrecy led to his suicide attempt.

Camilla joined them (she had also received a letter from Francis) and the three friends spent several days together in Boston. Camilla explained that Charles had continued to struggle with alcoholism, and had gone to rehab. He met a woman there, and the two of them have been living in a small town in Texas. Charles and Camilla no longer had contact. Before he left Boston, Richard proposed to Camilla but she turned him down. Camilla had devoted her whole life to taking care of her sick and elderly aunt. She also unveiled the secret that she still loves Henry. Agitated, Richard parted from Camilla and drove back to California alone.

At the end of the novel, Richard provides updates on the lives of various minor characters in the novel. Julian had never been in contact with any of his students, and had declined to attend Henry's funeral. Finally, Richard recounts a dream in which he meets with Henry in some sort of underworld or afterlife which looked like "an old city, like London – underpopulated by war or disease. It was night; the streets were dark, bombed-out, abandoned" (627). Henry seems trapped in some sort of limbo "I thought I'd find you here, said a voice at my elbow" (628). Richard was happy to see Henry after his death and acknowledges that he is unhappy, but Henry also points out that Richard is not happy either. Then Henry vanished from the place.



References

Tartt, Donna. *The Secret History*. London, Penguin Books, 2007.

McManus, Barbara F. *Aristotle's Theory of Tragedy:Greek Tragedy*. Nov. 1999,
pdfslide.net/documents/barbara-f-mcmanus-of-aristotles-theoryoutline-of-aristotles-theory-of-tragedy.html.

Hargreaver, Tracy. *Donna Tartt's The Secret History*. New York, Continuum International Publishing Group, 2001.

Arkins, Brian. *Greek Themes in Donna Tartt's The Secret History*. ILLiad, 2012.

AUGUMENTING THE INNERSELF: A PSYCHOANALYTICAL STUDY OF RUSKIN BOND’S THE ROOM ON THE ROOF

R. Rachel

PG & Research Department of English, St. Mary’s College (Autonomous), Thoothukudi.
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Adolescence is a period of physical and physiological change. This growth furnishes the basis for emotional, social, intellectual and economic maturity. The term 'adolescence' is derived from the Latin word 'adolescere' which means 'to grow up'. In the tradition of Bildungsroman, *The Room on the Roof* traces the development of the protagonist from a rootless young man into a mature adult on the threshold of a fulfilling profession. *The Room on the Roof* traces the journey of adolescent protagonist Rusty from dependence to independence, and diffidence to confidence. The novel deals with Rusty and his friends who are all between ten to sixteen. They are carefree adolescents free from the restraints of the adult world and are on the verge of the world of experience.

Keywords: Adolescence, Bildungsroman, Experience

Introduction

The Room on the Roof is an adolescent novel written by Ruskin Bond, an Anglo Indian writer. Novel was first published in 1956. *The Room on the Roof* was written in Post-war period it explores the concerns of identity formation, alienation and rebellion against restrictions, personal autonomy and self-independence. *The Room on the Roof* is a semi-autobiography novel in which Rusty, the protagonist of the novel, like Ruskin Bond, seems to have assimilated the Indian Culture and made it his own. *The Room on the Roof*, in contrast explores the themes, home of isolation from both England and India being charged between the two cultures.

The author of *The Vanishing Adolescent*, Edgar Z. Friedenberg describes adolescence thus,

Adolescence is the period during which a young person learns who he is, and what he really feels. It is a time in which he differentiates himself from culture; though on the culture's terms. It is the age at which by becoming a person in his own right, he becomes capable of

deeply felt relationships to other individuals, perceived clearly as such. (13)

The term 'adolescent' has a specific meaning in psychology. It should not be confused with the word 'teenager', although the periods of adolescence and teenage are almost the same. Teenage is the period between thirteen and nineteen. When a boy or a girl enters the age of thirteen, he or she is called a teenager and continues to be called so till the age of nineteen. The period of adolescence covers the years from thirteen to twenty and according to some psychologists up to twenty one.

Luelle Cole and Irma Nelson Hall made the chart on the stages of adolescents and it was accepted by leading psychologists, Preadolescence or late childhood 11-12 years (girls) 13-14 years (boys) ,Early adolescence 12-14 years (girls) 15-16 years (boys), Middle adolescence 15 -1 7 years (girls) 1 7 -18 years (boys) ,Late adolescence 18-20 years (girls) 19-20 years (boys).

According to Cole and Hall the main goals of the adolescents are Control of emotions by reason, Social adjustment, Independent adulthood, Financial independence, and Choosing a career. While pursuing these goals, the adolescent faces a number of problems. It is the responsibility of society to help the adolescent to achieve his goals and be responsible citizen of his country. All the important characters of Ruskin Bond such as Rusty, Somi, Ranbir, Sudheer, Kishen, Ruth and Suri are in their early adolescence

Adolescence is not all about physical changes, but physical changes, indeed, proclaim the onset of puberty. In Ruskin's works, we find that adolescents are conscious about their body changes. In *The Room on the Roof*, Rusty becomes conscious about these changes when he attacks his guardian Mr. Harrison. Body changes bring a positive effect on Rusty. Even psychologists agree that when adolescents are described as 'Gender stereotypes', for a boy -physical changes are symbolized by greater strength, manly voice, building of muscles and increase in height. Favorable body changes make the adolescent confident about his image. When Rusty fights with his guardian and hits him over and over, he is relishing this new found confidence which has to sustain him in a world of problems and confusion.

This inner effect of physical maturity and psychological confidence is wonderfully brought out by Bond. New gained physical power is also important for a male child because it determines the acceptance among peers. We find that Rusty before his encounter with Mr. Harrison remained shy and lost. Even when opportunities

came to build friendships, he refrained, but once he becomes aware that he is a child no more, gains in confidence and becomes more social. He forms friendship with sturdy boys like Ranbir and Somi and becomes more extroverts. Thus, Bond has wonderfully shown that favourable body changes at the start of adolescence not only help in building a confidence level psychologically, but also makes an adolescent socially more acceptable both in his own sex and the opposite.

Rusty's physical assault at the time of Holi festival can also be treated as a test of his stamina and temperament. When Rusty was invited to play holi, he hesitated at first because of the fear of his guardian, Somi and others started to make fun of him by calling him a snob. Somi teased Rusty about his clothes and appearance. When Rusty agrees to play holi, he is given heart approval from his friends. On the other hand, Suri was ridiculed because he had girlish appearance and habits. Physical changes come as a surprise even for the adolescents themselves. Once being aware of it, they start spending a lot of time in front of mirror, exploring their body. Rusty, when he settles in Mr. Kapoor's house, stands in front of the mirror and admiringly looks at his oiled body. The reason for loving the physical changes now, is not acceptability in one's own sex-group. He wants himself to look more handsome because he wants to attract Meena Kapoor - his new found love. He now attributes the physical changes and growth to his falling in love:

When Rusty rubbed the oil on his limbs, he noticed the change in his physique. He had lost his puppy fat, and there was more muscle to his body; his complexion was a healthier colour, and his pimples had almost disappeared. Nearly everyone had advised him about pimples: drink dahi, said Somi's mother, don't eat fat, eat carrots, said Somi, plenty of fruit: mangoes! Said Kishen; not at all, Oranges; see a doctor, said Meena; have a whisky, said Kapoor; but the pimples disappeared without any of these remedies, and Rusty put it down to his falling in love. (121)

The adolescents remove shyness before friends. They share every feeling freely, frankly with their companions. They generally avoid disclosing personal matters before adults because of shyness, fear or generation gap. Rusty in the absence of Mr. Harrison develops friendship with Ranbir and Somi. He tells them his life story and extends friendship and does not hesitate to share his personal matters with them. He also takes

spicy food at bazaar which may be harmful to his stomach. He becomes a rogue like his friends and begins to live a carefree life forgetting every difference. Bond describes,

They ate chaat, a spicy salad of potato, guava and orange; and then gol-guppas, baked flour-cups filled with burning syrup. Rusty felt at ease and began to talk, telling his companions about his school in the hills, the house of his guardian, Mr. Harrison himself, and the supple Malacca cane. The story was listened to with some amusement: apparently Rusty's life had been very dull to date, and Somi and Ranbir pitied for it. (27)

Rusty knows about the risk of mixing with Indians as Mr. Harrison has strictly ordered not to develop contacts with local people. Neglecting his instructions, the boy advances to join the wonderful world in the company of Ranbir and Somi. It also happens that his guardian returns from Delhi earlier than his schedule, or perhaps Rusty did not expect him back so soon. The boy soon forgets all his friends and fully pays attention on his guardian. The boy respects him not because of admiration but of fear. It is often noticed that the adolescents if frightened exceedingly, suppressed intensely, may rebel. They may be controlled by fear or force but in limit. If the limit is crossed and overpowered them, particularly boys may rebel and make counter attack too in their defense. Mr. Harrison in Rusty's case, makes use of overpower, and faces unexpected reaction of the boy. He hits the boy with a cane. The boy is ordered to bend over the sofa and receives unbearable strokes on his back. Bond narrates this scene realistically which indicates how a boy can turn to be violent against his elder,

The look of alarm on Mr. Harrison's face gave Rusty greater courage. Before the man could recover his feet and his balance, Rusty gripped him by the collar and pushed him backwards, until they both fell over on to the floor. With one hand still twisting the collar, the boy slapped his guardian's face. Mad with the pain in his own face, Rusty hit the man again and again, wildly and awkwardly, with the giddy thrill of knowing he could do it: he was a child no longer, he was nearly seventeen, he was a man. He could inflict pain, that was a wonderful discovery; there was power in his body-a devil or a god – and he gained confidence in his power; and he was a man! (46)

Adolescence is a time when young adults begin to separate from their parents and develop their own identity. Acceptance by peers at this time is of utmost importance. The other teenagers in the group also have their ideas of acceptability borrowed from the culture and media. A boy who is very emotional and sensitive and cries over trifles will not be looked upon favourably. Adolescents who boast about their physical strength and powers have a borrowed idea that a male is supposed to be rough and tough. 'Crying' is a feminine characteristic.

Adolescents have strange ideas about sex. Some are very curious about it and inquire their friends. Some are confused and do not talk freely about it. Some even consider sex bad or mean to talk about it while some fear for adverse consequences of it. Their attitude towards sex depends mainly upon their environment, family background, type of friends they have. Their approach towards sex is mainly affected by parents. However, today's adolescents differ from the earlier generations. They are more advanced today. It can be observed that they are bolder and more mature about sex.

Rusty after fighting with his guardian, runs away from home. He wanders in the deserted bazaar at night. No shop or stall is open. In the loneliness, Rusty finds a beckoning hand in a window. She is a prostitute. Rusty's condition is pitiable. He is still mad with anger and rebellion. He follows the sign of the woman at the window. The adolescent boy can't make out the situation. He reaches the woman's room in order to get some help. Instead, the woman expects a customer in the form of this boy. She touches the boy to excite him. Rusty's mental condition is disturbed after hand to hand fight with Mr. Harrison. He doesn't feel any excitement. For an adult sex may be a source of refreshing and up to some extent a remedy in bad mood. But for a growing up boy, it doesn't have any effect. Bond depicts the condition of an inexperienced boy in the matter of sex,

Reverently, and as respectfully as he could, Rusty sat down. The woman ran little fair fingers over his body, and drew his head to hers; their lips were very close, almost touching, and their breathing sounded terribly loud to Rusty, but he only said, 'I am Hungry.'

A poet, thought the woman, and kissed him full on the lips; but the boy drew away in embarrassment, unsure of himself, liking the woman on the bed and yet afraid of her....'What is wrong?' she asked. 'I 'm tired', he said. The woman's friendly smile turned to a

look of scorn; but she saw that the he was only a boy whose eyes were full of unhappiness, and she could not help pitying him. (50)

However, the same boy takes initial step in love making with Mrs. Meena Kapoor in whose house he is sheltered on a room on the roof. In a picnic at jungle, he and Meena get an opportunity in the loneliness of the jungle. A different Rusty can be found here. He avoids his involvement in sex with the prostitute that is safe; and he takes risk to express his passion for Meena who is mother of his student Kishen. Besides, her husband and other boys are at just a little distance. Now he seems aggressive,

‘It is only a bird,’ she said, ‘of what are you afraid?’ But he was unable to release his hold, and she made no effort to free herself. She laughed into his face, and her eyes danced in the shadows. But he stifled her laugh with his lips. It was a clumsy, awkward kiss, but fiercely passionate, and Meena responded, tightening the embrace, returning the fervor of the kiss. They stood together in the shadows, Rusty intoxicated with beauty and sweetness, Meena with freedom and the comfort of being loved. (109-111)

It may be a part of Bond’s technique to create exciting atmosphere to give way to suppressed emotion during the loneliness of the picnic. In the short story Love is a Sad Song, he makes use of the same technique of going to natural and silent spots close to or in the forest where his characters get opportunity to let out their passion by kissing and embracing their beloved. He is far a more advanced Indian writer in depicting the element of sex in his fiction. After violent encounter Rusty leaves his house and European community for ever. He struggles for shelter, bread and butter. But with the help of Indian friends Ranbir and Somi he gets this problem solved up to some extent. He is introduced to the Kapoors, Mr. Kapoor, his beautiful wife Meena and their only son Kishen. They offer him a room on their roof and work of teaching English to Kishen. He is appointed as a tutor for Kishen. The young boys Rusty, Ranbir, Somi, Suri and Kishen spend most of the time together. They enjoy every light moment of life in the company of one another. It helps Rusty to forget his past life of restrictions and torturing of Mr. Harrison. Bond throws light on other adolescent boys like Ranbir, Somi, Suri and particularly Kishen. Kishen gets more freedom after Rusty’s appointment as his teacher. He is very naughty boy. His father Mr. Kapoor is found most of the time under the influence of wine. The boy makes use of his drunkard father

by loafing every time, eating outside food at bazaar and spending money freely with his friends.

An important turn takes places in Rusty and Kishen's happy going life when Mrs. Meena Kapoor passes away in a car accident. The stern reality of Meena's death changes Rusty in a moment; he becomes an adult at once, a guardian to advice Kishen. Bond very faithfully portrayed the mental condition and behavioural pattern of the adolescent Rusty and the child Kishen in a critical situation when there is no support,

Kishen slept. He was exhausted - he had been walking all evening, crying his heart out. Rusty lay awake; his eyes wide open, brimming with tears. He did not know if the tears were for himself or for Meena or for Kishen, but they were for someone. Meena is dead, he told to himself, Meena is dead. If there is a God, then God will look after her; if God is love, then my love will be with him. She loved me, I can see her so clearly her face speckled with sun and shadow when we kissed in the forest, the black waterfall of her hair, her tired eyes, her feet like jade in the lamplight, she loved me, She was mine.... (135)

In addition to that Mr. Kapoor remarries after a short period of time of his first wife's death. He does not prove to a good husband and a responsible father. It worsens Kishen's condition. He becomes an orphan in spite of his father's being alive. Any step parent can never take the place of the real parent. Ruskin Bond himself had gone through the same circumstances. After his father's death, his mother remarries an Indian, Mr. Hari Bond. He always missed his father and lost his mother's love even if she was alive. Kishen's becoming orphan makes him more carefree. Rusty's role becomes more important now. The growing up boy, Rusty has to perform the role of a guardian for Kishen. He himself is also shocked to hear the sad news of Meena's death.

Towards the end of the novel, Rusty changed as a wise senior and brings his friend Kishen back to normal life from the world of crime. Both friends come back to the paradise, the room on the roof to bathe at the water-tank and listen to the morning gossip, to sit in the fruit trees and eat in the chaat shop and make a garden on the roof. Of course, time has changed. They have separated from the owner of the house Mr. and Mrs. Kapoor and some friends like Somi. They have many challenges and bread and butter is the first one. The great sign of relief is that they are together now, much experienced. There are struggles, setbacks, failures, but hope and optimism.

The Room on the Roof has earned fame for Ruskin Bond. In comparison to regular or traditional novels, this novel seems short in size with one hundred and fourteen pages. A larger autobiographical element can be observed here. The essence of entire novel can be felt in the following piece of verse by Charles Dickens speaks about the youth period in his poem The Pure,

The pure, the bright, the beautiful,
That stirred our hearts in youth,
The impulse to a wordless prayer,
The dreams of love and truth;
The longings after something lost,
The spirit's yearning cry,
The striving after better hopes...
These things can never die!. (1-3)

The Room on the Roof presents an interesting world of the growing ups. Here, readers come across so many leading features of the adolescents like their physical growth, curiosity towards sex, making friendship, carefree life with friends, planning and struggling for earning, feeling of insecurity in the absence of parents and elders, developing bad habits, sense of rebellion, cherishing dreams for better future and many other. Bond himself is present in many of the scenes of the story. Some names of the boys have not been changed in the story like Ranbir and Somi who in real life had helped Ruskin Bond remarkably in his struggling days.

The Room on the Roof recounts an adolescent journey, where Ruskin Bond self-assesses his own desires as a teenager who dreams of becoming a free Indian national. In this coming-of-age story, the author carefully paints the tribulations and ambition of introvert but adventurous Rusty, who lives with his guardian on the outskirts of Dehra, a north-Indian town which once served as a reclusive hub for the Europeans during the colonial period. Born and brought up in India, yet trapped in the enclosure of his community, Rusty's inquisitive mind strives to perceive the world outside. His life takes a different turn immediately after he comes in contact with miscellaneous Indian atmosphere of Dehra. Subsequent events lead us towards the self-discovery of the protagonist, who doesn't want to be cocooned in his guardian's strict European order.

The Research highlights the celebration of the self-identity, through the character of Rusty. The chapters meander through the journey of Rusty from being a moody, lost boy to being on the threshold of becoming a writer. It portrays how Rusty



feels the urge to resolve his identity-dilemma because he is trapped in liminality between his Indian self and English one. It describes Rusty's identity crisis is the result of being orphaned when he was a baby and his guardian's reluctance to speak of his parents out of contempt. Moreover, identity crisis is inevitable to Rusty for he enjoys no close relationship with his guardian and he is unfamiliar with his guardian's companionship. It shows how Rusty slowly learns that a life free from colonial myth made him to realize the true oneness. The chapters shows how Rusty's leap from his reclusive quasi-Englishness to become a responsible and free Indian citizen, promises him better scope.

References

Bond, Ruskin. *The Room on the Roof*. Penguin Books, 1987.

Friedenberg, Edgar Z. *The Vanishing Adolescent*. Boston Beacon Press. 1959.

Cole, Luella. *Psychology of Adolescence*. Holt, Reinhart and Winston, NewDelhi: 1983



DYSTOPIC VISION IN H. G WELLS NOVEL *THE TIME MACHINE*

K. Ramya

PG & Research Department of English, St. Mary's College (Autonomous), Thoothukudi.

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Herbert George Wells best known for science fiction novels was an English writer, journalist, sociologist, and a historian. Wells focuses on proposed future dystopia, rather than utopia in *The Time Machine*. He uses the characters, symbols, and images to criticize technological progress that leads to trouble in the future world. More than a science fiction story or a fantasy tale, *The Time Machine* is a cautionary tale of what may happen if unfettered capitalism is permitted to continue. By making a machine the thing that literally enables time travel, Wells was appealing to the increasing fascination of Westerners of the late nineteenth century had for the new and the mechanical. While entertaining, the book also explores social and scientific topics from class conflict to evolution.

Keywords: Time Machine, unnamed narrator, Eloi, Morlocks, sphinx

Introduction

H. G. Wells was a prominent forward-looking, even prophetic social critic who devoted his literary talents to the development of a progressive vision on a global scale. As a socialist he was against the mistreatment and abuse of the working class and believed that the class division that existed in the time should be abolished. He lived in a society which was experiencing the clashes created by the transition of Victorian values to modernism. The late nineteenth century was a time when many people believed that progress, especially technological progress, could solve many of humanity's seemingly intractable problems, such as disease, hunger, violence, and exploitation. Wells, a devotee of science, seemingly endorses this view at the beginning of *The Time Machine*, through the Time Traveller, an inventor, who creates a machine that travels in the fourth dimension to a world in future 802,701. However, as the story continues, readers see that the Time Traveller discovers a future in which the only thing that has progressed is humanity's savagery and thirst for self-destruction. *The Time Machine* is a cautionary tale of what may happen if unfettered capitalism is permitted to continue.

Wells, however, did not equate progress with improvement, and the discoveries of the Time Traveller illustrate his belief that evolution does not necessarily mean evolution of morality or of the intellect. An adherent of evolutionary theory and a staunch advocate of women's suffrage and workers' rights, Wells was deeply influenced by his times. In the 1880s and 1890s, Britain's population was booming, roughly doubling between 1851 and 1901. The rise of industrialization was emptying the farms of residents and rural labourers, as people flocked to the cities and industrial towns to work in factories.

By the turn of the century, more than eighty percent of Britain's population lived in urban areas. The shift from an agricultural to an industrial economy meant that England was now dependent on imports to feed its growing population and that the landed gentry who relied on income from renting farmland now had to find another way to make money. As a city dweller and a Progressive man, Wells was sensitive to the working conditions of the factory labourer. His description of the Eloi and the Morlocks dramatizes the exploitative relationship between owners and workers in Victorian England.

Wells' time machine itself was a product of an imagination nursed on the extraordinary technological advances of his day that fuelled industrial development and changed the complexion of the workforce. In the 1870s, both the typewriter and the telephone were invented. These inventions enabled office work to be done more efficiently, work that fell overwhelmingly to women. Other inventions that altered the daily lives and thinking of Victorians include suspension bridges, the telegraph, subway trains, steamships, buses, automobiles, and electric lights. These inventions made travelling places and moving goods less expensive and opened up vistas of opportunity for entrepreneur and worker alike. Public transportation enabled workers to live farther away from urban centres, which were becoming increasingly crowded, unsafe, and unsanitary. These inventions also sped up the pace of daily life, giving it a kind of urgency previously unknown and adding to the sense that the world was spinning out of control.

The Time Machine carries an important message that the division between the classes should be abolished before humanity ruins itself. During the time of H. G. Wells there was great division between the rich (upper leisured class) and the poor (working class). The working class would often be employed in lower class jobs, in nearby factories or mills. The working class was unfairly exploited, they were made to work

ridiculously long hours, for the minimum amount of pay, and they were also situated in low class accommodation areas. Working class was cramped into small areas, in areas that were highly polluted as the accommodation was so close to the factories and mills. The average life expectancy of a working class person was extremely low, which was mainly due to malnourishment, because working class was not paid fairly; consequently they could not afford to buy food. While on the other hand the rich (upper/ leisure class) lived a life of pleasure and ease. The upper class could live an entire lifetime without working, or ever having to fend for them. Further, as it is usually represented in Science Fiction novels, Wells introduces a kind of warning to humans who neglect ethical rights and principle of social equality.

Wells projects as giving rise to two separate human species: the fair, childlike Eloi, and the savage, simian Morlocks, distant descendants of the contemporary upper and lower classes respectively. It is believed that Wells' depiction of the Eloi as a race living in plenitude and abandon was inspired by the utopic romance novel *News from Nowhere* (1890). His dystopian outlook on human race and its future creates a common thread combining all the themes of the novel. Specifically, Wells notes, “Scientific people...know very well that Time is only a kind of Space”(12). Although the phrase bears purely scientific character, it also sheds light on the existing system of social and political order. By means of time, Wells can look at the future and change it with regard to the mistakes made in the present.

The Morlocks (the descendants of the British poor) live in difficult conditions and are fearful of one another due to the practice of cannibalism. As such, the Morlocks are a much more capable (though less moral) species than the Eloi. This is a direct challenge to the kind of Utopian thinking that would consider a world without struggle to be the ultimate achievement of humankind. If struggle and fear are part of what makes us human, then living in a Utopia would, paradoxically, rob human beings of their defining characteristics.

An ideal world for Wells, then, is one in which humans must work, strive, and take risks, but not to the point that they become depraved like the Morlocks world of the Eloi and the wicked society of the Morlocks. He exaggerated the difference between the Morlocks and Eloi to warn the well-to-do and the British government that the social injustices of the day would prove ruinous if not corrected. Also, Wells warns everybody that the attainment of our ideal world, one with no pressure or work, would probably be fatal to the human race.

The future is presented as a place where the privileged have finally gotten a world where they can lead utterly carefree lives of leisure. Unfortunately, the centuries of soft living

have turned the rich into weak and stupid creatures. Meanwhile, the working class has speciated into subterranean horrors that finally seek revenge on their former masters. This is to serve as an extrapolation of what Wells surely saw as a widening gulf between the rich and poor in Victorian England. Wells exaggerated the difference between the Morlocks and Eloi to warn the well-to-do and the British government that the social injustices of the day would prove ruinous if not corrected. Also, Wells warns everybody that the attainment of our ideal world, one with no pressure or work, would probably be fatal to the human race. Wells' vision, even the Time Traveller's movement hundreds of thousands of years in the future will not allow him to transcend his class. The Time Traveller is more at home with the Eloi than the Morlocks, just as he was socializing with elites in Victorian England.

The Time Traveller's initial response after landing in the future but prior to meeting the Eloi, underscores this thinking. He worries: "What if cruelty had grown into a common passion? What if in this interval the race had lost its manliness, and had developed into something inhuman, unsympathetic, and overwhelmingly powerful?"(35). His fears partially come true after meeting the creatures, for they have grown weak from not having to work or endure hardship, and since they had all the comforts of the good life provided for them, they had lost the impetus to strive. But the Time Traveller sees this "ruinous splendour" as a kind of paradise, where "One triumph of a united humanity over Nature had followed another"(48). This paradise, however, is not a cause of celebration but a reason for mourning.

Time Machines represent not only hope, but also danger. The time machine enables the Time Traveller to transcend one of the basic limitations of the universe. It has incredible power but takes him to a vicious land. The subways, railroads, and factory machinery of the 19th century Industrial Revolution represent progress, but they also destroy the environment and dehumanize workers. The Eloi represent the elitism of the rich who bask in their wealth and do not work to contribute to civilization. While they are beautiful and graceful, they are unintelligent and lazy. The Hebrew word Elohim, meaning "God," may be the origin of the term Eloi, suggesting a fall from grace. It is also thought that Wells' Eloi race shares many features with the works of other English socialists, most notably William Morris and his work *News from Nowhere* (1890), in which money is depicted as irrelevant and work is merely undertaken as a form of pleasure.

The Elois live a banal life of ease on the surface of the Earth while the Morlocks live underground, tending machinery and providing food, clothing, and inventory for the Eloi. The narration suggests that the separation of species may have been the result of a widening split between different social classes. With all their needs and desires perfectly fulfilled, the

Eloi have slowly become dissolute and naive: they are described as smaller than modern humans, with shoulder-length curly hair, pointed chins, large eyes, small ears, small mouths with bright red thin lips, and sub-human intelligence. They do not perform much work, except to feed, play, and mate, and are characterized by apathy; and when Weena falls into a river, none of the other Eloi help her she is rescued instead by the Time Traveller. Periodically, the Morlocks capture individual Eloi for food; and because this typically happens on moonless nights, the Eloi are terrified of darkness.

The Morlocks open the Sphinx and use the time machine as bait to capture the Traveller, not understanding that he will use it to escape. He reattaches the levers before he travels further ahead to roughly 30 million years from his own time. There he sees some of the last living things on a dying Earth: Menacing reddish crab-like creatures slowly wandering the blood-red beaches chasing enormous butterflies, in a world covered in simple lichenous vegetation. He continues to make jumps forward through time, seeing Earth's rotation gradually cease and the sun grow larger, redder, and dimmer, and the world falling silent and freezing as the last degenerate living things die out.

A loving and affectionate character, Weena happens to be one of the Eloi who is saved by the time traveller from drowning by the river. She is introduced to us as a beautiful and elegant female by the time traveller, although we don't know how he's able to figure that one out since he also tells us that it's especially very hard distinguishing the creature's gender. In a precariously unsafe future, Weena instills the feeling of love and peace and of expression of affection, no wonder the time traveller becomes so fond of her and plans to take her along with him to the present day.

The Time machine contains two levers—one to move the machine forward in time, and one to send it backward. Without the levers, the machine cannot work. The Time Traveller always keeps these levers with him, attaching them to the machine only when he means to travel through time, so that the machine cannot be driven by anyone else into a different era and lost to him. The levers represent the power of technology, a power that, unless shepherded carefully, can be misused, or lost altogether.

“There are really four dimensions, three which we call the three planes of space, and a fourth – time” (10). After a while, the Time Traveller found he was able to breathe easily once again. He began to see the dim outline of houses and, as he slowed the machine, he recognized the landscape once more. Finally, he found himself back within the walls of his laboratory. He stopped the machine, checked the date and, hearing his guests at dinner, went in to join them. His tale complete, the Time Traveller acknowledges that he doesn't expect

the guests to believe his story. They can, he states, take it as mere speculation if they wish. Indeed, he can hardly believe himself. “I cannot expect you to believe it. Take it as a lie – or a prophecy” (123).

Wells uses symbols to evoke ideas and emotions and to figuratively stitch together many of the story's themes. The dominating class follows utopian principles whereas inferior class lives in a dystopian world in the underground. In this respect, the main idea of the novel consists in the confrontation between these two social groups, as well as between different modes of life. At the same time, the contrast existed between these two societies is represented in relation to anti-ethical frameworks employed to depict them. Consequently, the world presented in the novel is full of biases and contradictions: utopian world of the Eloi and the wicked society of the Morlocks.

The Palace of Green Porcelain, a museum containing artifacts from England of the 1890s, signifies the idea of home, civilization, and extinction-all at once-for the Time Traveller. Other major symbols are the White Sphinx, which evokes the spiritual degradation of the Eloi-Morlock society, and the time machine itself, symbolizing Victorian progress and the promise-and the danger-of technology. Sphinx really does dominate the story; and not just the Time Traveller's first impression either. It strikes the first really sinister note, suggesting the decay of the future world, and also a mysterious threat to the hero. Its wings are spread, not folded, to suggest a flying bird of prey; as we see from the development of that idea soon after the initial description: "I felt naked in a strange world. I felt as perhaps a bird may feel in the clear air, knowing the hawk wings above and will swoop" (36). And the swoop duly takes place, when the Morlocks drag the time machine into the pedestal of the sphinx. And precisely the rise and fall of Man is the subject, of *The Time Machine*. Its whiteness is the whiteness not only of leprosy but also of bone, its sightless eyes are those of a human skull. It stands for immediate decay and the menace of imminent death.

Wells Concluded the novel saying that the Time Traveller disappears and never comes back. We don't know where he went. The unnamed narrator makes some guesses to show the range of possibilities may be in the new future. Thus Wells shows science to be a process that involves quite a lot of failure through the novel *The Time Machine*.

References

- “Modern Society in the *Time Machine* by H.G. Wells.” Bartleby research,
www.bartleby.com/essay/Modern-Society-In-The-Time-Machine-By-FCBC3UKWJJU
- Time machine symbols: *Course Hero*, www.coursehero.com/lit/The-q Time-



Machine/symbols/.

“The Time Machine” *Encyclopedia.com*. 25 Apr. 2022.

www.encyclopedia.com/arts/educational-magazines/timemachine

“The Time Machine: Notes Towards an Analysis of Well’s Novella.”

Interesting literature interestingliterature.com/2018/06/the-time-machine-notes-towards-an-analysis-of-wells-novella.

**SEARCH FOR SELF-IDENTITY IN MEENA ALEXANDER'S NAMPALLY ROAD****S. Selva Ramya**

PG & Research Department of English, St. Mary's College (Autonomous), Thoothukudi.

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Meena Alexander, an internationally acclaimed poet, scholar, and writer also with kaleidoscopic qualities. She was Born in Allahabad and raised in India and Sudan. She belongs to a Syrian Christian Family, she accompanied her parents when she was five to Khartoum, Sudan, later she attended the university of Khartoum where she studied English and French Literature. Then she moved to England for her doctoral studies in Nottingham. She returned to Hyderabad and started to teach English at Sona Nivas college. Meena Alexander traces her life from childhood in India through youth in England. As a result, Alexander struggles to find her identity, despite a past full of moves and changes. This paper discusses the novel Nampally Road and how Alexander portrays the pain of losing self-identity, dislocation, immigration.

Keywords: feminism, immigration, searching for self, violence**Introduction**

From the late nineteenth century and into the first half of the twentieth century women were making claims for their power and importance as writers and also for the lives of women as significant subject matter. Prominent women writers are Shashi Deshpande, Arundhati Roy, Bharti Mukherjee, Kamala Markandaya, Kiran Desai, Anita Desai and Meena Alexander. Their novels focus on psychological sufferings of women. The themes are often about the depiction of the repressed and oppressed lives of women of the lower classes.

Meena Alexander is an Indian writers whose poetry and fiction reflects her multi cultural life experience among diverse ethnic and religious communities on four continents. Generally concerned with the roles of place, memory and language in identity formation, Alexander's works examine the disparate elements of her heritage and her cultural displacement, concentrating particularly on her status as an educated women of the South Asian diaspora living and writing in the west. Alexander search for psychic wholeness through language a prevalent theme of her poetry also articulates the concerns facing many postcolonial writers silenced by the dominant literary traditions of the imperial past. Alexander is known for lyrical writing that deals with migration, its impact the subjectivity of the writer and sometimes violent events that compel people to cross borders. Though

confronting such stark and difficult issues, her writing is sensual, play got and maintains a generous spirit.

The novel *Nampally Road* vividly portrays contemporary India and one woman's struggle to piece together her past. At the heart of this novel, is the gang rape of Rameeza Be by the police. The towns people rise up and burn the police station. This novel reissued in 2013 by Orient Blackswan has a powerful resonance with the recent tragic events in Delhi. When it was first published in 1991 the novel was a Voice Literary Supplement Editor's Choice. Alexander focuses on issues of cultural richness, psychological complexity, feminism and social politics. *Nampally Road* is a narrative of minority struggle that focuses on the juxtaposition of past relationship and cultural and historical inheritance.

Mira was born in India a few years after the independence and she didn't agree to her mother's decision for an arranged marriage for her. She went to England as an undergraduate student and spent several years there. Life in England was a torture to Mira because she couldn't adjust with the fast lifestyle of the European people. She attended some dancing parties of the students but they disgusted her because of the loud music and the harsh lights. She even tried to go out every evening with a different boyfriend according to the western custom. Europeans considered it a permanent commitment or attachment to have the same boyfriend for a longer period.

Mira wanted to write a few poems so as to find out a separate identity for herself. She wanted to establish what she was. She thought that by writing a few poems or even a few prose pieces, she could start to give a meaning to her life. The novelist makes it very clear that Mira had a complex inter-cultural personality because she was an Indian girl who got a colonial education. When Mira got a teaching job in Hyderabad, she gladly accepted it because she thought that going to India would give her a chance to establish a clearer identity for herself. Once she reached in Hyderabad, she felt that she was no more a girl in confusion but a woman of firm standing. In any case her mind had grown stronger. She could live her life fully only in her own country. Mira decided to make William Wordsworth her role model in life. Wordsworth was one of the English poets whom Mira read very closely as a part of her M.A. final year studies. He had written several poems on nature especially about beautiful places where he wanted to return again and again. He was a great poet and he haunted the memory of Mira. She loved Wordsworth because he understood suffering and desire that could not let itself free. Mira wanted to become a poet by achieving the clarity of Wordsworth.

When Mira started living in Hyderabad, she had minor problems about readjusting with the Indian society. Once Mira started eating with her left hand by mistake and this shocked many Andhriles who saw it. She started teaching English literature at the Sona Nivas College, Hyderabad. The professor allotted her the lectures on Wordsworth and Mira became a favourite among the students of Sona Nivas. During her free time, Mira continued her attempts to write poems. She had a good collection of little notebooks hidden under her bed. Ramu made fun of the creative attempts of Mira and commented that no one had the right to impose ideas on the readers. Mira explained that writing poems was a mission in her life. She was 25 years old and she hardly knew what she was writing. She was very much confused inside her mind in spite of all her western education. She wanted to become a poet so as to establish a new identity for herself. Otherwise her mother will dress her up in silks and gold and marry her off to some rich engineer or estate owner. Mira strongly felt that she may not be able to survive such a marriage. According to Mira, marriage was a personal matter and she will commit into a marriage only when she is fully prepared for the arrangement.

Mira's search for identity makes a sharp turn when she sees Rameeza Be for the first time inside the Gowliguda police station. Rameeza's sari was stiff with blood. She lay curled up on the mud floor of the prison room just behind the wooden desk. Her face was held up by the mud. Mosquitoes were buzzing over her and still both her eyes were open. She was breathing in a jagged, irregular manner. Mira gripped the cell bars and looked at her for a long time. She bent forward and put her hand inside through the prison bars and touched the damp forehead of Rameeza. The hair from her head was plastered in a light mat on her cheeks and it was held together with blood.

Very soon someone carried away Rameeza to the house of Maitreyiamma where she was given good rest and medical attention. It was a long and painstaking process but Rameeza finally emerged healthy because of the strong herbal medicines of Maitreyiamma. Ramu and Mira visited Rameeza in that house and her pathetic condition extremely influenced Mira. 'I wished', Mira wondered, 'I could give up my own useless life in some way that could help her'. Thus, Mira finally found her identity. She understood that she was nobody else other than an ordinary Indian. The suffering of Rameeza Be was the suffering of an entire nation and Mira's mission in life was to seek a solution to give relief to millions of Rameezas in India. Mira became half an Indian by returning to India and deciding to settle down permanently here. She became a full Indian when she understood that her mission in life was to serve India, her motherland.

Nampally road is depicting the painful voices of woman folk stories, characters and plot may differ, but the clutches of violence are so strong that justice seems to be a far off decision. The novel not only focuses on the consciousness of the rape victim but tries putting forward the idea as demonstrated by Gayatri spivak regarding subalterns. It demonstrates the analysis of the subaltern and speech in the representation of Rameeza's experience. The text brings forward the difficulty, in the fact impossibility of articulating traumatic experience for the rape victim and the difficulty of a writer in representing this in any factual or fictional narrative

In the novel, the incident of Rameeza Be rape under the police custody reported in the papers and led to the burning of a police station in Hyderabad. Yet this event itself is transformed into a poetic symbol. There are dreams and portents linking Rameeza Be with Durgabai and the protagonist, Mira, who is a foreign-returned woman trying to find herself. The other main character is Ramu her lover, an activist who is in the thick of the civil liberty struggle, but who remains strangely opposed to Mira's writing, and a roman catholic servant who wants to emigrate to Canada. Such is the exotic cast of the novel.

Alexander creates a feminist space where characters are given a voice. This novel vividly portrays contemporary india and one woman's struggle to peace. The companionship between women are nurturing and sustaining. The violence is portrayed through the story of Rameeza Be who is a woman of little statures. The physical violence done to this innocent woman leads to psychological violence and fear in the mind of the inhabitants. The protagonist exemplifying Meena Alexander's own alter-ego, finds it very difficult to maintain a balance between her life of writing and grim realities that surround her. The catastroph his events of Rameeza's life force mira to ponder over the glorified concept of nationalism and her own identity as a writer. Mira begins to feel that her drafts are void of clarity and completion even when there is stack of notebooks under her bed.

Yet even with an optimistic Mira, along with Durgabai she makes arrangements for the rehabilitation of Rameeza Be. To see the transformation of a peace loving and economical secure Mira kannadical, joining the crowd to protest against injustices reflect the author's innermost doubts and confused emotions regarding identity and meaning and her own attempts to deal with dislocation of space, time, memory and real world.

Yet even with an optimistic Mira, along with Durgabai she makes arrangements for the rehabilitation of Rameeza Be. To see the transformation of a peace loving and economical secure Mira kannadical, joining the crowd to protest against injustices reflect the author's



innermost doubts and confused emotions regarding identity and meaning and her own attempts to deal with dislocation of space, time, memory and real world.

References

Alexander, meena. Nampally Road. Hyderabad: Disha Books, 1992.
<https://nampallyroad.wordpress.com/2007/12/24/notes-on-nampally-road-by-meena-alexander/>



**FAMILY DYSFUNCTIONS IN JONATHAN FRANZEN’S NOVEL *THE
CORRECTIONS***

Sharmila

PG & Research Department of English, St. Mary’s College (Autonomous), Thoothukudi.
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

ABSTRACT

This immense work of 21st-century American social criticism has been variously hailed as "the *Bleak House* of the digital age" and "hysterical realism," a sub-genre of Postmodern fiction, defined by "chronic length, frenzied action, manic characters and a tendency to digress into other topics not central to the story." The novel does exhibit these characteristics—exploring the dark corners of numerous issues, from globalization, the pharmaceutical industry, and economic colonization to the state of Central Europe and 21st-century university life—but its appealing, intellectual style brings warmth and humanity to its epic tale of the dysfunctional Lambert family and their attempt to meet for one last family Christmas. Although published in the United States just days before the tragedy of 9/11, the novel has been hailed for capturing the angst and anxieties so common in wake of the attacks.

Keywords: Pathology, dysfunction, family, conflicts

The American Midwest is a region of the United States. People in these states tend to value practicality, friendliness and conservative political values. Midwestern culture is generally seen to be distrustful of people who are different and it can be judgmental when a person does not follow societal norms. Stewart O’ Nan, in his novel *Songs For The Missing* has said that “The sins of the Midwest: flatness, emptiness, a necessary acceptance of the familiar. Where is the romance in being buried alive? in growing old?”

Stretching from the Midwest at midcentury to the Wall Street and Eastern Europe of today, Jonathan Franzen’s *The Corrections* brings an old-fashioned world of civic virtue and sexual inhibitions into violent collision with the era of home surveillance, hands-off parenting, do-it-yourself mental health care, and globalized greed. Richly realistic, darkly hilarious, deeply humane, it confirms Jonathan Franzen as one of our most brilliant interpreters of American society and the American soul..

Franzen’s *The Corrections* captures the mood and concerns of Americans who had never experienced terrorism. Postmodern literature is characterized by a mood of unease,

patriotism, and distrust on civilian soil. The problems that the characters Gary Lambert Chip Lambert and Denise Lambert face in *The Corrections* are indecision, antidepressants, and discontentment in their jobs. These problems are very different than the fears of war, terrorism, and government security that Americans faced. *The Corrections* depicts ordinary American life before it changed the landscape forever.

The Corrections relies on episodic plot to provide background knowledge about each character. Each section of the book largely focuses on one character. The circumstances and choices that these characters face shape the person they are in the novel's present time. The present time line for *The Corrections* only spans a few months starting with Enid Lambert and Alfred Lambert's flight to New York and ending with the Christmas gathering.

Enid Lambert and Alfred Lambert is an old married couple living in St. Jude Missouri. Alfred is a retired train engineer and Enid is a housewife. They are stuck in a rut of boredom and frustration. Alfred's mental health is failing, and Enid is stressed by the mental load of taking care of him in their old age. Alfred's mobility has slowed considerably, and he takes a long time to complete simple projects around the house. Enid recalls that several years ago, Alfred painted the patio furniture. It had taken him about two hours to complete the love seat. This time around he has been working for a month and "all he'd painted of the love seat was the legs." Alfred has frequent spills and stumbles around the house. He tries to blame Enid for his stumbling and forgetfulness and makes excuses for why he cannot complete the small tasks around the house. The real cause is Alfred's declining mental and physical health. Enid decides they need a change of pace, and they prepare to go on a cruise.

Enid Lambert and Alfred Lambert meet their son Chip Lambert in New York City before departing for their cruise. Enid and Alfred believe that Chip writes for the *Wall Street Journal* when Chip actually works for a small art publication called the *Warren Street Journal*. Chip used to be a college professor but lost his job because he had an affair with a student named Melissa Paquette. He blames the affair on Melissa and remembers the way she seduced him. He claims that he was "powerless" to act professionally.

Chip is struggling financially and has written a screenplay that he hopes his girlfriend Julia Vrais will pass on to her boss. Chip takes his parents to his apartment to meet Julia, but she appears to be leaving Chip. She has read his screenplay and is offended by the sexual references. She sees the screenplay as a failure and finds it "a tiny bit insulting" that Chip wrote a sexually charged screenplay about another woman's body. She

is frustrated with Chip's failing career and disappointing work, and she ignores his please to stay.

Denise Lambert arrives to have lunch with her parents as Chip impulsively decides to chase after Julia. Chip's past is revealed in a series of flashbacks. He had an affair with a student while a professor at a university. The student Melissa Paquette also got Chip addicted to a drug called Mexican A. Chip was soon fired from his teaching position and started a relationship with Julia who is married to the deputy prime minister of Lithuania Gitanas Misevicius. Chip often borrows money from Denise but spends it unwisely and is quickly broke again. When his parents arrive for their visit, Chip has four dollars in his wallet, less than ten dollars in his checking account, no credit to speak of on any of his major credit cards, and no prospect of further proofreading work until Monday afternoon.

Denise visits with her parents in Chip's apartment as Chip leaves to chase after Julia. She notices that Alfred's Parkinson's symptoms have gotten worse. Another flashback reveals that Enid and Alfred are disappointed in Denise's life choices. Enid wished Denise would accept traditional values and settle down and marry. Enid correctly suspects that Denise once had an affair with a married man. Chip returns to the apartment to find that his family has already left to send Enid and Alfred off on their cruise. Gitanas Misevicius hires Chip to do some questionable work for the Lithuanian government. Misevicius is vague about the nature of Chip's work and emphasizes the importance of fitting in with the Lithuanian people. He shows Chip some cigarette burns on his hand and hints at connections with corrupt government officials. Chip later leaves for Lithuania to begin his work for Misevicius.

The focus shifts to Gary Lambert who is the oldest of the Lambert children. Gary is an investment banker in Philadelphia. He and his wife Caroline Lambert are at a contentious point in their marriage. Enid Lambert calls and asks Gary and the family to come home to St. Jude for one last Christmas with their father before he dies or becomes too ill to enjoy the holidays. Enid also tells Gary about an offer Alfred Lambert received from a biotech company Axon Corporation. The company wants to buy a patent Alfred owns. Gary directs them to ask for much more than the company offered. He ends the call and researches the company on the Internet.

The story flashes back to Gary's last visit to St. Jude a few months ago. His visit does not go well. His parents' house has not been well maintained, and Alfred's health is much worse than Gary thought. Gary also realizes how much he dislikes St. Jude and the Midwest. In the present he gets into a heated argument with his wife Caroline Lambert.

She makes it clear that she does not want to go to St. Jude. Caroline had a very unpleasant Christmas holiday in St. Jude many years ago, and Gary promised his wife that he would never again ask her to go to St. Jude for Christmas. Caroline belittles Gary's parents and is especially harsh about Enid's values and choices. She tells Gary that he is free to go but that she and their three children will be staying behind in Philadelphia. Gary demands that the whole family goes with him. He believes that Enid will be "more willing to leave St. Jude and move east if she'd had her 'one last Christmas.'" The argument is so severe that both Caroline and Gary hint that divorce may be in their future. Gary is filled with rage and shouts, that they're going to split up over a trip to St. Jude!

A few weeks after Gary and Caroline's fight, the Axon Corporation is offering the public stock options. The Axon Corporation is the same company that offered to purchase a patent Alfred holds. Gary is interested in buying stock options in the burgeoning company. Gary and Denise discuss a promising new drug made by Axon called Corecktail. They wonder with excitement if the drug could help ease Alfred's Parkinson's symptoms. They also talk about the possibility of Alfred and Enid living with Denise as they grow older, but they do not come to any decisions. The flashback ends, and Gary decides that he will go to St. Jude for Christmas. He will not insist that Caroline and the children come with him.

Then the novel shifts to Enid Lambert and Alfred Lambert as they set sail on their cruise. A sequence of flashbacks describes Enid and Alfred's early marriage. Enid desperately wants children and dreams of being the perfect mother and housewife. After her marriage to Alfred, she quickly realizes that she will not get the attention and satisfaction she craves from her husband. She relies on her memories of the early years when he'd been mad for her and had looked into her eyes. She feels some contentment however when she gets pregnant with her third child Denise Lambert.

Alfred is a repressed and conservative railway engineer. A flashback to a business trip reveals that Alfred is uncomfortable with sexuality. He feels a sense of satisfaction when he represses sexual thoughts, and he imagines he'd denied the succubuses his satisfaction when he stifles any arousal he feels during the trip. Alfred is a stern man and is often too severe with Gary Lambert and Chip Lambert. The flashbacks show various scenes from the life of the growing family. Alfred is stern with the children when they rebel against his authority. When Chip refuses to eat the dinner Enid has prepared, Alfred tells him he cannot leave the table until he has had one bite of everything. Chip falls asleep at the table, and when Alfred takes him to bed he sees that Chip indeed took a bite of

every food. Alfred unfairly blames Enid for not taking Chip up to bed and tells her to never let it happen again.

In the present Enid awakes on the cruise ship to find Alfred lying naked in bed which is uncharacteristic of his usual conservative behavior. Alfred's mental health is rapidly declining. Enid finds the ship's doctor Dr. Hibbard and tries to explain her concerns about Alfred. Dr. Hibbard does not understand that she is flustered because of her sleepless nights helping Alfred calm down from his hallucinations. He calls Enid by the wrong name several times during their short conversation and does not understand what she is trying to tell him about Alfred. Dr. Hibbard believes she is the one who needs to calm down, and he prescribes her a drug called Aslan. He never sees Alfred, and Enid decides to take the medication so she can stop worrying about Alfred for a few moments and get some peace. Alfred has a second night of hallucinations while Enid sleeps soundly from the medication. Alfred hallucinates his own feces trying to attack him. He imagines a sociopathic turd, a loose stool, a motormouth that taunts him. Alfred tries to wake Enid for help, but she does not respond to his pleas. The feces continues to taunt Alfred who drifts into another hallucination of his time as a railway worker and imagines a huge pipe burst causing damage to the railway line. He unsuccessfully tries to change his adult diaper during the hallucination but makes a mess of the bathroom. The next day Enid attends a financial presentation on the ship called Surviving the Corrections. As she watches the presentation, she looks out a window and sees Alfred fall off the side of the ship into the water. He is airlifted by helicopter to the mainland.

The story shifts away from Enid Lambert and Alfred Lambert to their daughter Denise Lambert. A flashback describes Denise's friendship with the married couple Robin Passafaro and Brian Callahan. Brian has sold a computer program he developed for millions of dollars. He uses his money to open a high-end restaurant called The Generator in New York City and plans to hire Denise as his head chef. The narration shifts to Denise's summer after high school. She gets an entry-level job at the railway company where her father works. Denise begins an affair with one of her father's married co-workers. She enjoys the attention she gets from him but realizes she does not care for him. She attends college in Philadelphia and has affairs with two other married men. Her third affair with Emile Berger results in marriage and subsequent divorce. Denise also has relationships with women, but they end in dissatisfaction.

In the present Denise accepts the job with Brian Callahan, and they go on a culinary tour of Europe to search for ideas for the restaurant's debut menu. Denise turns

down Brian's sexual advances in Paris, and the two return to Philadelphia. Denise partly regrets not sleeping with Brian but also feels that for once in my life I am doing the right thing. Denise spends more time with Robin Passafaro and grows sexually attracted to her. Robin confesses that she is unsatisfied with her marriage to Brian. Denise and Robin begin an affair. When Brian discovers the affair, he fires Denise.

Denise and Chip Lambert catch up with each other through emails. Chip reveals that Alfred fell off the cruise ship and badly injured himself. He describes his work in Lithuania. Chip helps to run a website that lures American investors into fake business opportunities. The investors are told they can earn large returns by supporting Lithuania's transition from a communist country to a free market economy. Chip promises he will be at the family Christmas celebration in St. Jude.

Enid Lambert and Alfred Lambert have returned from their failed cruise. Enid is embarrassed by Alfred's fall and frustrated that her attempts to help him have failed. She hopes that she can get him into a trial for the drug Corecktal. The drug is made by the Axon Corporation which is the same company that Gary Lambert invested in and that offered to purchase Alfred's patent. Axon also manufactures the drug Aslan. The cruise ship doctor Dr. Hibbard prescribed Enid this drug, and Chip Lambert is addicted to the drug although he knows it by its street name Mexican A.

Gary arrives in St. Jude a week before Christmas. He is dismayed by the state of the house and his father's deterioration. He tries to talk about Alfred's health, but both parents dodge his questions and brush off his concerns. Gary tries to convince Alfred that he should enter an assisted living home much to Alfred's annoyance. Denise Lambert arrives in St. Jude shortly after Gary, but Chip Lambert is delayed in Lithuania. Denise and Gary are both shocked by the state of affairs in their parents' home. They find cans and containers of urine that Alfred has hidden around the house. Denise feels deep guilt that she did not realize how bad the situation had become for her parents. She and Gary both help Alfred change his adult diapers and navigate simple tasks around the house at different times during their stay. Denise learns that Alfred knew all about her affair with his co-worker and resigned from the railway company to protect her reputation.

A flashback reveals that Chip was detained by the Lithuanian police and accused of smuggling currency. He is able to make it to Poland and secures a flight home in time for the Christmas dinner. The Christmas gathering is not what Enid had hoped for. Everyone argues and quarrels, and no one has a fun time. Chip arrives at the family home just as Gary is getting ready to go back to Philadelphia. Gary explodes in anger at his

parents and siblings. He is infuriated that no one is taking Alfred's decline seriously enough or willing to admit that Alfred is in very poor health and in the last stages of life. Gary leaves in a state of anger.

Chip begins to realize the situation his parents are in and understands why Gary was so upset. Gary witnesses one of Alfred's hallucinations. Alfred's hallucinations are becoming more frequent, and he experiences them during the daytime as well as at night. Alfred hallucinates that the in-home physical therapist who comes to see him is an intruder. He has a hard time recognizing Chip. Chip tries to calm Alfred and diffuse the situation with the physical therapist. A few days later, Alfred and Chip go to a nursing home. The doctor asks Alfred a few questions to screen him for dementia. Alfred knows that he is failing the screening but does not know how to change his answers. He wets himself during the screening. Chip walks with the doctor to discuss Alfred's condition, and Alfred is left in the waiting room. He becomes agitated and yells for Chip to come back. Alfred asks Chip for assistance in committing suicide to avoid further deterioration. Chip tearfully refuses, and Alfred realizes he will never convince Chip otherwise.

The family Christmas did not go as planned. It was filled with difficult and awkward conversations between family members. It was nevertheless a successful reunion of siblings and parents. Although tensions were high and there was yelling, the honesty from each family member enabled them to move forward with a plan to help Enid Lambert and Alfred Lambert in their final years together. Franzen uses this scenario to comment on how difficult conversations and honest communication with family members can lead to feeling unburdened by repressed feelings. Each person makes small changes to themselves and the ways they interact with people. Some of these changes seem very small, but they have a profound impact. Franzen thus suggests that even small changes can cause great happiness within people and their loved ones.

In the last stages of Alfred's life, Enid finally gets her moment of honest communication that the other family members were able to have with one another during Christmas. Enid unleashes years of suppressed feelings that she hid from Alfred and the family because she wanted to keep the peace in the house. Enid takes pleasure in correcting Alfred every time he makes a mistake because of his dementia. Enid's marriage to Alfred meant she sacrificed her own dreams and desires to make the family happy. Alfred's declining health and deteriorating mental state mean Enid is finally able to reverse roles with Alfred and become the head of the household. She takes satisfaction in bossing



him around and criticizing his mistakes. Alfred's dementia is good for everyone except Alfred because the family is unburdened by his harsh and repressive personality.

The pace of the novel *The Corrections* is frenetic, simply because it has to be: it is an encyclopedic work, meticulously detailed about the areas of American life it brings under its gaze. These are so multifarious, their significances so varied yet so irrefutable, that the novel creates something of the multi-colored polyphony of history itself, and its scope and exuberance make it an oddly affirmative and even joyful novel that is simultaneously an ambitious critique of modern time.

References

Burn, S.. Jonathan Franzen at the End of Postmodernism. Continuum. 27 Oct, 2011.

Course Hero. "The Corrections Study Guide." Course Hero. 14 Dec. 2020, www.coursehero.com/lit/The-Corrections.

Franzen, Jonathan. *The Corrections*. Straus and Giroux. 2001.



**THE CRUMBLING DOWN OF GENDER STEREOTYPES IN MONTGOMERY'S
ANNE OF GREEN GABLES AND DAHL'S *MATILDA*: A COMPARATIVE
ANALYSIS**

Smeha John Machado

PG & Research Department of English, St. Mary's College (Autonomous), Thoothukudi.

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

The wider divergence of literatures of the world could be transcended by drawing together the elements ostensibly various but essentially common. Comparative literature necessarily involves the comparison of one literature with another. It is not for enhancing the superiority or inferiority of any individual literature but for enhancing the total understanding of literature in mutual terms. L.M. Montgomery's *Anne of Green Gables* and Roald Dahl's *Matilda* are taken into analysis. They show harmony among certain characters and their resistance towards the society's gender stereotypes. Both the authors enunciate the emancipation of both men and women from the hawk-eyed societal norms. Gender stereotype is the external acculturation and this paper explores the drudgery of gender stereotypes imposed upon the free spirited souls. The concept of masculine activity and feminine passivity is critically observed and a comparative analysis is laid on the female characters and their roles in reversing the stereotypes of the society.

Keywords: Comparative literature, gender stereotyping, Marxism, family, education, support

Comparison is a common instinct and very true of human experience. Comparison of both the novels underlines the element of unity in the themes such as family, education and support which is very important in every individual's life. The experiences of the characters created by Montgomery and Dahl and the analogical elements in the narratives of different nationalities are compared and contrasted. According to T.S. Eliot Comparison and Analysis are the chief tools of a critic. Therefore this paper deals with the comparative analysis leading to the enlightenment of scripts and an in depth discovery of new meanings. This research paves way for a broader scope over the unexplored path in the literary field. Montgomery gave life to her fictional character Anne Shirley. This stereotype breaking girl made the author achieve the status of National Historic Significance in Canada. This was very much

the case with Dahl, his novel's protagonist Matilda too was against the gendered stereotypes. Both the authors have portrayed bold, intrepid, conspicuous female characters in their novels.

Family is considered to be the most valuable and the dearest of all as it centers on love. All folklores, fairy tales, plays and poems featuring different types of families have taught the readers about various experiences and hierarchies within the family structure. The comparative analysis is in the universal theme of family where all literary pieces begin and end their wonderful area of exploration. Family stereotypes and its impacts are analysed through the incorporation of the Marxist Literary Criticism. Montgomery explains to her readers how Anne was not the typical well bred girl. The spark of a familial bond is instantly created between Matthew and Anne. After hearing the pathetic tale of this orphan Marilla's reluctance changes to a tender note. She was the one who said "... a girl would be of no use to us" (26). But she ends up loving Anne more than anyone else. Montgomery proves how a family need not have a particular structure or stereotype, instead loving, caring, supporting souls can create an awesome bond which can make a hearth and home. This can be seen in the case of Matilda when she is adopted by her caring teacher Miss Honey. Matthew, like Mr. Wormwood, considered the company of women to be out of context for a man. Women's society is considered to be trivial and since masculinity was stereotyped to be the sole bread winner they wanted only a genius company.

Here men were also the sufferers of the stereotype because they were taught that women do not have adequate intelligence to make decisions. This societal norm prevented them from having equal discussions with the opposite sex. Matilda's father could not accept the fact that his daughter is more intelligent than his son. She was considered as a scab by her parents. They looked forward to flick her away as soon as possible. Matilda's condition was similar to the protagonist of Montgomery who was an unloved child before she came to Green Gables where her heart, mind and body grew under the guidance of Marilla and Matthew. The unloved Matilda finds a family and a home in Miss Honey like Anne found amidst the Cuthberts. Dahl explains how extraordinary women are down trodden in this stereotyped society. The position of a true mother is taken by Marilla and Miss Honey. They are not bound by blood but by love. The authors enumerate the need for a family as the first step for empowerment. At the end of the novel both the girls acquire a beautiful home breaking the stereotype of patriarchal dominance as the home of both the protagonists seem to be led by the womenfolk. Anne and Marilla; Matilda and Miss Honey just exemplify that women can run a home without patriarchal dominance the father figure which has dominated the family structure ever since its formation. The stereotype of the necessity of a father figure

to lead the house or be the bread winner is broken here, since the women create their own loving family at the end of the novels. This dominant father is analysed by Marxist criticism which talks about women's domestic labour which has use value but no exchange value. Capitalism is congruent to patriarchy and women are the proletariat in the family structure. In *The Origin of Family, Private Property, and the State*, Friedrich Engels delineated the decline of the matriarchal society. Women are considered to be the property which has to be owned. Mrs. Wormwood and Ruby Gillis can be taken as an example, they are anxious in displaying their stereotyped beauty and behaviour which the patriarchy demands but the authors prove that charismatic, educated women like Anne, Miss Stacy, Matilda and Miss Honey are beautiful both within and without.

They break the gender stereotypes of the capitalistic society and insist that they are not properties but people with dignity. Mr. Wormwood represented the bourgeoisie and his wife represented the proletariat. He slanders her and she just puts up with him for his money this shows how the ideas of love and commitment are subordinate to the power structure of patriarchy. This isn't a family at all if the love is not mutual and reciprocal, mutual understanding between the members alone can form a family. Matilda gets a perfect familial bond with Miss Honey at the end of the novel similar to Anne who bonds with Marilla. In Juliet Mitchell's essay *Women: The Longest Revolution* (1966) she points out the intersection of patriarchy and capitalism in the exploitation of women. Gender ideologies instilled the belief that women's oppression is natural. Men also become the victims of gender stereotypes as Marx in his Preface to *A Contribution to the Critique of Political Economy* states, "it is not the consciousness of men that determines their being, but on the contrary, their social being determines their consciousness" (2). They are not born arrogant instead they are taught to behave like a man from their childhood because arrogance is appreciated in a man.

Dahl explains that women who value family love give no importance to the material benefits for which women depend on the patriarchs. Matilda is flicked off to Miss Honey and Anne decides to educate herself as well as look after Marilla. Montgomery and Dahl break the stereotype of their era and boldly allow their lead characters to sustain themselves. Finding a male partner or not is an individual women's choice, pride and arrogance cannot be attributed to them. Here the authors exhibit that women can be bread winners and become phenomenal examples to others.

Education is important to all and it improves women's communication with partners and employers and rates of civic participation. Previously the concept of women education was condemned because that would disrupt their feminine duties but some empowered

women proved it wrong. They managed it by dividing the domestic tasks with their partners. As Julia Kristeva advocates there should be both the spirit of adventure as well as spirit of nest, educated women created a beautiful family with the help of their progressive partners. L.M. Montgomery and Roald Dahl explain the importance of education as they capture the young minds through their famous characters Anne and Matilda. The teachers in both novels can be comparatively analysed. Miss Stacy and Miss Honey are very impressive as they do not force their pupil instead prepare them to face life, making them better citizens, inculcating self- control, politeness and rational thinking.

Miss Stacy is educated, smart and criticized by the elders of Avonlea just because she breaks the classroom stereotypes but Anne remarks, “Mrs. Lynde says she never heard of such going-ons and it all comes of having a lady teacher. But I think it must be splendid and I believe I shall find that Miss Stacy is a kindred spirit” (189). Montgomery introduces Miss Stacy just to prove her point that women are no less than men in acquiring and delivering knowledge. Anne expands like a flower under this teacher’s guidance. Matilda finds a new mother-figure and a comforter in Miss Honey. Both the girls love their teachers who are the source of their encouragement. Miss Honey seems to be the only sweetheart in the entire school. She understands Matilda’s innate ability and the only thing she needs is to be guided, nurtured and loved like Stacy understands Anne’s ability to compete with the urban scholars.

When Anne and Matilda get bullied they do not cry like the stereotyped girls. They know their worth and their educated minds lead them to subvert not submit to the wrong stereotyped rules. Montgomery and Dahl explicitly prove that Anne and Matilda act against the gender stereotype which advocated women can be bullied without them protesting against it. Gender stereotypes are considered to be mistaken social fictions. Ambition, aggression, high intelligence in women can quickly bring accusations on them for not being a feminine character. When Mrs. Lynde says Anne has got enough education for a woman and, “I don’t believe in girls going to college with the men and cramming their heads full of Latin and Greek and all that nonsense” (304). Similarly, Matilda’s father believes that girls going to college will only earn them a bad name.

While Matilda’s father forces his son to learn his business, the interested daughter is kept away from high finances just because she’s a girl. But education makes her rebel against her father’s illegal business when she says, “It’s dirty money I hate it” (19) similar to Miss Honey who survived outside her cruel aunt’s house. Because education and reading books enlightened them to behave honestly which will one day lift them to great heights. A truly educated woman never boasts about her excellence and skill. Her actions speak more than her

words. Both the authors inculcate the thirst for education among their young readers. They introduce characters like Anne, Mrs. Allan, Miss Stacy, Matilda, Mrs. Phelps, Miss Honey to tell that gender stereotypes are constructed to dishearten the tender accomplishing mind and they must be overcome. Mrs. Wormwood foolishly accuses Miss Honey for education saying, ... A girl should think about making herself look attractive so she can get a good husband later on. Looks is more important than books, Miss Hunkey...

I said you chose books and I chose looks... And who's finished up the better off? Me, of course. I'm sitting pretty in a nice house with a successful businessman and you're left slaving away teaching a lot of nasty little children the ABC. (91-92)

Mrs. Wormwood represents the whole lot of the females in the society who are trapped in the casket of the so-called gender stereotype. Similar to this, Ruby Gillis in *Anne of Green Gables* is very conscious about her looks and she is curious enough to get a 'string of beaus' this beauty stereotype has created a great impact on the female sex. Studies have shown that such ideals of beauty often lead to depression, reduced self-esteem and eating disorders. But Montgomery and Dahl succeed in fostering brave and beautiful women in their novels whose educated minds make them more attractive and charming. They prove that beauty comes with education and knowledge gains them dignity wherever they go. Anne follows Marilla's saying "Handsome is as Handsome does" (76). Both the authors focus on the education of the girls rather than submitting to the superficial adornments proving that women have more than beauty to be admired.

Matilda learns from Miss Honey that it is better to earn an honest living rather be the wife of some cranky businessman. L.M. Montgomery and Roald Dahl elucidate the purpose of education is fulfilled only when a woman becomes independent and empathetic. Virginia Woolf argues that in order to be creatively and critically successful, a woman must be able to own her own space and financial stability. And this leads to a progressive thought on 'women supporting women.' There are two dominant cultural ideas the Righteous Woman and the Queen Bee. The righteous woman is an ideal belief that women have a distinct moral obligation to have one another's back. Since all women experience sexism, they should be more attuned to the gendered barriers that women face. Thus women must foster alliances and actively support one another.

The Queen Bee belief argues that in reality women just can't get along. As Sheryl Sandberg and Adam Grant point out in their essay in *The New York Times* on the myth of the catty woman, this belief rests on the erroneous idea that there is something inherent to the female sex that causes women to undermine each other. Studies show that Queen Bee

behaviours are not reflective of some mean girl gene lurking in women's DNA. Rather to the degree they exist, queen bee dynamics are triggered by gender discrimination. When women for whom being a woman is not a central aspect of their identity this behaviour emerges.

Miss Trunchbull pursues this strategy to distance herself from other women, describing herself in a more typically masculine terms and denigrating other women. These behaviours are triggered in male dominated environments in which women are devalued. A woman alone has only power when they seem collective there is impact. Alexandra Elle, the poet and the author taps into this progressive thought of 'women supporting women' according to her,

Celebrating other woman's triumphs or success will never take away you shine or glory. If anything, it'll add to it and create more light... It's human to feel competitive sometimes; it's normal to feel jealous, but we have to reel in those negative emotions and not let them dictate our relationships with one another. (Strebe, par.4)

When a woman supports a woman there is a feel of being anchored and truly supported. Elle asks her readers to put aside any perception or judgment of women that stereotypes have taught womenfolk throughout ages. Gender stereotypes showcase how women are meaner and hypercompetitive to fellow women. But the road to gender equality starts with 'women supporting women.' There is strength in numbers and empowering other women is self-empowerment in itself. The concept of supportive women in Montgomery's novel starts with the character Marilla breaking the Avonlea stereotype and adopts a girl, supports Anne and stands for the orphan. Providence has handed over Anne to Matilda and ultimately Anne supports the old fragile Marilla at the end of the novel. Anne compliments Diana and vice versa showing that compliments can brighten one's day. Anne does not encourage making uncharitable remarks on other women.

Miss Josephine Barry, Mrs. Allan and Miss Stacy come under the influential supporters in the life of Anne. Roald Dahl brings in the concept of 'women supporting women' through Matilda and Miss Honey. Matilda was recognized as a great talent instantly by Miss Honey. She wished to give her private tuitions in order to support this lectionophile. Matilda's parents "instead of applauding her, called her a noisy chatterbox and told her sharply that little girls should be seen and not heard (5). The disparity between Mrs. Wormwood and Miss Honey lies in the support they deliver to their fellow women. Miss Honey encourages Matilda saying that she is a phenomenon thereby indicating that every strong supportive woman turns out to be phenomenal. Matilda catches hold of this advice and devises a plan to help her teacher from the clutches of her terrible aunt. Thus the support of

Miss Honey is reciprocated when Matilda helps her get back her father's inheritance which was usurped by her aunt.

The teacher helped Matilda get love, support and affection which she yearned for and Matilda in turn supports her teacher by understanding her state of helplessness. This is similar to Marilla's support to Anne giving the orphan a dignified place in the society and in turn Anne helps Marilla by staying by her side when Matthew dies, she saves Green Gables from being sold. The authors have succeeded in making their female characters break the gender stereotype which has been telling for ages that women do not support women. Instead the women in the novels support and appreciate their fellow women which is the stepping stone for a progressive society. Thus the paper intends to compare and analyse Montgomery and Dahl's powerful women and their attitude towards gender stereotypes.

References

- Dahl, Roald. *Matilda*. Penguin Random House, 2016.
- Eliot, T.S. "Functions of Criticism." *Criterion*, Faber and Faber, 1923.
- Engels, Friedrich. *The Origin of the Family, Private Property and the State*. Charles H. Kerr & Co., 1902.
- Marx, Karl. Preface. *A Contribution to the Critique of Political Economy*. Progress Publishers, 1977.
- Mitchell, Juliet. *Women: The Longest Revolution*. New England Free Press, 1966.
- Montgomery, Lucy Maud. *Anne of Green Gables*. Bantam Books, 1998.
- Sandberg, Sheryl, and Adam Grant. "The Myth of the Catty Woman." *The New York Times*, 23 June 2016.
- Strebe, Sacha. "An Author Explains Why Women Supporting Women is the Way Forward." *Byrdie*, 18 Feb. 2021. www.byrdie.com



ETHNOCENTRISM AND THE ISSUE OF UNHOMELINESS IN CHIMAMANDA NGOZI ADICHIE'S AMERICANAH

D. Nancy Carmel

PG & Research Department of English, St. Mary's College (Autonomous), Thoothukudi
Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Home is a place where an individual feels comfortable and trusts everyone in it with his or her life, but what happens when that space loses its charm and becomes something that steals away a person's peace of mind and their sense of feeling safe? It takes an incident from the outer space to make one feel unhomey. The space of unhomey is created when the line between the private and personal life gets overlapped. The peaceful state of home is ensured only by the external force which becomes an inevitable cause in an individual's life. Of course, one feels entirely lost when one goes through unhomey space, because it will be the least expected by anyone in a household. Adichie in *Americanah* engraves the concept of unhomey space by the characters Ifemelu and Obinze.

Key words: Unhomey space, external force, safe

Homi K. Bhabha, in his introduction to his essay collection *The Location of Culture*, takes his time to clarify the concepts "Beyond" and "Unhomey" in their present sense through simple terms. Under the heading "Border Lives: The Art of the Present," Bhabha identifies a space where an individual has to confront two or more cultures in order to have their very own identity, and if one fails to recognise themselves with the already existing culture, then they form a hybrid culture rather than neglecting one and favouring the other. The need for a hybrid culture is motivated by the need to have an identity.

Migrants who have been exposed to a specific culture since birth often feel befuddled when they are exposed to a culture that is completely foreign to them. Their mother culture sets an invisible barrier that refuses the idea of completely converting into a culture that is previously unknown. To survive in a country that has a completely different culture from that of their mother culture, the said migrant enters into a space where they go through a revisionary process on what they have to follow under culture in order to have an identity. They realise that they have to form a hybrid culture that is completely flexible, like that of the mother culture, and the culture that was previously unknown. This hybrid culture is motivated by the aim of being recognised as an individual under categories such as "race,

gender, generation, institutional location, geopolitical locale, sexual orientation,” (Bhabha 14) that helps one to be identified in the modern world. Bhabha further proves his point by quoting Renee Green, Frantz Fanon, and Guillermo Gomez-Pena.

Under the heading “Unhomely Lives: The Literature of Recognition,” Bhabha deals with the concept of “unhomely.” He brings in what Sigmund Freud identified as uncanny or unhomely. Freud says, “the name for everything that ought to have remained secret and hidden but has come to light” (qtd in *Location of Culture*, 14, 15). Bhabha, by citing these lines, brings out a space where the concept of home as a safe haven has been completely changed into an underworld by factors such as war, colonial aftereffects, and political and social unrest. The border line between personal and private space is blurred, creating a space that is unhomely. The feeling of being unhomely can be understood by Nadine Gordimer’s *My Son’s Story*, where she brings out the negative effect of the imbalance between public and private life and the sacrifice of the private for the political cause.

Bhabha also cites Tony Morrison’s *Beloved*, a novel that focuses on the traumatic effects of a mother who suffered under colonialism and post-colonialism. Again, Bhabha focuses on the side of an individual that deliberately wants to be recognised with a colonial identity. He ends his introduction by bringing in the line, ““I am looking for a join... I want to join in. I want to join”” (qtd in *Location of Culture*, 27:4, 5) from Toni Morrison’s *Beloved* to strongly declare the need for identity for an individual, mainly a migrant.

The process of migration as an individual or a group is possible when they are either forced to exit their country by choice or by force. This is possible only when a country is affected either by external forces or internal forces. The external forces included the colonizers who had claimed their rights over the colonized by branding them as people who didn’t have a culture. The natives, who were fascinated by the colonizer’s skin tone and attire, never thought to interrogate their colonizer’s plans for their country. They were rather ignorant and innocent compared to the manipulative and resource-seeking colonizers who saw them as nothing but as goods that could be used for their selfish needs.

As the natives were mere goods for the colonizers, they were uprooted cruelly from their countries and were planted in various other countries without their concern. These slaves, who were transported as goods and were forced to remain as aliens in the foreign country, they were treated very poorly by many of the native colonizers. They were forced to feel unhomely by force and by selfish desires that drove the colonizers to enslave them. These colonizers failed to realize that they were just humans like them. Though this happened in the past, as Edward Said says, “... even as we must fully comprehend the vastness of the

past, there is no just way in which the past can be quarantined from the present” (Said 2). As he has said the past is never completely fixed. It was never forgiven or forgotten. Instead, in this ruined past, the natives are left to build an identity for themselves in the present.

The internal force of a nation plays its role in driving away the people from their nation when they begin to search for their identity with reference to their past. These internal forces are mainly the politicians and corrupt businessmen who set forth their own growth over the development of their country. For example, right after Nigeria’s independence from the British Empire, the question of who would lead the country became the most important concern of the nation. This led to many civil wars. The Biafra War, also known as the Nigerian Civil War, is one of the most important civil wars that have been recorded in the history of Nigeria.

Right after Nigeria’s independence on October 1, 1960, Abubakar Tafawa Balewa, founder of the Northern People’s Congress, was appointed as prime minister of the Federation of Nigeria with Benjamin Nnamdi Azikiwe, leader of the National Council of Nigeria and the Cameroons, as the Governor-General. Later, this government was dissolved in the year 1964. Later, Chief Samuel Akintola of the Nigerian National Democratic Party was re-elected as prime minister of the Western Region of Nigeria on October 11, 1965.

In the year 1966, a lot of Nigerian soldiers believed that they had to take things in hand when they observed that the then government was unfit to lead the nation. Nigeria's first military coup showed its resistance by assassinating more than twenty individuals, including Abubakar Tafawa Balewa, former prime minister of Nigeria; Ahmadu Ibrahim Bello, former premier of northern Nigeria; and Chief Samuel Akintola, former prime minister of the Western region of Nigeria. This military coup was led by Major Chukwuma Kaduna Nzeogwu, a man from the Igbo tribe, and Major Emmanuel Ifeajuna on January 15, 1966. Five months from this date, a lot of people from the Igbo tribe, particularly those who were working as technicians, professionals, merchants, and government employees, were killed mercilessly.

At a conference at Aburi organized by General Joseph Ankrah for the establishment of peace in the year 1967, it was decided that Colonel Odumegwu-Ojukwu would lead all the war refugees and the oppressed people of the Igbo tribe in Eastern Nigeria by forming a republic called Biafra. Odumegwu-Ojukwu owed it to his citizens to lead the state without any kind of corruption and provide for them. This state was recognized by many states, such as Haiti and four African nations: Gabon, Côte d’Ivoire, Tanzania, and Zambia officially. Israel, France, Portugal, Rhodesia (present-day Zimbabwe), and South Africa kept providing

Biafra with medical and economic support.

The end of Biafra came when a lot of people died from starvation, lack of security for the people, and continued war between Nigeria and Biafra. This war cost the lives of more than 2 million people. Though peace was established, the people of Nigeria suffered from diseases and many other wars after 1970. Several parts of Nigeria are still suffering from various crises that prevent Nigerians from receiving a proper education and finding work. Though education is provided, only some are entitled to have it.

Due to continuous unrest in the country, many ordinary Nigerians and Nigerian intellectuals migrated to countries such as America, the UK, and many more in an attempt to have a better future. The aftereffects of civil war and the internal conflict in Nigeria are explained in Adichie's *Americanah* through the characters of Ifemelu, Obinze, Aunt Uju, Dike, and many more.

As she was braiding her hair in "Mariama African Hair Braiding" (9) in America, she remembered one of her childhood memories. It was a blissful memory. She remembers "growing up in the shadow of her mother's hair" (41) and she also remarks on how thick it was. The irony in remembering this memory is that she remembers how her mother loved her long, thick waves of hair and how everyone around her enjoyed and envied her locks, but at present in the saloon, the braider, Aisha, encounters Ifemelu's hair as a challenge and is irritated by Ifemelu's hair.

Aisha is even more surprised when Ifemelu admits that she likes her natural hair and has stopped using relaxers on it. Her memory doesn't stop with it; she continues it by recollecting how her father had given the nickname "crown of glory" (41) to her mother's hair. Ifemelu's mother was happy with her hair until one day when Ifemelu was just ten. Her mother looked different that day when she checked off the clock from her work. Nevertheless, her attire was the same, her eyes were unfocused, and her face was flushed. She demanded Ifemelu bring her a big pair of scissors. Even though little Ifemelu was confused, she complied with her mother's demand. She took the scissors from her little fingers and severed her hair without any remorse. Her hair fell down like "dead grass" (41). After finishing this task, she demanded a big bag from Ifemelu. Little Ifemelu was alarmed by the scene unfolding before her eyes and decided to go with her mother's course.

Ifemelu's mother collected all the Catholic objects in the bag and burned them in the place where she usually burnt her sanitary pads along with her discarded hair. As Ifemelu watched her mother from inside the house, she realised that "the woman who was bald and blank was not her mother, could not be her mother" (41). For a moment, she feared her own

mother. This happened when she was just ten. That afternoon, her God completely changed. “He became exacting.” (42). Relaxed hair offended him. “Dancing irritated him.” (42). Before that afternoon, her God allowed her to pray with a rosary, speak with a feminine and high-pitched voice, wear pretty dresses and crack jokes about the Latin songs, she sang with bad pronunciation, but this changed that day. This God of hers demanded starvation as an offering.

Ifemelu recalls her mother going through various fasts and hindering her health, but this changed one day when she had a revelation and changed her God again and again after another revelation. The final church that she decides to stick with is “Miracle Spring” and “Join Guiding Assembly” (43) where all the “newly wealthy” (43) gather for service. This God agreed to be commanded around. He also allowed her to wear jeweler, which was restricted to her by all her former Gods. Ifemelu’s mother remembered him on every occasion: “Good morning” or “Good afternoon” was a cheerful “God bless you” (43). When her mother believed that God provided “Pastor Gideon the big house and all those cars” (44), she believed it to be the result of three collections of money that he collected during the service.

Ifemelu’s mother was so fixated on following a religion that she never realised how Ifemelu was feeling distant from her mother. Her mother’s change from faith to faith made her doubt the existence of a real God. At one point, she realised that her mother was not changing God. Instead, she became obsessed with the pastors of the church, whom she believed to have provided the church’s believers with earthly materials. Her mother was determined to become rich through a miracle, and she believed that it would happen if she followed a pastor from a parish that had many wealthy people.

Ifemelu felt detached from her mother, and she knew that she was going against her will. As a result, she received harsh punishment. She realizes this when she talks back to “Sister Ibinabo” (50) when her mother made her volunteer to decorate the church to bless Chief Omenka for his donation to the church. But Ifemelu refuses to do so, as she states the obvious truth about him being a “419” (51) man, and most of the men who came to that church were

419. This number 419 is a reference to the corrupt and unjust men in her society.

Back home, she was punished by her mother. Her mother said, “„The devil is using you. You have to pray about this. Do not judge. Leave the judging to God! ”” (52).

When her mother refused to see the truth behind Ifemelu’s words, it is clear as day to

the reader that the money provided to the church was earned by the corrupted men through immoral means. To her mother, these men are men who were blessed with God's miracle, but to Ifemelu, they are men who don't deserve any applause. The variation between Ifemelu and her mother's ways of thinking on the concept of religion created a drift in their relationship.

Ifemelu recalls how her mother used Bible verses instead of actually teaching her about the concept of mensuration and sanitary pads. As the memory matures, the readers are borne to the only refuge she had in her life other than her father. Aunty Uju, who was pursuing her education in medicine, took her time to explain how "to mash an avocado and spread it on her face, to dissolve Robb in hot water and place her face in steam, and to dry a pimple with toothpaste" (51). Ifemelu remembers her aunt having "talked her through her first menstrual period" (52). Her aunt was more like an elder sister who took care of her younger sister. Her mother never took care of her child with motherly love. Instead, her whole focus on disciplining was influenced by what the parish pastor preached to her.

When Ifemelu's mother torments her for speaking her mind, her aunt advises her to keep her thoughts to herself selectively, by keeping in mind the place she is in. Her aunt made her feel secure, but it was short-lived as her aunt gave into the mirage of materialized temptation by deciding to be the mistress of "The General" (44). Before giving into the temptation, she was planning to become a doctor with a mentor, but it all changed after she decided to take a short cut to have a steady job. Landing a job was not a piece of cake in Nigeria, as lots of youngsters fresh out of college had to face the plight of unemployment.

Only weeks before, she had been a new graduate and all her classmates were talking about going abroad to take the American medical exams or the British exams, because the other choice was to tumble into a parched wasteland of joblessness. The country was starved of hope; cars were stuck for days in long, sweaty petrol lines; pensioners were raising wilting placards demanding their pay; lecturers were gathering to announce yet one more strike. But Aunty Uju did not want to leave; she had, for as long as Ifemelu could remember, dreamed of owning a private clinic, and she held that dream in a tight clasp. (45-46)

Ifemelu's aunt was enjoying the luxury of being the general's mistress. She had a job at the military hospital in "Victorian Island" (45) and a "new house in Dolphin Estate" (45). Meanwhile, Ifemelu's father was fired from his job as he refused to "call his new boss mama" (46). She recalls how her father always supported her all the time during her fixation with what the pastor of a parish had to say. Also, notice how he covered up his insecurities about not having a Master's degree by using well-mannered English. Ifemelu felt even more

unhomed after Aunt Uju's recent departure and her father's unemployment. Her mother was really upset about it and kept reminding him about his incident.

In her recollection of memory, Ifemelu remembers her first encounter with Obinze, who made her feel comfortable in her own skin. He was a boy from a single-parent household. Obinze was nothing like the other boys in Lagos; as a boy from Nussuka, he shared her interest in reading books. As they slip away from the crowd to find out about each other, she learns that he had his eyes on her right from the beginning and admits it by saying "I'm chasing you" (60). She called him "Ceiling," (93) with the aim of conveying to him that she felt at home with him. He admired her straight-forward and honest.

Ifemelu, in her recollection, also remembers that Ginika, one of her closest friends, is moving away to America. When she shared this news with her parents, Ifemelu, her mother said, "They are blessed" (65) and her father remarked, "At least they are fortunate to have an option." (65). Ginika's parents were professors, and as the condition of the university was so poor, they decided to immigrate rather than stay in an unyielding land. In Ginika's father's words,

We are not sheep. This regime is treating us like sheep, and we are starting to behave as if we are sheep. I have not been able to do any real research in years because every day I am organising strikes and talking about unpaid salaries, and there is no chalk in the classrooms. (64)

As the memory grows from the occasional visit to her present, she reveals her reason for immigrating to America. When she was studying at a university in "Emenike" (88), the university she studied at kept closing off due to strikes. These strikes were initiated by professors who had enough of teaching without earning a salary at their university. These strikes made many "young people become armed robbers" (91). In Obinze's mother's words, "I understand the students' grievances, but we are not the enemy. The military is the enemy. They have not paid our salary for months. How can we teach if we cannot eat?" (91).

The situation at Nigerian universities deteriorated as a result of the ongoing strikes; many crimes began to occur in and around the universities, and soldiers were stationed in many of them to keep things under control. Ifemelu decides to take her studies to America because of Obinze's motivation. In America, she was unwelcomed and she had to tolerate a lot of unfair treatment just because she was from Nigeria. Sometimes, she stayed with her aunt, who had moved to America after the General's death, just a few years after she gave birth to their son, Dike. She adapts to living like an American rather than a Nigerian

American.

Aunty Uju had transformed into someone Ifemelu could not recognize because she had taken to hiding her unhappiness behind the mask of being an American. She's so into being an American that she questions, "Will you be able to cope?" (17) When Ifemelu voices her wish to go back to Nigeria, Ifemelu's return to Nigeria shows that she decided to stay in her homeland rather than feel unhomey in a place where she has to undergo various unfair treatments. Returning home, she gets in touch with her "ceiling" (19) and she gets to know his life during her absence.

Dike, Aunty Uju's only child son, is someone who will be categorized as half-baked by Nigerians. He had a Nigerian mother and a non-Nigerian father. Though he doesn't talk about it, he gets into trouble for his skin tone. As his mother was so focused on being a successful American, she never took the time to listen to what he had to say. When he was a baby, Ifemelu, his cousin, took care of him as much as possible until she got tangled up in her own problems. He felt that he was unwelcome in the school where he studied, and because of his skin tone, he was subjected to prejudice. Rather than supporting his son with encouraging words, Aunty Uju kept complaining about his school management. He let his troubles out to Ifemelu, but when she was not there when he needed her; he decided to end his suffering by suicide.

Though it was not too late, Ifemelu and her aunt managed to save him. They realised that Dike was driven to do so after having enough of feeling as if he did not have an identity in the place he was in, just like Ifemelu, Obinze, and Aunty Uju. Though Ifemelu went out of her native country in order to find an individual identity for her, she fails to do so and returns home. This happens even to Obinze. Even though Dike did not permanently reside in Lagos, he felt at home when he accompanied Ifemelu back to Nigeria.

As a result of migration, migrant people from various continents are treated cruelly on various levels by the natives of the continent they migrate to. The natives refuse to treat them equally because of their skin tone, appearance, and ancestral history. Failing to look beyond their appearance is a clear indication that they do not value them. They fail to see that the migrants are oxygen-in taking humans just like them who have decided to have a better future in that country by proving their intelligence and unique qualities. These migrants are requesting the natives to treat them as humans, with humanistic thoughts, rather than as mere commodities from another continent. They ask the natives to try and put themselves in their shoes in order to understand what they had to go through to get to where they were.



References

Adichie, Chimamanda Ngozi. “The Arrangements: A Work of Fiction.” The New York Times, 28 June. 2016, www.nytimes.com/2016/07/03/books/review/melania-trump-inchimamanda-ngozi-adichie-short-story.html

---. Americanah. Harper Collin, 2013.

Daly, Samuel Fury Child. A History of the Republic of Biafra: Law, Crime and 56 the Nigerian Civil War. University Printing House, 2022, pp. 35-77, doi:10.1017/9781108887748.

Bhabha, Homi. K. “Introduction.” The Location of Culture. Routledge, 2015



PORTRAYAL OF NEW WOMEN IN JAISHREE MISRA’S AFTERWARDS

M. Suba Nanthini

PG & Research Department of English, St. Mary’s College (Autonomous), Thoothukudi.

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

ABSTRACT

Jaishree Misra’s novel *Afterwards* based on the struggles faced by women in day to day life. Jaishree Mishra projects herself as an ideal spokesperson as well as the representative of the women folk of the current time. The literary career of her took off with the very popular novel *Ancient Promises* that was released in 2000. The author's primary focus is actually on the struggles of women. Women's in her novels appear to be a personification of contemporary women who could be in a position to deal with the burden of inhibition they've carried from generation to generation. The household setup of all heroines of Misra is strictly patriarchal. Domestic violence is portrayed perfectly in the novel. This particular article is designed to analyse as well as determine the idea of 'New Woman' in the novels of Jaishree Misra. The study additionally seeks to trace the journey of the 'new woman' tracing her 'self' at various phases of life.

Keywords: Feminism, Patriarchy, Human relationship, Domestic violence, Women psyche.

Introduction

Jaishree Misra is one of the famous women writers of the present age. She is a growing women writer in Indian English literature. She is mainly concerned with the conflict between tradition and modernity and between the conventional and the new women. Her novels mainly focus on marital life and woman’s role at home.

Jaishree Misra was born in 1961 in Kerala. She belongs to a Malayali family. She was brought up in Delhi. Her father is an Indian Air Force officer and her mother is a school teacher. She completed her Post Graduation in Kerala. She also studied Diploma in Special education at Institute of Education in London. In 1990, she moved to England and worked as a Radio Journalist at the BBC as well as a film classifier at the British Board of Film Classification in London, England. She resigned her job at the end of 2009 after a seven year stint when she went to live in New Delhi. Then, she helped to start up a residential home for mentally challenged adults. She built the studio on Veli beach in Trivandrum. Kerala is being developed into a writer’s residency. She currently lives with her family in the United Kingdom.

Indian women writers habitually wrote about domestic life. They are concerned with women and talk about the limited space of women in the society. Jaishree Misra started writing as a career in 2000. Jaishree Misra in *THE HINDU*,

I took to writing in 1999. Basically, I was working as a radio journalist in BBC, but they put me on the early morning shift. Since, she (my daughter) was young, she needed me. I gave up my job and started to write memoir because I was bored. It became my first book, *Ancient Promises*. Then events over took me.

Jaishree Misra is the great-niece of the late Thakazhi Sivasankara Pillai. He is a famous Malayali writer and a Janapith Award winner. He wrote thirty novels and six hundred short stories.

Jaishree Misra's marriage life was a failure. When she was a teenager she loved a man, but she was directed into an arranged marriage. This marriage was a disaster and she gives birth to a mentally challenged child. For her intellectually challenged child, she studied special education. She met her first love after ten years of her marriage and her heart was broke. Her first lover's name is Ashutosh. He lost her because he moved to United Kingdom for higher studies. It was when she came in contact with her teenage lover, who had never married. Eventually, she filed for divorce and after the bitter battle gained custody of her daughter Rohini she remarried.

The woman in India is definitely worshipped making use of probably the choicest terms of address. Though the female of independent India isn't prepared to enter another abysmal era of oblivious hero worship. With snowball wisdom being passed down to her throughout the ages, she's learned to recognize herself. The spirit of revolt arisen out of physical lifestyle, wayward methods and mismatched matrimony of the husband have forced the female to come out in the ready to accept register the dissent of her. Jaishree Misra is actually the writer of this particular decade.

Jaishree Misra was created in 1961 to a Malayali family in New Delhi. Misra's life is as remarkable as the books of her. As a Keralite, growing up in an army family of Delhi, Jaishree Misra lived a seemingly Western lifestyle. She fell in love as a teenager, but was directed into an arranged marriage. The marriage was a disaster and worsened with the birth of a mentally challenged kid. The child of her led Misra to the world of Special Education. Throughout 1990, she left for England once again, this time to complete a post-graduate diploma in Education that is Special at the Institute of Education in London. It was right here exactly where she came into touch with the childhood sweetheart of her, that had never

married. Ultimately she filed for divorce, and after a bitter fight received custody of the kid of her, and remarried. Indian females' writers typically dwell far too much on domestic worries, the limited sphere of heart as well as the house. But Jaishree Misra, who started up the publishing career of her in 2000, proves to be distinct from the majority of the contemporary writers and thinks out of the package.

Jaishree Misra an Indian novelist has joined the growing number of women writers from India, on whom the picture of the suffering female gradually breaking the standard boundaries has had a huge impact. The author's primary focus is actually on the struggles of females. She projects herself as an ideal spokesperson as well as the representative of the women folk of the current time. Females in her novels appear to be a personification of contemporary women who could be in a position to deal with the burden of inhibition they've carried from generation to generation.

Jaishree Misra, this modern-day female author tasks herself as an ideal spokesperson as well as the representative of the females of the current time. Although the emphasis of the study is actually on the portrayal of the 'new woman' in the novels of Jaishree Misra, it might be properly carried out just by an evaluation of the females' characters of Jaishree Misra. Misra's girly outlook, as well as method, have been significantly analyzed in detail. Nevertheless, the views of a number of feminist theorists could be appended as explicatory substances.

Misra speaks all about the different instances which guide ruptures in relationships. She photos the intricacy of relationships, once the components of love, as well as commitment, are missing. She thinks in the pursuit of the self, which hibernates in the psyche of the Indian females. She takes initiatives to create her readers realize the complete spectrum of emotions, out of the heights of complete delight to the depths of grief, similar to the different phases of life.

Misra comes about the predicaments as well as difficulties, experienced by females of the complex web of relationships. Misra's novels are actually Ancient Promises, Accidents as Marriage and Love, Afterwards, Rani, Lies and Secrets, Sins and secrets, A Scandalous Secret and even A Love Story for The Sister of mine. She weaves the novels of her around the axes of love, loss as well as marriage. She handles an array of themes which include rootlessness, bereavement, belittlement, incompatibility, infidelity, diaspora, family stress, cultural pressure, rejection, relationships, urbanized musings, the east-west encounter, partition, alienation, quest for identity, loss, and love as well as the like. A large image of the societal landscape can be purchased in the works of her when she compares the Orient and

the Occident. This east-west equation of hers paces the fast evolution of the protagonists of her. The photograph of her of the double-edged place of females once they bounce between the roles of theirs as well as the quests of theirs is outstanding. To be a critique of the Indian culture, she emphasizes the protagonists of her to improve relocation in culture as well as space.

Misra portrays the crucial circumstances of society, in a vulnerable fashion. Her protagonists tell exactly how the female is subverted by the traditional codes. Female is actually anticipated to do the gender roles to adjust as well as live in adherence to the society as well as the protagonists of her are actually pressured to exist beyond the mental boundaries of theirs. She attacks the contexts which result in psychological anguish to female. Shameem states, "Jaishree Misra believes in the dormant inner power of the Indian female. The characters of her are made with intense individuality which will help them break the invisible bonds of intellectual and also mental servitude"

Misra provides a unique mental perspective of females. Bringing out versions, mental structures as well as character patterns, she fathoms the stamina of females of the contemporary society. Misra has proved that family constantly offers abundant fictional content due to the range of complexity of human relationships that it provides. As a writer, she concentrates on the preoccupation of her with familial themes as well as the female perspective of the family, the man-woman bonding. Furthermore, the conflict between tradition as well as modernity discovers a prominent spot in the portrayal of females by Jaishree Misra.

Jaishree Misra's extraordinary succeeds get a major new meaning when read in the perspective of crisscross dogmas of cultural critical thinking. Her works include *Ancient Promises (2000)*, *Accidents as Marriage and Love (2001)*, *Afterwards (2004)*, *Rani (2008)*, *Lies and secrets (2009)*, *The Little Book of Romance (2009)*, *Sins and secrets (2010)*, *A Scandalous Secret (2011)*, *Of Others and mothers (2013)* along with a *Love Story for The Sister of mine (2015)*.

In some of the novels, the readers are able to find the portrayal of a meek, submissive female that plays a subservient function to father, husband, and son. On the flip side, Jaishree Misra additionally picturizes the truly daring female, who breaks the clutches of patriarchy and leads an unbiased existence.

Misra's very first novel, Ancient Promises, released in 2000, is actually semi-autobiographical. It's about her unsuccessful arranged marriage followed by a divorce 10 years later on. Janu, vulnerable and young, gives up Arjun, the very first love of her, to enter

into an arranged marriage. A long-time later, she's slowly shut out by the coldness of her husband's family as well as the indifference of his to her as well as her daughter's requirements. She leaves for Delhi to make a scholarship interview as well as chances to meet Arjun. Used passions are aroused as well as the few realize they still feel great for one another. Janu offers to file for divorce to end the unpleasant marriage flees with Riya to England as well as restarts a new life with Arjun. Like magic, Suresh reconciles himself to a divorce, hands above Riya and all are very well that ends well. It's a moving story about marriage, motherhood as well as divorce.

In *Accidents as Marriage and Love*, the Sachdevs, Singhs, and Menons are urbanized Indians with daily concerns. Nevertheless, when a foppish Delhi walla falls for a beautiful, wise Keralite as well as the brother of his finds romance abroad, passion, as well as comedy, take control of the destinies of theirs. Based in Delhi, the story revolves around the lives of the Menon's and also the Sachdevs. The Sachdevs are actually abundant but orthodox particularly the lioness Aran who wishes an ideal but submissive Punjabi bahu for the youngest son of her, Tarun. Nevertheless, the dream of her of playing the dominant mother in law gets shattered once the once Casanova Tarun falls head over heels in love with Gayatri Menon, a beautiful and bold Mallu.

Inside Afterwards, when Rahul Tiwari arrives in Kerala for a brief break from London, he finds himself playing finally, co-conspirator, partner, and friend the unanticipated job of a saviour. Maya, suffocating in the weight of a loveless marriage and a suspicious husband, turns to him for assistance. It's the story of Maya - the oppressive married life of her, the short dalliance of her with independence and lastly the demise of her. Abused by the suspicious husband of her of Kerala, Maya strikes up a friendship with Rahul Tiwari an NRI that hires out the home next door. Rahul is the ticket of her to independence as well as she cajoles him into taking her as well as the daughter of her, Anjali with him to the UK. After a brief but life that is satisfying of England with Rahul, she dies in a crash.

Rani is actually Jaishree Misra's most ambitious guide. It's a historical novel depending on the life of Rani Lakshmbai as well as set in nineteenth-century British India. Thirteen-year-old Manikarnika leaves her father's court-in-exile to marry the king of Jhansi. Within this particular time, little does she realize the burden of greatness awaiting her. As she grows out of a vigorous and headstrong female into a female, she learns to put aside private disappointments & aspirations. This will make her come out as a competent queen, loved as well as respected by the employees of her. Really soon, she watches the political

landscape close to her alter and shift alarmingly under the command of the effective East India Company.

Secrets & Lies is actually a book that celebrates female friendship. It follows 4 females that live a seemingly glamorous life in Bombay as well as London but are haunted by a deep secret from the school days of theirs. Sam, Bubbles, Zeba, and Anita have a friendship that spans more than 20 years, created out of the years of theirs at a private girls' school in Delhi in the first nineties. The superiority of theirs is actually being endangered by the arrival of a newbie to the college - the beautiful, gifted 16-year-old Lily D'Souza. The females confront a secret that has haunted the adult of their lives when called back again to India for a reunion by the beloved school principal of theirs, Ms.Lamb. Lily's body was located on the night of the leaving party as well as, for 20 years, the open verdict has shielded the point that they might have had a hand in the death of her. As they reunite in Delhi, they learn the truth about what truly happened that night, as well as the friendship of theirs, stands the stress.

Secrets & Sins is actually a study on infidelity. 15 years back, Riva Singh and Aman Khan had a passionate love affair. In spite of the appeal of theirs, Riva rejected Aman for a dependable Ben, who became the husband of her later. Today, Riva is actually a bestselling novelist as well as Aman is actually a Bollywood superstar. Both have watched one another from afar but have stayed apart after the agonizing split of theirs. Fate plays a cruel function and they're tossed together at the Cannes film festival. Aman is torn between the deep love of his for Riva and the young family of his. On the flip side, Riva is guilty their renewed like will kill all of the elements they hold dear. The novel is about the way the star crossed lovers decide between their hearts and mind.

A Scandalous Secret is actually an engrossing novel about second chances and challenging choices. The story revolves around a happily married couple, whose lives shift after a deep secret from previous. It's a comprehensive account of the heartbreak of giving up one's own kid for adoption and thereby, having a secret from one's spouse without affecting one's marriage. While studying at Oxford, a naive eighteen-year-old Neha fell expecting and made the hard choice to quit the baby for adoption. However, years later, the little female of her, Sonya is currently a completely grown female and then motivated to find the birth mother of her.

Of Mothers & Others is actually a great collection of stories, essays as well as poems which provides a brand new perspective to the cozy picture of motherhood. Motherhood for the writers consists of searching thoughts about identity, publishing and one's place in modern society - the very nature of the self - thoughts of adoption, childlessness, surrogacy,

bereavement as well as abuse explore the tender as well as uplifting facets of this most crucial relationship, between kids as well as the mothers of theirs at every age.

A Love Story for The Sister of mine, Jaishree Misra's latest novel, is actually a novel about Tara's little sister Pia, a young aspiring novelist, checking out the interesting story of 'Margaret,' one of the very first known victims of the Stockholm syndrome. She married the soldier that had kidnapped her throughout the 1857 massacres, as well as went on to live apparently satisfied, as being a Muslim wife. When Pia stumbles upon Margaret's private letters, she eventually understands exactly how it may have been easy for that female to fall in love with the captor of her and consequently be dissatisfied. Nevertheless, the more compelling question for Pia is actually whether the daughter of her may have been similarly in love. Moving gracefully between the grueling summertime of the 1850s Kanpur as well as the leaden grey winter of modern-day Delhi, Misra weaves an interesting tale of hope and danger.

Jaishree Misra maintains that the values of females are actually completely different from those of males. From the novels of her, she worries herself with issues primarily limited to females, therefore making them ideally suited to a feminist reading. An effort is actually produced to this specific thesis to render a feminist reading of Jaishree Misra's novels.

Lamb and Zeba of Lies and secrets and Neha of - A Scandalous Secret show the abusive selves. They display the destructive forces of oppression on female kids in a male-dominated Indian society. Oppression functions as a significant constraint that impacts as well as afflicts childhood commonly at all levels. In such a sordid society, female kids endure infinite suffering. With their female potential, the protagonists struggle to tide of the suffering & overcome this kind of oppressive conditions. In the process, they start developing self-determination to resist patriarchal oppression as well as an effort to liberate them from it.

Janu in Ancient Promises, Neena of Accidents as Marriage and Love, Bubbles inside Secrets & Maya and lies in Afterwards demonstrate the alienated selves. They learn the destructive impact of repression on females of the androcentric society that is dominated by patriarchal culture throughout adulthood theirs. Repression functions as a significant impediment that suppresses the awakening among females. The heroines endure mental repression at the hands of the husbands theirs. These female's suffering constitutes the feminist anguish of theirs and indicates the entry into the next phase of the evolution of feminist consciousness.

Rani of Rani, Samira of Secrets & Riva & lies of Secrets & Sins show the identified selves. They realize the need to assert the identity of theirs in a patriarchal society

throughout the third stage of theirs of life, womanhood. They celebrate female's attempt at expressing their own female individuality of theirs. This particular phrase becomes a positive force that embodies the development of feminist consciousness. As an advanced level of marketing the feeling of feminist awakening among females, the expression of female individuality is actually regarded as the key feminist theme. At this particular point in determining the self,' the internal voice becomes important. In the procedure of integration, they create a narrative sense of self.

Janu in *Ancient Promises*, Neena of *Accidents as Marriage and Love*, Bubbles inside *Secrets & Maya* and lies in *Afterwards* demonstrate the empowered selves. They learn the female opportunity of theirs and determine love' as a redeeming pressure in their lives. To have determined the self', they obtain what they've preferred as well as dreamt of. They do this by abandoning the husbands of theirs and extricating them from the patriarchal clutches of theirs. As ground breaking people, they assert the self of theirs & achieve economic freedom. For that reason, the brand new females like the autonomy of theirs and illustrate the third stage of feminist consciousness.

The novels of Jaishree Misra house the preliminaries of courtship, reconciliation as well as heartbreak. The protagonists of her just don't wish to be directed towards the home concerns & kids, although they have faith in domestic harmony find it hard to perform it when the existence of theirs is actually questioned. Misra has painted the protagonists of her from the photo of life that is real. She's painted them with a postmodern touch so that several of them also recognize adultery as well as betrayal.

Jaishree Misra has portrayed the new' female who's willing to take the road not taken. Such a female is actually even, assertive, and independent defiant. Comprehensive research of the novels of her reveals that Jaishree Misra's females are actually the females of the brand new era who would like the personal worth of theirs realized.

References

- Agrawal, Krishna Avtar. *“Post-Colonial Indian English Literature”*. Book Enclave. 2007.
- Beauvoir, Simone De. *“Woman as Other”*. *The Second Sex*, Vintage, 1997, pp. 1-38.
- Gilbert, Sandra and Susan Gubar. *“The Madwoman in the Attic”*, 1980.
- Misra, Jaishree. *Afterwards*. Penguin books. 2004.



VOYAGE INTO CHITRA BANERJEE DIVAKARUNI'S *THE FOREST OF ENCHANTMENTS*

S. Tancy

PG & Research Department of English, St. Mary's College (Autonomous), Thoothukudi.
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

The Forest of Enchantments by Chitra Banerjee Divakaruni is based on India's most cherished lovelorn epic Ramayana. This novel depicts Ram's banishment of fourteen years and Sita's life thereafter from her perspective. It also presents Sita's deep-seated desires--her love for Nature. She was indeed the daughter of Nature who could feel their anguish as well as amusement. The forced banishment indeed had its ups and downs which even Ram and Sita could not escape. This paper deals with Sita's life, forest life. It also engages with the other characters in the periphery. But the chief interest lies in the fact that how Sita, staying within the society, highlights the loopholes of our society- how women, through the course of their life, are subjected to racial discrimination in their own house, their society, and, most importantly, how men try to control their lives. Sita's voice further speaks about the art of balancing the public and the private life which is very essential for the entire human race to follow. How Sita understands and analyses the different facets of love also provide a lesson for life to the entire human race is analyzed in this paper.

Keywords: Cultural, Embodiment, Identity, Desire, Courage

Introduction

Chitra Banerjee Divakaruni is an award-winning and bestselling author, poet, activist and teacher of writing. Her work is published in over 50 magazines, including the *Atlantic Monthly* and *The New Yorker*, and her writing comprises over 50 anthologies, consisting of *Best American Short Stories*. Divakaruni is known for her cautious consideration of the immigrant experience, especially that of South Asian women. Her collections of poetry include *Black Candle: Poems about Women from India, Pakistan, and Bangladesh* (1991) and *Leaving Yuba City* (1997), which won the Allen Ginsberg Poetry Prize and the Gerbode Foundation Award.

Chitra Banerjee Divakaruni's *The Forest OF Enchantments* is about the retelling of our ancient prestigious epic of Ramayan from Sita's perspective. As an Indian diasporic writer Divakaruni has nostalgia about Indian culture and tradition. The word culture comprises of behaviours and institutions, for its attempts at retelling an ancient epic through

the female's perspective. This novel focuses on the self discovery of Sita who is a celebrated female character of ancient India. So, Divakaruni has changed her way of thinking from traditional portrayal of simple and selfless women into modern female characters who is searching for their identity in the patriarchal world.

The Forest of Enchantments was published in 2019. *The Ramayana*, one of the world's greatest epics, is also a tragic love story. In this dazzling retelling, she places Sita at the centre of the novel this is Sita's version. It is also a very human story of some of the other women in the epic, frequently misunderstood and demoted to the margins of Kaikeyi, Surpanakha and Mandodari. The novel has mighty remarks on duty, betrayal, adultery and honour. It is about a women's struggle to retain freedom in a world that benefits men, as Chitra transforms an ancient story into a gripping, contemporary battle of determination. *The Forest of Enchantments* is based on India's most adored lovelorn epic *Ramayana*. This novel portrays Ram's fourteen years of exile and Sita's life thereafter from her view. It gives Sita's deep-rooted wish and her love for Nature. She was indeed the daughter of Nature who could feel their grief as well as pleasures. The forced banishment had its ups and downs which even Ram and Sita could not escape.

The book is one of the best versions of the *Ramayana*. This retelling depicts not only elements of honor, love and duty, but it also brings out the ingrained sexism that has prevailed in Indian culture since the times of the great epics. The *Ramayana* is a story told about the marriage of Ram and Sita, their banishment to the forest for fourteen years, Surpanakha's infatuation with Ram, the battle that followed and the final victory of good over evil. She is referred to be the immortal one. Abandoned at birth and found and raised by King Janak's palace in Mithila, Sita the Princess of Mithila is blessed with powers to heal. Thus, she is cherished as the Goddess, though she considers herself a scanty mortal like the others.

The story told in her own voice charts the course of her life, her love at first sight with Ram, their subsequent marriage, her life in her new home in Ayodhya, her feelings and desire for motherhood, her pain in captivity, and finally the sorrow that arises out of Ram's suspicion on her character. While the *Ramayana* resonates even today, she makes it more relevant than ever, in the underlying questions in this novel: How should women be treated by their loved ones? What are their rights in a relationship? When does a woman need to stand up and say, 'Enough!'

The novel focuses on the self-identity of Sita. The self-discovery or self – identity is inevitable as breathing in contemporary Indian fiction. The modern writers have changed the

way from the depiction of traditional portrayal of women but they are searching their identity. Divakaruni gives an unusual interpretations and new exposition about the Indian women's identity. This novel attempts to analyse the self-identity of Sita from Sita's perspective. *The Forest of Enchantments* gives an insight into what happened through the eyes of the strong protagonist Sita who is a daughter of the earth, later adopted by king Janaka. Sita is the wife of Ram and princess of Ayodhya. In this novel Divakaruni introduces Sita, who lost everything except her babies.

Sita is a paragon of humanism, of fidelity, of grace, of sagacity, of valour, and fortitude. In this novel, Sita is the woman from mythology who fights her own battles of hardship. In her single life span, she is abandoned by her parents right after her birth, is exiled with her husband, is abducted by Ravan, and later on undergoes an ordeal of fire to prove her fidelity. Chitra Banerjee Divakaruni revisits the Indian epic in her attempt to reconcile the seemingly irreconcilable. Marie Josephine Aruna believes:

The discourse of mythology is male-centered...mythological stories have represented feats of masculine prowess. Women, on the other hand, remained as docile puppets with their roles being confined in as much as playing victims, gorgons, or mute observers, with no representation of feminine prowess or female heroism or even female nature as such. (230)

Her pertinent efforts to satisfy male egotism make her firmer to rescue her self-esteem by relinquishing the mortal world.

There are three important things when Divakaruni researched and meditated on her findings of the novel, *The Forest of Enchantments*. First – Sita may be the incarnation of the Goddess Lakshmi, but she had taken on a mortal human body with human failings. *The Ramayan* is filled with human emotions. Ram loves Sita so much at a crucial moment. “He becomes hostage to his desire to be the perfect king, which leads him into an action that will break his heart as well as his beloved's” (ix) Second – Sita's choices and reactions would stem from her courage. Sita has a courage of endurance. Sita demonstrates her courage in her life time that refuses to compromise, no matter how much is at stake. Third – the story of Sita and Ram is one of the greatest and most tragic love stories not just because of their Indian Culture but is universal in its theme in the world.

Divakaruni's major theme centered on her desire to investigate the identity of South Asian women, so she has created a new strong woman in her novels. As an Indian woman she was highly influenced by Indian mythology particularly Indian epic *Ramayan* and

Mahabharat. A study of fascinating world of myth gives knowledge to the roots of the society and it makes people aware of their religion, social customs, and rituals way of life.

The Forest of Enchantments was published after Divakaruni's famous novel *The Palace of Illusion*, in which *Mahabharat* told in the voice of Panchaali. She was the kind of writer whose imagination may lie in her topic which she can throw her body and soul. She read the Valmiki *Ramayan* and the *Adbhuta Ramayan* and the *Kamba Ramayan* and her favorite Bengali *Krittibasi Ramayan* form the fifteenth century. In that work pieces she discovered folk songs about Sita and there were many portraits of her, each different in a significant way. It gave me the courage to write *The Forest of Enchantments* of her own version. This chapter deals with the womanhood of Sita and other major women characters.

The novel became a meditation on the nature of love. She clearly portrays the character of Sita as a contemporary woman. It also tells about the goddess Sita who is in the form of human body and how she got into the palace of Mithila and her marriage life in Ayodhya. After that her husband and herself were banished 14 years of exile. It tells about how she managed to behave in a proper way during her marriage struggles in her mother-in-laws house. Chitra Banerjee Divakaruni wrote her story except in the colour of menstruation and childbirth, the colour of marriage mark that changes women's lives, the colour of the flowers of the Ashoka tree under which Sita had spent her years of captivity in the palace of the demon king Ravan.

Banerjee's *Ramayan* is told through Sita's voice. Sita is a young prince of Ayodha. When the king Janak was ploughing, he found a baby lay in his path, she do not cry and she kicked the clothes and enters the word. Some believers believed that god has gifted the king a girl child. Sita says about her martial arts lessons: "she was, in some ways, the real ruler of Mithila, sharp of intellect, clear of vision, balancing kindness with justice" (9). Sita is entirely different from her sister Urmila. Sita says, "I was very fond of my sister, though she was quite different from me, always wanting to play with dolls and dress up in Mother's jewellery, and entertain the daughters of our ministers or visiting dignitaries." (9). Urmila always wanted to play with toys and was fond of jewellery but Sita is a keen observer of her father's ruling, her mother who is a counsellor to her father.

Sita learned how to deal with the troublesome circumstance, from watching the decision of her father. Sita enjoyed the journey with nature, she wanted to feel the plants when she touched the plants, she can feel the healing properties of that plant even she can hear the sounds of plants. Sita has knowledge of different subjects. She is well-versed in

martial arts, understands nature and has mystic powers to cure headaches and colds. Sita says, her strange gift with plants was a mystery to her:

I was earth-born. Maybe for the same reason, when I touched a plant, I know its healing properties. I could tell which grasses cured headaches and colds, which seeds fended off infections, which herbs to give women when their monthly blood flowed too long, and which potions healed the shaking sickness or gladdened a long-depressed heart. (7)

After visiting Ram and Lakshman, Sita and Urmila had fallen in love with them. So they go to the Temple of Parvati in order to pray with Holy Mother. Urmila thought that Lakshman was a fine-looking man. Sita thought that Ram was the right mate for her. Even though she was portrayed as a goddess she has a desire to choose a pair for her. Sita prayed with intensity than she ever before that.

“Endure” is the classic advice Sita gets from her mother as she sets off on her journey from the sophisticated Mithila court to Ayodhya, fraught with intrigues, palace plots and fusty protocols. Her mother Sunaina instructs her daughter to be careful about king Dasharath and his three queens, Kausalya, Sumitra and Kaikeyi.

Kausalya, the eldest wife of King Dasharath. She was chief consort of him but she is not his favourite even though she is Ram’s mother. That was her deep sorrow to her. “she’ll try hard to make you her ally, to support her in her battles against the other queens. Listen patiently to her complaints about the other wives, but keep what she says to yourself. And as far as possible, be polite and respectful to them all and don’t take sides” (48). Sumitra, the exquisite. She is the youngest of the three. Dasharath was infatuated with her beauty.

Initially King Dasharath has no sons, after the holiest rituals all his queens became pregnant. Kaushalya gave birth to Ram, Kaikeyi to Bharat and Sumitra had the twins, Lakshman and Shatrughna. And then Sunaina explains about Dasharath’s second wife Kaikeyi. She is the most favourite queen of king Dasharath. She often drive Dasharath’s chariot when he was at war. She is a healer too. Because twice she saved the king Dasharath. Sita’s mother instruct not to trust anyone in your new home especially Kaikeyi. Kaikeyi became his favorite wife, his counselor and comfort. She was the most powerful person in the palace.

Sita’s mother says about Kaikeyi that, “Be careful with her. I’ve heard that she’s as changeable as clouds in a windy sky. If she takes a dislike to you, your life could become difficult” (50). After Sita reached Ayodhya, she saw her mothers-in-law. Kaushalya was quite a bit older than the other two women. She has a wrinkled face and dark circles under her

eyes. But her smile was genuine. Meanwhile Sumitra is more possessive of Lakshman and more determined to control Urmila, Sita's sister.

One day Kaikeyi invites Sita to visit in the afternoon. And Sita enters into Kaikeyi's chambers, it was more elegant and opulent than those of the other queens. It was filled with unique and expensive art objects. Sita found that she was practicing sword-fighting with another woman. Sita says, "Sweat beaded Kaikeyi's face like pearl drops. Slim and strong and nimble, she moved like a much younger woman. "Something about her stance reminded me of the symbol on her steal, which she'd clearly chosen with care: the leaping tiger" (78).

Kaikeyi wanted to know how well a Mithilian princess fights, so she asks Sita to fight with her. When Kaikeyi was fighting with Sita, she switched the sword from her right hand to her left. She was ambidextrous. Kaikeyi has a sharp sense of humour, sharing funny stories about her follies when she was a new bride. She is a difficult person, hard to understand. Manthara, her nursemaid who came along with her when she got married. Both of them are very close to one another. Manthara the hunchback, she is the resident spy. She is very devoted to Kaikeyi. Manthara creeps around the palace, watching and listening and digging up secrets and reporting back to her mistress, Kaikeyi.

King Dasharath wants Ram to rule over the kingdom of Ayodhya. So he decides to celebrate Coronation. The king loved the ceremony. So he wanted all to be present at the festive event, to bless his son, Ram. Sita's life after marriage is not a happy one. In Ayodhya Kaikeyi who is the dearest wife of king Dhasaradh, she reminded her king to fulfill the boon who has promised before. Manthara entered Sita's chamber to invite her to Kaikeyi's chamber. Kaikeyi wanted to give a wedding gift, and she was asking him to get the gift from her.

Kaikeyi's room strangely appeared dim inspite of gleaming floors and walls. Dasharath sat on a golden throne. And explains the boon which was given earlier to Kaikeyi. She got boons from her husband that is Ram should go to the forest where he has to live as hermit for fourteen years and Bharat will be a king of Ayodhya. Even though Ram was her favorite one she gave first priority to her son, Bharath. Sita had a dream about Kaikeyi and says,

This is what Kaikeyi failed to see: it's not enough to merely love someone. Even if we love them with our entire being, even if we're willing to commit the most heinous sin for their well-being. We must understand and respect the values that drive them. We must want what they want, not what we want for them. (126)

At once Sita begs Ram to fight against his kingdom. “protest. If nothing else, remind your father of his kingly duty to the people of Ayodhya.” (105) Ram and Sita made their way to Kaushalya’s quarters. Ram wants Koshal to have peace, so that he won’t do anything against her mother, Kaikeyi-Ma. Ram explains his thought to his wife Sita:

And that’s what I’m doing. Apart from honouring my father’s promise, which is my duty as his son, I want Koshal to have peace. If I protested, strife would erupt all over the kingdom. Kaikeyi is powerful – she has her own faction here, her won guards, Riots and occur, maybe even civil war. Maybe worse, if she calls upon her brother to come and join her with his powerful Kekaya army. I can’t be the curse of so much death and destruction. (106)

Being a new bride, this makes her life complicated, Ram agreed to go to the forest he insisted Sita to stay with her mother in law because he felt it is too dangerous for women to live in forest but unexpectedly Sita raised her voice, “I wanted to say, not all women are weak and helpless like you think. For all you know, I might be of help to you.” (111)

Sita was bold enough to face any obstacles. This decision taken by Sita without consulting anyone in the palace, the words of a young woman stunned everyone in the palace. So she was ready to go along with Ram and Lakshman. At once Ram insists Sita to stay along with his mother, Kaushalya but she refused to do that. Sita wants to go with her husband to comfort him. Then they were ready to exile for the long fourteen years of banishment. Before Sita leaves Ayodhya she wants to visit her sister, Urmila. Sita held her sister tightly at that time Urmila said that Lakshman refused to take her with him. Urmila says, “Her voice was calm and emotionless, and this frightened me more than if she’d been weeping. He said he had his hands full taking care of Ram, who was his first duty” (116).

Then Sita accompanies Ram and Lakshman to the forest. By projecting this fact Divakaruni breaks the stereotype and shows the performance of Sita. Her love for Ram was won. Then they leave the city of Ayodhya and entered into the forest. When they were in the Chitrakoot Mountain, Bharat came and inform that their father Dasharath was dead now he wants to beg Ram to return and take over the kingdom. Kaikeyi-Ma denounced her publicly in the court and imprisoned her in her quarters. Bharat joined his brother Ram palms and says, “please come back, eldest brother. The kingdom is in turmoil. People are rioting. Many are leaving Koshal. Your return would help Kaushalya-Ma, too. She’s so depressed that we’re afraid for her life” (122). But as per the principles of the family of Raghu, Ram refuses to go with Bharat.

One day they reached a small hermitage which was already known for Ram. In that ashram one beautiful lady named Ahalya was created by Brahma, who then gave her in marriage to Gautam, the ascetic. “Her movements were as graceful as a dance, and her eyes affectionate,” (133). Ahalya devoted to taking care of Gautam. As the king of god Indra believed that such a beautiful woman should belong to him. She was a virtuous wife and rebuffed Indra. Indra make use of the time, when Gautam went deep into the forest to perform a special yagna. At that time Indra is in the guise of Gautam and took Ahalya to bed.

After returning from the forest Gautam sensed that something had happened wrong and with his magical power he knew that what had happened in the ashrams. Then Gautam got furious with Indra and Ahalya and cursed both of them. “For betraying her sacred marital vows for the sake of bodily pleasure, she would be turned into stone. Ahalya declared her innocence, pointing out that she was as much a victim of Indra’s trickery as Gautam. But it was too late. The curse was in full force. Already her body was petrifying” (130). In that scene Banerjee beautifully shows that how female may the victim of men’s mistake. Even though Indra is making mistake but Ahalya was the victim to her own husband Gautam.

After leaving the small hermitage and then they were reached the place called Panchabati. For a decade in the forest life, Sita’s emotion about the childbearing with Ram is portrayed beautifully. She argues with Ram about her longing to have babies. But Ram refused. Ram says that it would not be the right time to bear a child in the dangerous forest. Sita says,

‘We have so many skills. I could teach them self-defence and cooking and gardening and healing and songs and stories and letters and even regal comportment. Lakshman could teach them hunting and tracking and wrestling. You could teach them all about royal duties and higher morals and the use of special astras, and – ’. (140)

Finally Ram refuses and says sorry to her beloved Sita and he says that “please be patient for little while longer, Sita – the way you’ve been all this time. We only have two more years in the forest. It’ll be over soon (141).

Sita sees a girl while bathing in the river, she is slim and brown as bark and hiding behind the tree. She didn’t wear any clothes. The girl asks Sita, what are you doing here? Then she says about Ram’s vows and how they ended up in the forest. The girl instructs Sita to leave that forest because the forest belongs to the girl’s brothers, Khar and Dushan. Then the girl meets Sita’s husband and brother-in-law to tell the whole story of her brother and her kingdom. The girl told her name that was Surpanakha. Then the girl calls her name as

Kaamarupini. Kaamarupini likes Ram and she asked him to marry her. “I really like you. So I’m asking you to be my mate” (146). Kaamarupini says,

‘I guarantee you, ‘kaamarupini continued, ‘I will make you happy. I know all kinds of magic. I can fly halfway around the world with you, take you to beaches filled with silver-white sands where no man has ever set foot, or to mountains so high that from their peaks you can see the entire world. We can frolic in lakes filled with heavenly lotuses. Or if you prefer, I can build you a palace filled with every comfort you can imagine. And should you ever get tires of my looks, I can change them and become slim and tall, or soft and curvy, or golden – haired like the pale women of the north. In fact, I can fulfill every fantasy of yours.’ (147)

Here, in the form of rakshasas Surpanakha having a desire of the human to make her as a mate for her life. She offers everything in her desire for Ram. But Ram refused her proposal. Then Surpanakha went on with Lakshman’s proposal, Lakshman also refused, at once Surpanakha angry with Sita and she ready to fight with Sita. Then Ram instructs his brother to handle the ugly immortal creature. Lakshman picked up his bow and his bow chopped off the girl’s nose and ears. She screamed and vanishes, from a distance her final words heard, “you’ll be sorry. Ah, you’ll be sorry. All of you. My brothers shall know of this – and then you’ll be sorry you were ever born.” (150)

Sita was a child to be humoured in this novel, because she was childish in need of the deer. Sita says, “My need for the deer grew like an ache an addiction.” (156) Even though she does not have a good feeling about the deer, she was a child to be distracted by the beauty of the deer. And she insists her husband to bring the deer to her. Then Ram went in search of the deer. And in sometimes Lakshman also go in search of his beloved brother Ram. Before Lakshman left Sita, he took his bow and draws a big circle around the hut. The line began to glow like a fire. Before leaving Sita he instructs not to step outside this rekha on any situation.

Once Lakshman disappeared, Sita prays to god for her husband to come back quickly. Then Sita was abducted by Ravan a demon king of Lanka. She was dropped under Ashoka tree, he instructs many demonesses to guard the area and prevent Sita from escaping. Ravan want Sita to be his chief Queen and she refuses to become his chief queen because she love Ram with her wholeheartedly. Even in the very comfortable life she refuses to become the queen of Lanka. She will be faithful to her marriage vows no matter what ever may happen. Then Ravan offers, “I’ll give you a year to change your mind. At the end of that time, either

you'll become my queen, or I'll turn you over to Surpanakha, who will love the opportunity of designing for you whatever kind of death she thinks you deserve" (180).

Sita refuses to yield to his advances and maintains her chastity. There are so many women who spoke kindly and some spoke to her rudely. Sita knew that her Ram will come to rescue her, she maintains her faith and confidence in the palace. Under the Ashoka tree Sita is exercising about face Ravan, she acknowledges,

“Allow him to pursue you and at the last moment, step sideways and bring up a knee in a sudden movement to the opponent's groin; when he doubles over, press your thumbs into his eyes to blind him. Or step back as though retreating, and when the opponent lunges at you hit his wind pipe with your hand, held straight as a knife, At the right angle, the impact will break his neck.” (188)

Divakaruni shows Sita as quite courageous who can survive any difficult circumstance, she can easily move forward in spite of obstacles who never gives up, the courage that speaks in her journey no matter what the cost Indian women do. After many adventures, the story leads up to the battle between Ram and Ravan. Finally, Sita is rescued. Ram summons his wife but instead of being blissful at seeing Sita, he feels guilty and shame because his wife had lived in the palace of another man, her purity has been called into question.

Sita broken up by his words undertakes an ordeal by fire to prove her chastity to Ram and his people. Sita calls upon Agni (the god of fire) to testify her loyalty and purity. She said, “Build me a fire. There's nothing left for me on this earth now that my husband, Who I love more than my own self.” (245) Agni god recognizing Sita's chastity refuses to consume her. Sita suffered numerous horrors for no other reason than that she is Ram's wife but Divakaruni's Sita strikes hard to make her voice in which time to stand up and say enough. She has presented Sita's agnipariksha episode is a moment of feminist brilliance.

As a part of demolishing the stereotypes, Divakaruni added many new dimensions in the novel which added new features in Sita's character. When the battle between Ram and Ravan is over, finally fourteen years after Dashrath's declaration, Ram sat on the throne with his wife Sita. The gossips starting over there in Ayodhya spoil the reputation of Ram. So he gave order to his brother Lakshman to drop Sita in the forest, near sage Valmiki's hermitage without informing Sita.

Ayodhya again banished Sita into the forest, Sita knows the injustice, and so she raised her voice once again. Sita ordered Lakshman, “You go back and tell him this,

Lakshman. He sentenced me to banishment because people were whispering that I might have betrayed him. But he's the real betrayer, who's going to sentenced him.” (317) Sita walked into the forest, she observed the absence of boundaries and felt for her babies who are the most innocent creatures in the world. Later Sita realises the fact that she will be a single person to raise her children. During the difficult journey she is emotionally strong and positive her mental strength should be praised. She reflects,

‘I’m going to live for you. I’m going to guard you with my last breath. I’m going to love you enough for mother and father both, so you feel no lack. I’m going to teach you everything you need to know to be princes. But more than that, I’ll teach you what you need to know be good human beings, so that you’ll never do to a woman what your father has done to me. (317)

Sita and her sons Lav and Kush live in the shadows of the forest. Sita never rested always smiled with her son’s lives which were not easy for her but she handled her difficult situation with hope. This shows that Sita is a female counterpart of supreme beings. She is an embodiment of courage, spirit, wisdom, compassion, and endurance and Sita will resonance in today’s time.

Divakaruni’s *The Forest of Enchantments* shows Sita as a strong, resilient, positive, symbol of love and courage. Throughout the novel, women be the victim of her own husbands and it was beautifully portrayed by Divakaruni. This courage that has been reflected for centuries in the lives of women. Divakaruni’s protagonist not only search for their identity but they create self identity. This novel chooses as its medium one of the most extraordinary woman character of Indian mythology. Sita creates everlasting impression in the minds of the readers showing the path for all women.

References

- Adichie Ngozi, Chimananda. *We Should All Be Feminists*. Vintage Original, HarperCollins, 2014, pp 4.
- Aruna, Marie Joesphine. *Patriarchal Myths in Postmodern Feminist Fiction: Select Study*, Pondicherry University, March 2010, pp. 230
- Divakaruni, Chitra Banerjee. *The Forest of Enchantments*. Hapercollins, 2019.



NATURE AND MAN: A STUDY OF AMITAV GHOSH'S THE HUNGRY TIDE

J. Theres Rahina

PG & Research Department of English, St. Mary's College (Autonomous), Thoothukudi.

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Ecocriticism aids in comprehending the intricacies of man's relationship with nature as shown in literature. This relationship varies by species and highlights the qualities of both nature and humans. India is a country rich in ecology with deep roots in the natural world. As a result, it blends in well with the surroundings. The Sundarbans is an example of a place that is profoundly connected to the planet's ecology. Amitav Ghosh has written on the beauty of the place as well as the lives of the people who lived there. In an eco-centric environment, he has brought out nature and man from his perspective. In the novel *Hungry*, he depicts the surrounding area and discusses the protagonist's relationship with nature.

Keywords: Ecocriticism, Sundarbans, Ecofeminist, Nature, Dolphins, Ecocentric.

Introduction

Ecocriticism deals with artistic comment which claims to explore the connection between writing and earth. It covers the investigation of writing, human studies, social science, brain research and so on and attempt to consider the state of mind of humankind in environment. Notable class include eco poetics, nature writing and ecological artistic feedback. Ecocriticism isn't just the utilization of environment and biological standards yet in addition the investigation of writing and hypothetical way to deal with the associations of the environment, culture and its intricacies. It is additionally an investigation of dialect through which writing is communicated. Writing famous for copying the contemporary issues couldn't have stayed untouched from this idea. This uprising danger to humankind from persistent abuse of our environment has grabbed the consideration of the journalists in later past. The textualisation of previously mentioned ecological issues in scholarly works has offered ascend to another division of artistic hypothesis, to be specific ecocriticism. Greg Garrard in his book *Ecocriticism* says that,

Environmental problems require analysis in cultural as well as scientific terms, because they are outcome of an interaction between ecological knowledge and it's cultural inflection this will involve-disciplinary scholarship that draws on literary and

cultural theory, philosophy, sociology, psychology and environmental, history as well as ecology.(14)

Ecocriticism, like other branches of the ecological humanities, morals, history, religious studies, human studies, and humanistic geology, believes that natural wonders must be comprehended, and that the current burgeoning exhibit of natural concerns must be tended to subjectivity as well as quantitative. The driving force of new creative ability, vision, will, and conviction is at least as important to their repair as logical leaps ahead and stronger administrations of plan execution. Innovative depictions of ecological mischief, without anybody else, are unlikely to free societal orders from forms of living that are dependent on rapidly changing settings. Ecocriticism agrees with various branches of the ecological humanities, morals, history, religious studies, human studies, and humanistic geology in believing that natural wonders must be comprehended, and that natural wonders must be understood.

In the contemporary world, nature has been the centre in many noteworthy art works. Due to various developmental factors, there has been a lot of destruction in environmental landscape. The change in the social and economic situations of the world has totally changed the portrayals of man's disposition towards nature in scholarly articulations. Ecocriticism is a quickly extending zone of research covers extensive variety of writings and speculations which examine the relationship of man and nature. Ecological investigations in artistic messages through nature symbolism, sexual orientation develop, women's liberation, man-lady relationship, tourism, culture and so forth have more extensive implications than what is depicted through their exacting articulations. In Indian works in English, there are numerous abstract books that mirror the topic of ecocriticism in them. There are numerous ways that creators have investigated natural issues. In a few books it is integral to the book, while in others, it is optional to the story and of different topics. There are a plethora of Indian works which revolve around the environment thanks to the abundance of flora and fauna in the country. Despite direct correlation there is nature intertwined with the setting. The glorification of nature and description by writers gives gleam to the art work.

Analysis

Ecocriticism aspires to create a bond between man and his society that evolves into a more harmonious civilization. Ecocriticism is a discipline that seeks to recognise that man is both a reflection of and a mere representation of ecosystem. The primary goal of ecocriticism is to reorient man away from his current state of ignorance. There is a desire for breaking the inhumane and raising a humane transition among society, which is based on

an ecocentric vision. Ecocentrism provides a successful solution by integrating diverse society aspects.

Amitav Ghosh's *The Hungry Tide* is one of the novels which has been written in the current era. In *The Hungry Tide*, Ghosh explores the tensions that exist between and among human societies, as well as their unique relationships with the outside world and the more mundane realities of nature that evolves and is constantly transformed by people. The tale is about a marine biologist (Piyali Roy) and her bond with nature. Water is both a builder and a destroyer of relationships. When Piyali Roy nearly drowns while on board a boat, they form a relationship. Fokir saves her from drowning. It develops into a lovely friendship/relationship. When he sought to protect her, his life was robbed from him. This concludes the discussion.

The story entirely revolves around Sundarbans, which is one of the suburbs of India. Ghosh portrays the entire novel as the ecological witness in the region of west Bengal after 2004, which is completely surrounded by the mangrove forest. The characters employed in the novel intersect at various grounds and provide a striving purpose in illustrating the ecological factors in novel. The narration has vividly explained the indispensable role of each aspect of nature such as crocodile, tiger, and various other animals in the entire story. Here characters and elements of nature have a wholesome part to justify environmental happenings and the course of change. The characters strive to ceaselessly explain and act as a bridge between the present and the past.

The beginning of the story is set on a train journey, where one of the protagonists, Kanai Dutt, a city based Translator, encounters another protagonist Piya, and he understands by her appearance to be a foreigner despite her Indian tone. The travellers are designated towards a same destination have a purpose to be accomplished, which is the central element of the plot. Kanai is translator from Delhi and he travels to Sundarbans to visit his aunt and get acquainted with the letter, which his dead uncle had left behind. Piya's purpose is revealed through the conversation, as she is returns to her native land from Seattle to find out a rare species of Dolphin, as she works as a Marine Biologist. They depart at Lucibari after Kanai invites Piyal to his place as a nice gesture. He is accompanied by his aunt Nilima, and surprised to see the changeover of the entire place as he visits Lucibari after a long time. The water flow in the river has noticeably changed and also seems to be muddy.

Persuasively, Nilima made Kanai read the entire document, which was in the form of a hand written dairy. She insisted him to read the entire letter for the sake of Kusum, who is dead and an old friend of Kanai in Lusibari. The letter consists of the record of the main events that took place in the year 1979. Later on, Nilima narrates the entire happenings of

Morichjhanpi massacre, where Kusum was killed. Nilima introduces Kanai to Fokir's family, and Fokir, son of Kusum, who is a local illiterate fisherman. Kanai comes to an understanding of how unsure the tide is in Sundarbans after he interacts with Fokir's wife Moyna. Meeting held in the hospital gave him a perspective, and thorough out the meeting Moyna was keen about sending their son Tutul to school. Moyna has deep objection towards her son to ride along her husband and she has plans for his son to attend school in the near future. Entire conversation doubtlessly enthralled Kanai, as he was clueless about the massacre and Fokir's family's plight. The narration gradually takes back to the memory of Kanai, when he met Kusum in the year 1970, and she was under Nilima's care as Kusum's family has broken apart. Kanai also reminisces the performance they watched together and the last time he saw Kusum.

Parallely, Piya has come to her native land to excavate a rare Dolphin species. Forest department of Sundarbans grants permission for her research and she seeks aid from the local fisherman. A forest guard offers to help her along with a boat pilot, Mejda. They set off for their destination into the woods and they reach a particular spot as Mejda proposes that they could spot the dolphin. Piya could realise after a while that these people are not helping and they are just condescending. The reckless attitude of the men intimidated her as she almost drowns into the water. She calls off the entire works as the men are not reliable to help her in anyways. However, in a meantime, Piya encounters Fokir before and they begin their pursuit in the search of the dolphin to a place called Garjontola, where they encounter few Irrawaddy Dolphins around the area. Piya is overwhelmed as the day is not a failure and she could mark certain amount of progression in her work. Moreover, the genuineness of Fokir along with his son is an added factor in seamlessly pursue her work. However, the risk is like an inevitable factor as Piya almost lost her hand to crocodiles, which are also present in the water.

Piya then decides to seek help from Kanai, who has already invited her to Lucibari. Nilima also offers to help Piya by allotting the guesthouse for Piya's stay during her time of research. Meanwhile, the narration takes the readers through the letter and details the meeting of Nirmal, Kusum and Nilima. Refugees of Morichjhapi were in a great distress due to various causes and also explained in the letter. Later, Piya along with Fakir and Kanai set off to Bhotbhoti to continue her study and Kanai decides to be as a translator between Fakir and Piya. Nilima shows her disapproval when Kanai prepares to leave along with Piya, as tiger kills people every week in the place they are about to visit. This is a strong evidence that government priorities tiger over common people and they are the actual victims. Further, they

move towards the Garjontola pool in order to begin the research. Kanai beings to translate as Piya starts to talk about how she developed interest towards study of dolphins.

They encounter endless struggles throughout the stay in the pool. Kanai along with Horen decides to leave the place as Piya is able to communicate with Fokir better than the previous time. Kanai learns about a cyclone in the Garjontola pool later, but he was unable to return to the place and rescue them. Unfortunately, Fohir is hit by something large and he dies in the boat. Piya returns to Lucibari and narrates the whole incident to everyone. Piya also decides the name the project as Fokir.

The disposition of the characters in the novel has various factors that impedes their communication and nature acts as a driving force in order to unite them. Kanai's prime duty seems to act as a bridge between Piyali and Fokir, but there is a gradual progress in their relationship, where Piyali was able to comprehend the information communicated by Fokir. This stems up to the understanding of unity that nature has taught the characters in the novel. The portrayal of the character Fokir has also deepened the ecocentric narration of Ghosh. Fokir, the local fisherman, though kills animals for living also plays indispensable role in conserving them. Ghosh strives to give ecological solution to the central issue of the novel by effectively connecting past and present. The dramatic depletion of the nature is insisted as there is instinctive call of attention portrayed through the character Kanai. Postcolonial emphasis also deliberately insists that ecological balance as Ghosh vividly describes the past and the need for the present change in the environment. Nalimia being the strongest postcolonial character proves to reinforce that human beings are part of nature and she resources to insist on saving animals and explains the danger of it. The strongest message of ecocentricism is conveyed through connecting indigenous people with their nature in which community based ecology is explained. Reconciling with nature is also strongly projected alongside of the entire story.

The grinding amongst arrive and the ocean in the Sundarbans makes a steady rubbing between the plant and creature life. Man's consistent infringement of the environments of the Sundarbans just legitimize the pressures between the different components of nature.

For pilgrims, the Sundarbans offers to a great degree eccentric and unreliable life. Terry Tomsy in his article when talking about the novel says that, "By dramatizing the encounter between bourgeois characters and the traumatic history of people inhabiting the Sundarbans region of Bengal, Ghosh suggests that an unreconstructed cosmopolitanism is incapable of addressing social injustices"(53). The Hungry Tide is a deliberate attempt to provoke readers to think in fresh ways about the role and meaning of place in fictional and

nonfictional narratives—both in narratological and ideological terms. In short, Ghosh's depiction of the Sundarbans exposes the limits of conceiving character and setting as distinct categories.

Distress and ousting are consistent dangers and assaults by tigers which are generally normal. Tidal surges demolish the dependability of life on the island with no notice. Amitav Ghosh's *The Hungry Tide* always talks about the contention amongst man and nature with regards to the Sundarbans in India and Bangladesh. The novel mirrors the contentions between the occupants and the oceanic and untamed life of the Sundarbans.

On all levels of the story, in fact, the forces of the global interact powerfully with the local, be that in ecological, economic, or cultural terms. And, in the end, an engaged globalism and an engaged localism emerge as constitutive, and are posited together opposite the force of destructive national and regional politics.

There have been various instances in the novel which cite the relevance and dependence upon nature for livelihood. The entire scene is set in the Sundarbans which is an area which dwells in costal biodiversity. "Ecology found its voice by studying the properties of species, their distribution across space, and their adaptive discourse in time"(69) says William Howarth in the *Ecocriticism Reader*. This stays in tandem with the life lived by the characters in the story. Piyali Roy by profession is a Marine Biologist who lives a life by studying the intricacies in the life of the renowned Irrawaddy Dolphins. Ghosh has shown this character as a person of strength and grit to withstand the problems faced by the government and so on. She is an Ecofeminist. Where she earns the name of being a feminist by her ideals and her very close connection and desire to study this particular breed is depicted in the novel. As Karen J Warren states in her work, she claims that Women and the environment have a closer walk together. As they have close connection with nature, they have their pursuits too in accordance to their walk with nature. Piyali Roy as a cetologist helps in the understanding marine animals and others. In the end the connection established between her and the environment is evident in the text.

There are no borders here to divide fresh water from salt, river from sea. The tides reach as far as three hundred kilometers inland and every day thousands of acres of forest disappear underwater only to re-emerge hours later. The currents are so powerful as to reshape the islands almost daily some days the water tears away entire promontories and peninsulas; at other times it throws up new shelves and sandbanks where there were none before.

India is a country which is rich in biodiversity. The country is rich in Flora and Fauna and hence it is seen in the works of writers. This collage of ideas and thoughts sync well with the literature. In accordance to that, literature has come to grow alongside with such scenic and aesthetic descriptions in the works of Indian Authors, Ghosh *The Hungry Tide* is one such novel which has immense amounts of such literature in correlation to that. The protagonist itself studies nature and the tale tapers on that very note. Piyali Roy tries to do research and can be seen as an eco feminist based on her work. Nature is seen as a provider in her household too, despite not being the traditional provider, it does provide in a different way. The novel is filled with ecocritical elements and stands as literary elements which add flavour and beauty to the novel by broadcasting the relationship between man and nature. This is highlighted in the novel and the plans and ideas that help nature and man's coexist one.

The harmonious balance between man and nature is meticulously explained through the novel. The fact of coexistence between man and nature is inscribed through this novel. It also paved way for man to understand that there is no life possible without establishing relationship between man and nature. Mother earth has infinitely generated various problem, which is an inductive reminder to safe guard the earth. Literature acts as a tool and a medium to link nature and man and also strives for effective commencement of actions to mankind. Ghosh has remarkably included the elements of caution through every character deployed in the novel. Ecology has proved to be a striving force throughout the novel which alters the way of life people lived in the past and also featured in the present. There is fear instilled in Moyna, who is depicted to be the one of the bravest characters with will power, fears nature to safe guard her son's life. This is the strongest reinforcement from nature against all odds to win man. The thematic concerns of the novel also revolve around an issue of global dimension. The novel forges a prominent concern about the survival of an ecologically balanced labyrinth like the Sundarbans. At the same time, the novel documents the pitiable plight of the impoverished and homeless refugees in their fertile surroundings to ensure their survival.

References

Garrard, Grey. *Ecocriticism*. Routledge, 2004.

Howarth, William. "Some principles of ecocriticism". *The Ecocriticism Reader: Landmarks in literary ecology*, 1996, pp. 69.

Tomsky, Terri. "Amitav Ghosh's Anxious Witnessing and the Ethics of Action in *The*



Marian Quest – A Bi-annual Multidisciplinary Research Journal. Vol.13 ISSN2249– 7145.

Hungry Tide.” The Journal of Commonwealth Literature, vol. 44, no. 1, Mar. 2009, pp. 53-65.



PARSI MIGRATION AND THEIR ELUSIVE PAST IN GIEVE PATEL'S POEMS

L. Jacqueline Leo

Associate Professor of English, St. Mary's College (Autonomous), Thoothukudi
Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

The trials and tribulations the earliest Parsi ancestors suffered in the hands of their Arab invaders necessitated desertion of and displacements from their homeland Persia. The apocryphal accounts on their turbulent journey by sea from Persia to India and on their original settlement in the shores of Gujarat, handed down to the successive generations kindle and keep alive their nostalgia over the celebrated lives of their Persian ancestors. The advent of the British and internal migration to Bombay took them to the centre stage only to be relegated to insignificance in the politics of numbers in democracy post independence and eventually “longing for the past” revisited the community. Amidst intergenerational sentiments, transitions and variances over centuries and a regretful assumption of divergent squalor, Parsi community is passionately stuck to its religious exclusivity, while it exhibits virtues of acceptance and kindness aplenty and a remarkable adaptability to life in a different country with multiple cultures. Gieve Patel's writings portray in a remarkable way the Parsi ethos. In this article, an attempt is made to trace and highlight such ethos as is evidenced in a few poems of Gieve Patel. The setting for many of Patel's poems is his locale - the shores of Gujarat and Bombay.

Keywords: Parsi ancestors, migration, sea, racial memory, internal migration, changes, challenges, survival, nostalgia

The Zoroastrian religion of the Parsi ancestors was handheld by the Persian Empires and nurtured under the shadow of the crown, and it met with its downfall as the political authority was lost to the Arabs. The persecutions and tribulations in the hands of the Arabs forced the ancestors of the Parsis, the once mighty Zoroastrians, out from their homeland, Persia. After a turbulent voyage by sea, they took refuge in Sanjan on the shores of Gujarat and adopted Gujarati as their language and the country as their own. Unlike any other migrant grooming an ancestral pride and boast of it, Parsis don't harbour an aim or idea of return to homeland. Indian hospitality, tolerance and multicultural diversity allowed them to live free from fear and to practise their faith without significant strictures. Gieve Patel, a Parsi writer,

uses his works as a medium to show case and safeguard their Zoroastrian identity and to bring out their current predicaments. There is something unique, special and refreshing apparent in his writings, in his paintings, and sculptural works. As Arundhathi Subramaniam rightly says, his thoughts are always profound and explore the harsh realities of an issue with the help of symbolic interpretations. His poems are filled with many such symbols.

Migration may be voluntary or otherwise, either resultant of the fear to avert a catastrophe or of the search for better pastures or is a mixture of both rise and fall. Parsi migration was to escape from disaster in the hands of Arabs and was through a voyage by sea. Sea has been viewed as a saviour, a source of migration and a space to promote life in the land. Patel in his writings uses life images like, “sea,” “sand”, “air” “mountains,” and “valleys” with the spatial travel that his Parsi ancestors experienced through their migration from Persia to India and to point out that life for them was full of ups and down and in the quest for yet another space to move on.

Patel talks about replacement during migration as the theme in most of his poems. He beautifully examines the space consciousness of the Parsi community in the poem, “The Place” where he finds the issue of accommodation as not simply borne of availability, suitability or affordability but stemming from opaque instincts. Like a “tryst” the reason is kept “inward” and not amenable to logics. There are no modest reasons to prefer a “lumpy, dusty” place, since the chooser is not ascetic but aesthetic, “Outright beauty too has pleased” (13) them. Madusudhana Rao says that in the post-modern era, writers universalize “*personal*” description of the place, when they internalize their places – their imaginary homelands in their chosen linguistic metaphor. Here, language is the mode of internalizing the “*place*.” “As they vivify the place in language and metaphor, irony and apathy, endearment and disgust – finally the place “becomes” the poet’s self.” (47) When Patel talks about “The Place,” it becomes the Parsis’ “self.” “We make ponderous choices, rejecting / That cool well side for no mortal reason /Favouring instead a lumpy, dusty stone”(7-9). Like atom bonding, the space is being selected and rejected to sit upon, “. . . as the one spot / We had been urgently seeking” (10-11). The journey helps him relive the racial memory that lands him onto the period of migration:

Like that seashore, dense with moonlight
Igniting water, sand and air
Into a blind shimmer; our
Recurrent wrangling the
One division to mar

That places simple perfection. (14-19)

The Parsis have survived against many odds and have done wonderfully well in the land that adopted them. The apocryphal accounts of Parsi migration would say that on their entry into the Indian shores, the local ruler, Jadi or Jadhav Rana offered them with a bowl brimful of milk signifying that there is no space in their lands to accommodate any more people and that the Parsi head priest responded by slipping some sugar into the milk indicating that they would dissolve into the society, like sugar does in milk, sweetening it but not unsettling it. Parsis have indeed been the “sugar” that for centuries has sweetened the flavour of the Indian ethos. They shaped the city of Bombay and also shifted their centre of activities from rural Gujarat to the city at the advent of the British. They benefitted a lot due to their hard-work; their fortune and influence grew multi-fold. Parsi names cropped up all over Bombay, attached to streets, blocks of housing, public gardens etc. When the first Parsis:

. . . arrived in Bombay in the mid-seventeenth century, Bombay was little more than a collection of fishing villages . . . surrounded by swamps . . .

Within the next hundred and fifty years Parsis would shape the familiar physical outline of Bombay and would become some of its principal inhabitants. (Palsetia³⁵)

Poems like, “City Landscape” and “Public Works” display Patel’s concern for the earlier Parsis who have made the city of Bombay grow and prosper and their present sordid state of affairs. For Patel, the streets of Bombay are the quintessential space of the society, not just thorough fares connecting one place to another. The opening quote from “City Landscape” reminds us that, for Patel, coexistence with the miserable and endurance with difficulties are inescapable features of the Parsi life:

I pick my way
Step by ginger step between
Muck, rags, dogs,
Women bathing squealing
Children in sewer water, . . . (1-5)

In “Public Works” he imagines the city that was built on seven islands and literally rising out of the water and doomed to destruction by the very medium which gave birth to it. Violence is conveyed through the images of chaos wherein he creates a fantasy of “polished chrome” crashing down in rust heaps and fires all over the city making it unpleasant and damp at present, “And fire places all over the city / Choking in wetness; electric grills /

Losing their orange glow, kerosene stoves”(13). The city “shrouded with smudge”, is suggestive of the modern industrialised city with its dirty and paltry life. Patel bemoans the fact that the modern atomistic approach of man to everything, has split up his soul and body and reduced the latter to something lumped together like clods of clay.

The sea image is evoked more effectively in “Haunting” representing migration: “In clotted har / bours”(1-2) by the, “tide’s pull”(6). Patel feels that the lepers and he himself are the last hopefuls “to haunt / the wat /er’ s edge (12-14). They come with the hope of healing their sores and discomfits in “primal salt” but now the harbours are clotted and filled with waste polythene shopping bags and they sewer the water gurgling in their bellies and there is no way for healing. The sea never takes rest on their primal glories. His longing for the better future to transcend all kinds of Parsi boundaries to enter into a global humanists attribute is best illustrated through descriptions like:

think
ing to heal
their sores, wishful faith
in primal salt. I
come watching for that hour, (15-19)

Migration is a continuous threat especially for the poor among the community. Patel proves through his writings that the Parsi migration is a social milieu and that most of his poems go with the coastal village Nargol with a predominant Parsi settlement. The large villas, cottages, and bungalows stand as a proof of the affluence that prevailed in the Parsi past. Now in the Postcolonial period, everything is in a state of neglect. Broken windows, walls ruined by the elements of nature, and creepers grown all over the walls and doors tell a sorry tale of despair about their owners. “Nargol” is a monologue and Patel is the persona who talks about the deprived and the dispossessed due to the social changes. He dramatises the resentment of the people to the poor and the oppressed through the metaphor of the poet’s ambivalent attitude to a beggar woman who is associated with his visits to the village. “Let herself recede. / I reach the sea.” (24 - 25). Initially the poet despises the sight and thought of the beggar; he sends her away. Later when he reaches the sea he is preoccupied with her absence and ponders over Parsi memory of carrying the Parsis on his back: Walking to the sea I carry /A village, a city, the country, (71-72). On a deeper level the beggar woman represents how the Parsi community struggled for survival as they lose their individuality during their migrations.

Patel craves for their robust Parsi spirit, the Zoroastrian supremacy in their Persian distant past and for the magnificence and glory they espoused later from the British during colonisation till independence. However, for Parsis the longing for regaining any of the lost past continues to remain flimsy and vague, while the threats of survival are real and formidable largely because of their love for retaining religious exclusivities. Parsis aren't quite comfortable with the aloofness and neutrality as well in the Indian society divided between Hindus and Muslims. In "The Ambiguous Fate of Gieve Patel, He Being Neither Muslim nor Hindu in India", he decries the Parsi position of being a non-entity in the mainstream India: "To be no part of this hate is deprivation" ... "Bodies Turn ashen and shrivel/ I Only burn my tail." Parsis have lost abruptly altogether the centre-stage post independence.

The anguish and affliction of the working class, who are the real victims of the society, get reflected in poems like "Servants" and "Dilwadi". He dramatises the single moment of migrants entering the city by portraying how they came off peasant stock from Gujarat to the city of Bombay - a migration within the settled land, having lost their roots and personal relationships in the process of migration, sit mute without the aura of life – like animals in "Servants":

. . . The oil flame reflected in their eyes,
Large beads that though protruding
Actually rest
Behind the regular grind
Of the jaws. (21-28)

The poem laments the reality of the labourers who are reduced into limited dehumanized individuals, echoing their experiences of successive migration since their leaving from Persia, yet it traces the holistic essential elements of humaneness writ large and deep in their actions:

They sit without thought,
Mouth slightly open, recovering
From the day, and the eyes
Globe into the dim (15-18)

The poem is suggestive of the study of the history of human minds in the context of survival; particularly this can be applied to Parsis' continuous struggle to adapt themselves in various cultural settings, inclusive both of the British and of the Indians.

In "O My Very Own Cadaver" he talks about the social problems which affect him as a Parsi and says:

I see my body float on waters
That rush down the street,
Like a leaf that humps its way
Over pebbles. (1-4)

With a beautiful undertone he says that his body seems “insubstantial,” but it has become “tough as plastics” and with ease he could meet any “bizarre fate”. In “It makes”, he argues that there is no sense in keeping the migrating body flawless, like a hermit sealed, in a compact, “box of incorruptibles” (5) not mingling with “the world passage” (13) and so it is better to break the shell and pierce out happily into the open-air, “Better shot through and through! / Interpenetrated/- with the world” (6-8). He considers himself a sorted, classified bead, “thumbed” on a string by threads of all hues, “riddled,” challenged to live happily in the modern world among varied heritage and senses from which he has to come out, interpenetrate into the world and absorb himself into the ways of the world. The last three lines show the adaptability enforced by piercing the, “threads of all hues / riddled, / happily” (20-22).

In “Of Sea and Mountain,” the image, “Water to/ heal” (27-28) implies a hope of survival. Patel breaks the sentences and words to give an onomatopoeic effect and reiterates the impact of sea on the Parsis as he describes the sea:

. . . un
furl a stir in the air an
nouncing
a flood of green tides
signalling them to move on.(32-36)

The images get continued in “Of Sea and Mountain”, where Patel reflects on the community’s boredom and longing for an elusive fulfilment. Whenever he is perturbed at “a sinking boredom” (4) or at “pity and anger” (10) and “on both the occasions,” (14) he rushes out, . . . from the gallery / On to the road / To fill your lungs with air (14-16). Patel continues to say that it is on such occasions that he reflects on the sea to give him power to overcome the inconsistencies of his inner life: “Then O sea I think of you- / Your unbroken chain / Of deep salt waters” (18-20).

Patel seeks the “unbroken” chain of the deep salt waters of the sea to give him depth and clarity in thought and the “immutable” structure of mountain to withstand the endless burden:

At such times O mountains

I long for your structure
Your seemingly immutable
Rise and fall. (38-41)

In “Turning Aside” he wishes his “Embattled mind” to settle down “to sweet quietude” so as to become one with a buffalo, in the “mango shade” of a pool full of water buffaloes. Patel tries to get quietude in the “mango shade” at the ponds along with the buffaloes. The very existence of the water buffaloes in the pond’s edge, their sleepy head wearing a mud crown with half shut eyes, cleaning the oozing into their nostrils with their tongues and their clod “by clod/ plopping / into the water” (29-31) are all remarkably elucidated. It concludes with a revelation. What is sought from the fierce God is a sign of mutual regard to lull him, to quietude. Nature reappears, not merely to set the scene, but to lead to an illumination. The references to ageing and the quest for quietude embodied in the movement of the verses, resonate the ageing community and its desperation: “Embattled mind, settle down so / to sweet quietude” (44-51) acquires the tolerance to accept the world as it is.

Patel’s poems contain, much through symbols, a strong reflection of Parsi ethos and pathos borne collectively of their ancestral pride, its deprivation, migration from Persia, adoption of Gujarati, adaptation to Indian culture, religious exclusivity, ascension to centre stage with the advent of the British, abrupt loss of primacy and relegation to a non-entity in the independent India, and multiple other reasons specific to the community. The intergenerational longings for the memories and glories of past, closer or farther, are interwoven in his works through striking symbols.

References

- Abidi, S.Z.H. *Studies in Indo Anglican Poetry*. Bareilly: 1987.
- Sharma, G.V.L.N. “R. Rabindranath Menon’s Poetry”. *Contemporary Indo-English Verse*. Vol.2. *A Collection of Critical Essays on Male Poets*. Ed. A.N. Dwivedi. Bareilly: Prakash, 1984.
- King, Bruce. “The Poet’s India: Ezekiel, Ramanujam, Patel, Daruwalla and Shiv Kumar.” *Modern Indian Poetry in English*. Ed. Bruce King. New Delhi: Oxford UP, 2005. 110-128.
- Kirpal, Viney Pal Kaur. “The Poetry of Gieve Patel: A Critical Scrutiny.” *Living Indian English Poets*. Ed. Madhusudan Prasad. New Delhi: Sterling, 1989.175-185.
- Nabar, Vrinda. “Gieve Patel Poet as Clinician of Feelings”. *The Indian Literary Review* 3.3 (Oct 1985): 49-55.



- Nair, Ramachandran K.R. *Gathered Grace: An Anthology of Indian Verse in English*.
New Delhi: Sterling.1991.
- Palsetia, Jesse S. *The Parsis of India: Preservation of Identity in Bombay City*. Leiden:
Brill, 2001.
- "Parsi." Encyclopedia of World Cultures. *Encyclopedia.com*. web. 9 May. 2016
- Parthasarthy, R. Ed. *Ten Twentieth Century Indian Poets*. Delhi: Oxford UP, 1976.
- Patel, Gieve, *Poems*. Bombay: Nissim Ezekiel, 1966.
- Subramaniam, Arundhati. "Gieve Patel (India, 1940)". *poetryinternationalweb.net*.
1 Dec. 2005. Web.18 Jan. 2013.
- . . . , "The Poet as Profane Monk".1 Dec. 2005. web.18 Jan. 2013.
- Sunil R.Sawant . "The Encounter Between Self and The Other in Gieve Patels Poetry."
Indian English Literature.Vol.3.ed.Basavaraj Naikar. New Delhi: Atlantic, 2002.
27-38.
- Vibhakar. "Gieve Patel's Poetry: An Exploration of the Body." *Contemporary Indo-
English Verse*. Vol.2. *A Collection of Critical Essays on Male Poets*. Ed. A.N.
Dwivedi. Bareilly: Prakash, 1984. 82-88.



A STUDY ON ENVIRONMENTAL IMPACT OF SOLID WASTE MANAGEMENT IN KOOTTUDANKADU OF THOOTHUKUDI DISTRICT

A. Sudha and M. Magisha

PG Department of Economics, St. Mary's College, Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Solid waste dumps are seriously spoiling the environmental conditions in developing countries. Negative environmental impact from improper solid waste dumping can be easily observed everywhere in the developing world. In India, due to a lack of proper planning and funding, the solid waste management scenario is becoming worse day by day. To highlight the main causes of improper solid waste management in developing countries, Koottudankadu urban area is selected as a case study. This urban area is facing miserable solid waste management crises due to rapid industrialization, urbanization and insufficient funding. Improper solid waste dumps are spreading different diseases in the study area. It is investigated during in population, increment in solid waste generation rate, management deficiencies, lack of legislative implementation and funding, the solid waste management systems of koottudankadu are not working effectively. The major causes for the inefficient municipal solid waste management systems in koottudankadu are the unintended invasion of the city, severe weather conditions, lack of social awareness, community involvement, improper resources including improper equipment and lack of fund. An inefficient municipal solid waste management system may create serious negative environmental impact like infectious diseases, land and water pollution, obstruction of drains and loss of biodiversity.

Keywords: solid waste management, Municipal solid waste, Waste management, Environmental impact, land pollution, Dumping, Infections diseases

Introduction

Industrialization, fast urbanization and population development have affected the healthy relationship between human beings and nature. Numerous human activities produce huge amount of solid wastes throughout the world and their management has become a technical and environment challenge. Many of the garbage are removed in ecologically unsustainable manner by open dumping or burning, or minimum quantity of waste was enzymatically decomposed with microorganisms due to their ability to secrete enzymes.

These environmentally harmful garbage disposal approaches may lead to losses of nutrients, economically and affect the air, soil and water.

An imperative feature of soil is that it influences the efficiency of our planet's environment through harboring and nurturing various forms of life and consequently results in creation of outstanding and energetic biodiversity. Being one of nature's greatest complex environments, soil contains thousands of dissimilar organisms, which interrelate and subsidize to the global rotations that make all life potential. Soil produces a complicated network of communities that again assemble themselves as smaller communities occupying detailed microhabitats.

Organic matter plays a key role in agricultural manufacture because it owns many desirable properties such as high-water holding capacity, cation interchange capacity, and capability to sequester pollutants and nutrients comprising both organic and inorganic constituents and exert helpful effects on physical, chemical and biological features of soil.

The wastes of the animal and plant origins are organic and degradation; the end products deliver a good source of nutrients to increase soil efficiency. In developing countries, the organic wastes are degraded by using aerobic and anaerobic techniques which may affect the adjoining water and soil.

To avoid the pollution due to accumulation of wastes, waste management is a significant task in the Urban and Cosmopolitan cities. Several waste management strategies are adopted depending upon the waste nature, quantity and its heterogeneous constituents. For bio-solid wastes, composting is the best option to not only degrade the wastes but also generate end products enriched with nutrients to improve soil fertility. Though microbial composting and vermin composting are used to decompose the bio-solid wastes, but individually they suffer the disadvantage of wastes comprising both plant and animal constituents. Microbial composting is advantageous in degrading animal wastes but not preferable for degrading plant wastes as they do not secrete cellulose or lignin seen zymes to completely degrade plant constituents; whereas vermin composting can efficiently degrade plant wastes but inefficient in degrading animal wastes. Here we have used a combined approach, wherein microbial composting followed by vermin composting of organic garbage to produce composts enriched in nutrients to improve soil fertility as well as the productivity of vegetation.

Solid waste

Solid waste is the useless, unwanted and discarded material resulting from day to day activities in the community. Solid waste management may be defined as the discipline

associated with the control of generation, storage, collection, transfer, processing and disposal of solid waste. The present paper based on the study carried out on solid waste management practice by Koottudankadu Panchayat.

Objectives of the study

- To assess the solid waste generation
- To know about the disposable pattern of the households in the koottudankadu study area.
- To identify the factors which determine the quantity of solid waste generation of the household
- To analyze and compare the factor reflecting impact of solid waste in Koottudankadu.
- To reduce the quantity of solid waste disposed of on land.
- To assess the landfill of the study area

Problem of the study area

Major Problem of in this study area trash is building up quickly in landfills; there is very little landfill space in finding the quickest way of decomposing the waste of the study area.

Scope of the study

Routine human activities impact the environment and the consumption of natural materials and energy resources. The challenge to society is to minimize these impacts, maintain an acceptable quality of the environment, and sustain the quality of life and resource supplies for future generations. The generation of solid wastes is inevitable because all products have an end of life and humans and animals create wastes that have to be managed to maintain hygienic, healthy and tidy urban and open country environments. Key objectives of the Wastes Management and Research. The Journal for a Sustainable Circular Economy (WM&R) is to address these challenges through dissemination of scientifically based reliable information, e.g. in terms of waste prevention, waste recycling, recovery of energy from material residuals not suited for recycling or reuse, waste treatment and waste disposal.

Limitations of the study area

- This study was conducted only in a selected village Koottudankadu. in Thoothukudi district.
- The data collected was limited to 115 respondents.
- Due to lack time the investigators personally contacted 115 sample respondents of the study area.

Review of literature

Pires et al., 2011 Integrated sustainable waste management (ISWA) system was then introduced in 1995 to improve earlier system that neglect unique characteristics of a given society, economy and environment European countries had applied various system assessment tools and engineering models to create sustainable communities, manage resources efficiently, tapping innovation potential of the economy, ensuring prosperity, environment protection and social cohesion in their SWM system

Couth &Trois 2010 For example, waste managers in Africa need to tackle some issues including, lack to data, insignificant financial resources, vast different of amount and waste types between urban and rural area, lack of technical and human resources, low level of awareness and cultural aversion towards waste

Vietnam and Nepal Shekder 2009 The generation of waste is also reported to be associated with the economic status of a country. In Asia, countries with higher GDP, namely Hong Kong and Japan were reported to generate more waste compared to developing countries such as India,

Shekder, 2009 On the other hand, problem faced among Asian countries differ with two distinct groups; developed and developing countries. While some of the countries are having specific national policy on solid waste management. Some other experience problems such as increasing urban population, scarcity of land, services coverage area, inadequate resource and technology, and so on

Agamuth et al.2009 The drivers of sustainable waste management were clarified by which include human, economic, institutional and environment aspect. The study be considered in local context as managing solid waste for a particular society may differ from the other.

Shekder, 2009 Asian countries had also given attention in building the national legal frame works, managing institutional, technology, operational and financial aspects, and creating public awareness and participation

Hazra&Goel, 2009 A lot literatures has discussed current practices, challenges and future solutions on waste management such as those for India.

Hazra&Goel, 2009; Bai&Sutanto,2002 Developed countries are experiencing high waste generation while developing countries always have problems with the implementation of the management system . This includes weak enforcement, lack of technology and ineffective policy implementation.

Agamuthu et al., 2009 In detail these countries experience low and irregular collection of waste, uncontrolled of air and water pollution in open dumping area, the breeding of flies and vermin, and the mismanagement of scavenging activities

Methodology

The methodology adopted for the present investigation including selection of the household respondents and objectives of the study together with source of data, sample, selection, period of study, scope and significance of the study and statistical tools used for data analysis. The research work depends, mainly on primary data collected through survey, personal interviews and questionnaire. The use of secondary data to a limited extent is made wherever necessary. Primary data is collected through questionnaire, observation and discussions.

Hypothesis

Relationship between monthly income and expenditure of the sample respondents

Co-efficient correlation:

To find out the relationship between the monthly income and monthly expenditure of the respondents the researcher is using the statistical tool of Co-efficient Correlation for the calculation the following formula is used,

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

$$r = 0.97$$

Result

There is a positive relationship. Therefore the above hypothesis is proved. Because the monthly income of the respondents and monthly expenditure of the respondents have a positive relationship,(i.e.). When income increases expenditure also increases, when income decreases, expenditure also decreases.

Findings, suggestions and conclusion

Findings

- Majority of the respondents are (34.78%) between 30-40 years.
- 39.14% of the respondents are males and 60.86% of the respondents are females
- Majority of the respondents are 43.47% secondary educated.
- Majority of the respondents are 39.13% daily labours

- Most of the respondents are 56.52% in the Nuclear Family
- Nearly 29.56% of the respondents are monthly income less than 5000-9000
- Nearly 29.56% of the respondents are monthly expenditure less than 9000-12000
- Most of the respondents are 28.69% food waste
- Most of the respondents are 21.73% used from landfill
- Majority of the respondents 24.34% quantum of waste generates by households 2(kg) above

Suggestions:

- Public awareness should be created among the masses to inculcate the health hazards of the wastes. Littering of MSW should be prohibited in the city areas notified by the Thoothukudi Corporation.
- Moreover, house-to-house collection of MSW should be organized through methods like collection on regular pre-informed timing and scheduling.
- The collection bins must be appropriately designed with features like metallic containers with lids, and to have a large enough capacity to accommodate more than the expected waste generation in the area, with a design for mechanical loading and un-loading, placement at appropriate locations, etc.
- Municipal authorities should maintain the storage facilities in such a manner that they do not create unhygienic and unsanitary conditions.
- Proper maintenance of the MSW transportation vehicles must be conducted, and the Dumper Placer should replace the old transportation vehicles in a phased manner.
- Municipal agencies will have to plan and execute the system in keeping with the increasing urban areas and population.

Conclusion

The expanding amounts of waste generated nowadays due to changing lifestyles and urbanization have become an issue of high priority for all municipalities. At the same time, the growing realization of the negative effects of municipal waste on the environment and human health results in the development of evaluation methods that enable the design and implementation of optimum integrated waste management systems. An integrated MSW management system reflects an approach to sustainable waste management. Such an approach is environmentally effective and includes an optimized waste collection system, efficient sorting accompanied by one or more processes like recycling or composting of organic fractions, and finally land filling of the residual waste. Towards this direction, Waste Framework Directive establishes the concept of “waste hierarchy” and sets the principles for

the protection of the environment through the implementation of more efficient MSW management systems. Accordingly, the European Union member states are gradually incorporate the waste regulation into their national regulatory framework and adopt waste treatment methods that lead to energy and material recovery from the various MSW streams. However, in Greece, Waste Framework Directive is poorly implemented, waste management still represents one of the most critical problems that need to be addressed and the developed of an optimal waste management strategy is more than critical.

References

1. Tavares, G.; Zsigraiova, Z.; Semiao, V.; Carvalho, M. da G. A case study of fuel savings through optimisation of MSW transportation routes. *Management of Environmental Quality: An international Journal*. 2008, Vol. 19, Issue 4, pp. 444-454.
2. Li, J.-Q.; Borenstein, D.; Mirchandani, P. B. Truck scheduling for solid waste collection in the City of Porto Alegre, Brazil. *Omega*. 2008, Vol. 36, pp. 1133-1149.
3. Ustundag, A.; Cevikcan, E. Vehicle route optimization for RFID integrated waste collection system. *International Journal of Information Technology & Decision Making*. 2008, Vol. 7, Issue 4, pp. 611-625.
4. Hansmann, R. S.; Zimmerman, U. T. Integrated Vehicle Routing and Crew Scheduling (IVRCS) in Waste Management -Part 1-. *Dagstuhl Seminar Proceedings 09261 Models and Algorithms for Optimization in Logistics*. 2009, <http://drops.dagstuhl.de/opus/volltexte/2009/2185>.
5. Tavares, G.; Zsigraiova, Z.; Semiao, V.; Carvalho, M. da G. Optimisation of MSW collection routes for minimum fuel consumption using 3D GIS modelling. *Waste Management*. 2009, Vol. 29, pp. 1176-1185.
6. Arribas, C. A.; Blazquez, C. A.; Lamas, A. Urban solid waste collection system using mathematical modelling and tools of geographic information systems. *Waste Management & Research*. 2009, Vol. 28, pp. 355-363.
7. De Meulemeester, L.; Laporte, G.; Louveaux, F. V.; Semet, F. Optimal Sequencing of skip collections and deliveries. *Journal of the operational research society*. 1997, Vol. 48, pp. 57-64.



8. Aringhieri, R.; Bruglieri, M.; Malucelli, F.; Nonato, M. A particular vehicle routing problem in the collection and disposal of special waste. Presented at Tristan 2004, Guadeloupe, French West Indies. 2004.
9. Aringhieri, R.; Bruglieri, M.; Malucelli, F.; Nonato, M. An asymmetric vehicle routing problem arising in the collection and disposal of special waste. *Electronic Notes in Discrete Mathematics*. 2004, Vol. 17, pp. 41-47.
10. Dell'Amico, M.; Righini, G.; Salani, M. A branch-and-price approach to the vehicle routing problem with simultaneous distribution and collection. *Transportation Science*. 2005, Vol. 40, pp. 235-273.



**AN ECONOMIC ANALYSIS IN BUYING PATTERN ON CONSUMER WITH
SPECIAL REFERENCE TO IN INDRA NAGAR IN THOOTHUKUDI TOWN;
THOOTHUKUDI DISTRICT**

P. Anuradha and M. Nisha preethi

PG Department of Economics, St. Mary's College, Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

This project is a web based shopping system for an existing shop. The project objective is to deliver the online shopping application into android platform. This project is an attempt to provide the advantages of online shopping to customers of a real shop. It helps buying the products in the shop anywhere through internet by using an android device. Thus the customer will get the service of online shopping and home delivery from his favorite shop. This system can be implemented to any shop in the locality or to multinational branded shops having retail outlet chains. If shops are providing an online portal where their customers can enjoy easy shopping from anywhere, the shops won't be losing any more customers to the trending online shops such as flip cart or e bay. Since the application is available in the Smart phone it is easily accessible and always available.

These facts obviously show that most individuals are very well-educated and tech-friendly in southern India. Because southern India has a greater proportion of educated people, educated people are quicker to try out and adopt the recent techniques for this reason. Over the years, online shopping has become incredibly popular, but in South India, the practice of purchasing or selling internet products and services is very prevalent. Instead of spending time and shopping from retail shops, a majority of South Indians prefer to shop online. And as far as payment is concerned, MOD (money on delivery) is India's preferred technique of payment. Corporations can create direct contact with their clients through online shopping. Because of its advantages like enormous discounts on global products, privacy and liberty of choice, many individuals in Chennai now prefer online shopping for days. These all variables play a crucial part in making online shopping system popular among clients. On the other hand, there are few problems that need to be resolved such as warranty problems, return problems, difficulties with late shipment, scams and additional shipping fees. The aim of this study is to identify variables that play a significant part in the online shopping system's popularity.

Introduction

Online shopping or e-shopping is searching for and purchasing goods and services over the Internet through the use of a web browser. The main allure of online shopping is that consumers can find and purchase items they need (which are then shipped to their front door) without ever leaving the house. Today, almost anything can be purchased through online shopping, amounting to billions of dollars a year in sales.

Today, most retail stores have a website for customers to buy from online and either ships them to their home or pick up at a nearby store location. Wal-Mart, Best Buy, Sears, and other retail businesses offer this type of shopping experience. Some companies only sell products through their website and do not have a retail storefront. For example, Amazon, Tiger Direct, and New Egg conduct their business exclusively online.

History of online shopping

Before the World Wide Web was created, Michael Aldrich developed a system called Redifon's Office Revolution in March 1980, connecting sales companies, suppliers, and customers together. Companies were able to order supplies from suppliers and sell products to customers electronically, utilizing video-tex technology. It is considered a major predecessor and influence on the development of online shopping as we know it today.

In 1994, several years after the launching of the World Wide Web, online transaction systems, including banking and shopping, started emerging. The first shopping transactions were completed through Net Mark and Internet Shopping Network in 1994, beginning the online shopping boom. Amazon.com and eBay launched their websites in 1995, offering online shopping options for customers. Many of the first online shopping websites utilized Inter-shop Online, an online shopping software system, developed in 1995 by Inter-shop Communications AG. The Inter-shop Online software allowed businesses to more easily add online shopping capabilities, or e-commerce, on their website, with secure transactions for their customers.

A customer is one who purchases products for usage rather than for resale or commercial purposes. The customer is a person who pays a certain quantity of cash for the products and services needed to be consumed. Consumers therefore play a crucial role in a nation's economic system. The customer is also one of the components of the supply chain. Marketers have recently begun to participate in personalized marketing, permit advertising and mass customization instead of marketers producing wide demographic profiles and Fisio-graphic profiles of market segments. Buying pattern has been changed generations after generations; first of all it started as a barter system, people exchanged goods with goods.

Then during 600 BC coins came into existence and they started to trade with it. Later on during the 700 BC currency came into existence and slowly trading with currency was easier. And during the 21st century online banking came into progress which made transactions and trading much easier. This online banking was made convenient to common people and retailers too. They sell their products through online websites and reach the consumers easily. Most people all over the world prefer online shopping and online transactions. And anyone can contact with any one for trading. The consumers also get many choices to select whatever they want.

Complex buying pattern:

While the customer is extremely engaged in purchase process and important variations within all the brands come together are known as complicated purchasing conduct. The customer must therefore obtain adequate data on the product characteristics in this situation and the dealer should give comprehensive data on the brand characteristics.

Variety seeking pattern:

Here when purchasing a product, customer participation is small, important variances within products are present. Customers usually buy distinct products not cause of the previous goods discontent, but because they are looking for variation. They just purchase distinct washing detergent for variety as they do every time.

Dissonance buying pattern:

Consumers are heavily engaged in buying here, but few variances within brands are found. Like, customers purchase them rapidly while purchasing floor tiles, because there are few differences within products.

Habitual buying pattern:

Consumer participation is small in this situation and there are few distinctions between brands. The customer is quick to buy the item. For instance toothpaste, many clients tend to buy their favorite products by visiting separate shops at distinct places to compare rates and offers. Therefore, for a very long time a client does not stay faithful to a single shop. A retail store must pay a great deal of attention to the place of the shop, identifying a distributor in the area, the nature of the goods and the ready-made goods. Essentially involves an evaluation of the product type that a customer is going to buy and how much. This depends on the following variables, such as:

- i. Buying capacity.
- ii. Product durability.
- iii. Availability of choices.

iv. Requirement of the product.

v. Availability of product.

The possibility of online marketing is growing in Chennai with growing internet literacy. Consumers who enjoy online shopping take many variables into account. This project is a component of the research, focusing on the financial assessment of Chennai's economic analysis in buying pattern. This study discovered that data perceived effectiveness, convenience of use; overall pleasure and security privacy are the five prevalent variables that effect on internet buying attitudes of consumers. Micro and societal views are the two perspectives that try to apply their understanding. Consumer behaviour has a major impact on the quality and standard of living.

The convenience of online shopping

Customers can purchase items from the comfort of their own homes or workplace. Shopping is made easier and convenient for the customer through the internet. It is also easy to cancel the transactions.

- Saves time and efforts.
- The convenience of shopping at home.
- Wide variety/range of products is available.
- Good discounts / lower prices.
- Get detailed information about the product.
- We can compare various models/brands.
- No pressure shopping

Generally, in physical stores, the sales representatives try to influence the buyers to buy the product. While in online shopping, you're free to do as you will.

Need of the study

Not many studies have been undertaken exclusively to study the perceptions and preferences of online shopping consumers and the same has to be disseminated positively in the minds of consumers, which is essential in any nation. Studies cover the issue of online shopping, consumers buying pattern at the micro level. Particularly in the perspective of the decline in the contribution of online consumers in primary online market operations, withdrawal of consumers from the online shopping market into safer consumer avenues like cash on delivery, bank taking out, online payment, debit cards and credit card payment, it becomes all the more important to make an economic analysis of the buying patterns of consumers in Indira Nagar. This may help the policymakers in developing appropriate plans

to get online consumers in large numbers so that the mobilization and effective operation of the online shopping markets may improve.

Statement of the problem

To discuss the purchasing pattern of online shopping consumers in various avenues that is available in Indira Nagar, Thoothukudi District. In this sense, no attempt is made to extract the critical underlying factors of consumers' buying pattern, their relative significance and their relationship with socio-economic variables. Nowadays, online shopping decisions depend on various attributes. There are so many factors that influence their shopping decisions. The online consumers' buying pattern has to progress forward from their iconic role; there is every possibility that decisions regarding online consumers' buying with their surplus money may be different, depending on the parameters of the online consumers' buying pattern and degree of risk-taking capabilities. In this modern world, online buying plays a vital role in human life. The online consumers select from various buying pattern alternatives. Indian online shopping players are of multiple types like; students, businessmen, and employees. Online shopping activity is determined by consumer buying pattern in Indira Nagar, Thoothukudi District. There is a chance of the buyer losing interest.

Scope of the study

Traditionally, marketing theory is based on consumer's decision through a lens of risk and return, and the decision should be a reasonable and one. Various consumers are aware of such psychological behaviour while making online shopping decision. This irrational behaviour helps us to know of the online shopping literacy level which creates uncertainty in the game of buying pattern. As a result, the traditional online shopping market theory which is related to the efficiency of the online buying demonstrated is incorrect. In this context, it is very significant for the consumers to be aware of the various psychological phenomena and they should identify the ways to overcome the obstacles while making, buying and selling a product. Therefore, online shopping portals have a strong desire towards doing what others do. Identification of all such behaviour helps the consumer in making a proper buying decision. Apart from psychological factors, demographic factors also influence the online shopping process. This study is on online shopping and consumer buying pattern in Thoothukudi City. The developing economies like India, online shopping needs to be expanded so that the marketing sector can rise to accommodate consumer buying behaviour. Individual consumers have a considerable role in the smooth functioning of online shopping into the most efficient hands. Hence, there is a need to protect their rights. There is an imperfection in consumer activism in India, especially in Tamil Nadu. Consumer knowledge

relating to the state of Tamil Nadu is minimal. Hence this study is undertaken to gain insight into the consumer buying patterns.

Limitations of the study

The learning is restrained to Indira Nagar, Thoothukudi District, and therefore the conclusion cannot be comprehensive to the entire country. The findings and suggestions and the determination may be applicable only to economic analysis in buying the pattern of the consumer in online shopping with particular reference to Indira Nagar, Thoothukudi District. A considerable number of financial instruments with a variety of company specific features of consumer buying pattern options need a lot of time and resources to research. Lack of knowledge of online shopping about the financial instruments can be a significant limitation.

Methodology of the study

This learning is centered on online shopping, the perception of consumer buying patterns, pre, and post-consumer behaviour, and both in analytical and descriptive nature. The procedure is the rationale phase which rules the final results of studies. It encompasses and leads the study to analyse a research manner which guarantees and enables the truthfulness of the effects, deals with the data amassed for the take a look at, assets of information, sampling plan of the population of the have a look at, area of the research, device used to accumulate facts, method of receiving facts, analysis and interpretation of the collected data with different statistical equipment with the intention to find out the electricity of the accumulated information and limitations of the observe for the reason of gathering primary facts.

Review of literature

Rupali Rajesh (2018)

In this study has given special consciousness on key aspect of online buying like suitable and time saving, Clear Return policy, Variety of product and types to be had on online sites, Trusted shopping, Product evaluations, 24*7 Shopping, Cash on transport and Credit card offerings availability of favourite brands, readability approximately terms and situations, chance at credit score card transactions, beyond buy enjoy and so forth., as well as customer satisfaction factors like return coverage, product quality, experience, touch and feel factor etc. These effects will enable, Electronic marketers to designs higher appropriate strategies, aiming to buy practice and success.

Gunjita Kumar (2017)

It stated that earlier than demonetization, items had been bought online shopping to customer choice and hazard bearing capacity, however after demonetization it has become nearly obligatory to look for optimum bills via Electronic pockets for all sorts of goods and

offerings bought. Prior to demonetization humans consume to shop for online either uncommon items or goods which aren't effortlessly to be had in the nearby marketplace, but after demonetization, they had been shopping goods of their everyday wishes. Formerly humans also favoured to buy objects online for which satisfaction gained turned into confident, but currently, they can use to one-of-a-kind websites imparting the facilities like an attempt to purchase they have been prepared to take up the hazard additionally.

Ahmed AuduMaiyaki (2016)

He observed the principle thing of influencing consumer online buy in conduct. The price and the product art collection in online shopping immediately affect purchasers' buying cause and conduct. The explosive in online buying available at a lower price, and the import range is more than traditional shopping, the purchasers will select to capture online.

Pritam Kothari. P (2016)

By this study was about the existing reputation of online buying. Those who spoke back were accrued well-based telegraph shape. They assist with information analysis and abstractionism finding had been drawn through researchers. Since there was a revolution in telecommunication quarter no of users on the internet. Increased in India recent time and customers had been the usage of internet for online purchasing however nonetheless everyday purchase maximum of patron's first preference has been manual shopping. Most of the customers had been providing majority opinion that advertising prices by using companies had been very excessive, it is cautioned to organizations to either reduce transport prices or shipping of product have to receive freely. Corporate may use one of the acknowledgment activities. Once studies discovered that important starting gate at the back of improvement of online buying became of customer cognizance.

Objectives of the study

1. To study the reasons for online shopping.
2. To analyse the risk involved in online shopping.
3. To understand consumer attitude towards online shopping and their satisfaction.
4. To study the buying behavior of customer towards online shopping.

Table No -1

SOURCES OF ONLINE SHOPPING INFORMATION

Sources of Online Shopping	No of Sample Respondents	Percentage
Family /Friends	28	20.38
News Papers	25	18.21
TV Advertisement	37	26.82
Website Advertisement	26	18.74
Others	22	15.85
Total	138	100

Source: Primary data

The above table explains that sources of online shopping information through which the respondents were purchase their products. The major source is from TV advertisement as 26.82%, 20.38% by family and their friends, 18.74% and 18.21% through Website and newspaper advertisement respectively; 15.85% of the respondents were purchased their products through online from other sources too.

Figure- 1

SOURCES OF ONLINE SHOPPING INFORMATION

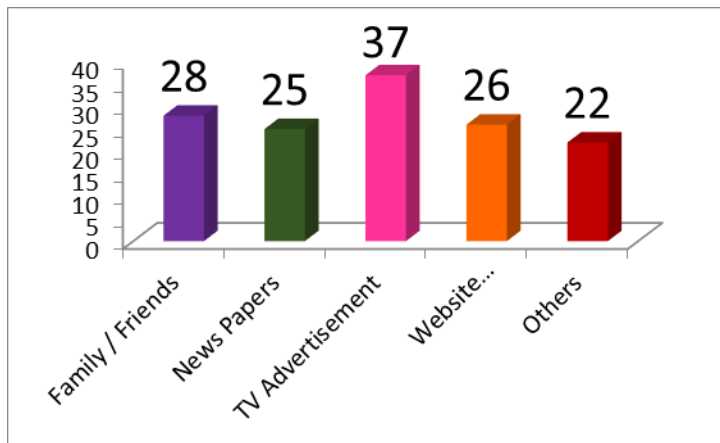


Table-2

REASONS FOR CHOOSING ONLINE SHOPPING

Reasons for Choosing Online Shopping	No of Sample Respondents	Percentage
Availability of Variety of Products	16	11.59
Product Comparison	23	16.67
Time Saving	29	21.02
Comfortable	31	22.46
Above all	39	28.26
Total	138	100

Source: Primary data

The above table explains about the reasons for choosing the online shopping. 28.26% of the respondents accept all the reasons which are mentioned in the table above. 22.46% of the respondents were chosen this online shopping for its comfortable. 21.02% respondents for time saving and 16.67% of them for product comparison and 11.59% of the respondents for the availability of products.

Figure-2

REASONS FOR CHOOSING ONLINE SHOPPING



Table-3

TIME INTERVAL FOR ONLINE SHOPPING

Particulars	No of Sample Respondents	Percentage
Frequently	16	11.59
Once in Six Months	23	16.67
Once in a year	29	21.02
Occasionally	31	22.46
Seldom	39	28.26
Total	138	100

Source: Primary data

The above table explains about the time interval while purchasing the products through online. 28.26% of the respondents were purchased their products according to their need. 22.46% and 21.02% of them occasionally and once in a year respectively, 16.67% of the respondents were purchased for six months once and 11.59% only frequently purchased their products.

Figure-3

TIME INTERVAL FOR ONLINE SHOPPING

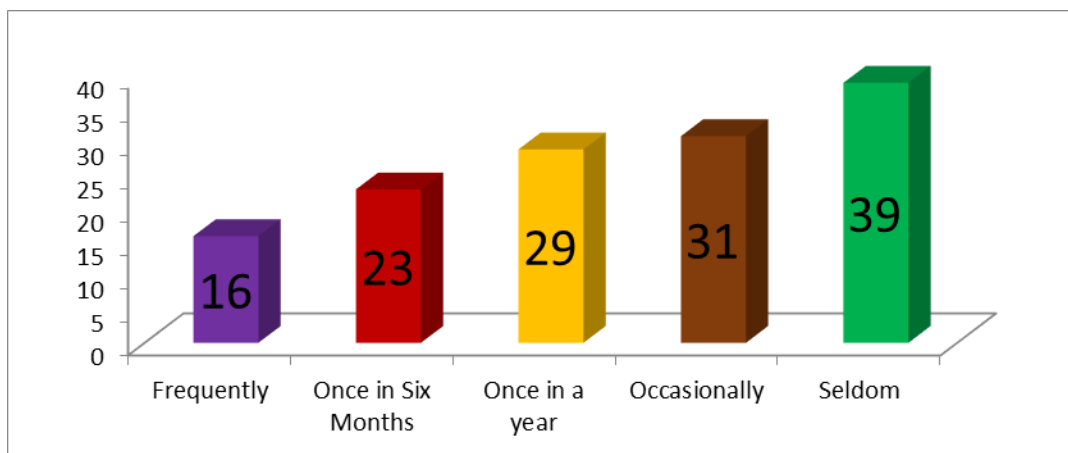


Table-4

PROBLEMS ON ONLINE SHOPPING

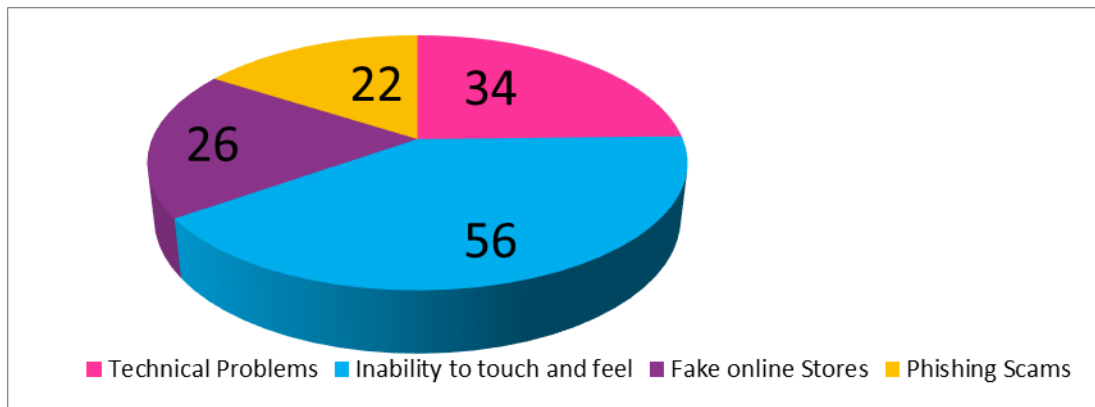
Particulars	No of Sample Respondents	Percentage
Technical Problems	34	24.65
Inability to touch and feel	56	40.57
Fake online Stores	26	18.84
Phishing Scams	22	15.94
Total	138	100

Source: Primary data

The above table shows the problem which were faced while their purchasing through online. 40.57% of the respondents felt that inability to touch and feel the product, 24.65% of the respondents were faced technical problems at the time of online shopping, 18.84% of the respondents were faced the fake online stores and 15.94% of the respondents were having phishing scams.

Figure-4

PROBLEMS ON ONLINE SHOPPING



Findings:

- From this study the sample respondents of Male is 42.75 and Female is 57.25. The highest level of age group is lie between 48 to 68 years is 34.78% and the lowest level

is lie between is the age of above 68 is 18.13%. At the age group of 18 to 28 is 21.01% and at the age group of 28 to 38 are 26.08.

- 27.55% of the respondents were homemakers, 24.63% of them were in business, 23.19% of the respondents were in service level and 8.69 of the respondents were students and other categories were 15.94%.
- 33.33% of the sample respondents were having their monthly income as 25,000 to 35,000. 23.18% of them were having their monthly income as 35,000 to 45,000. 21.04% of them were having their monthly income as 45,000 to 55,000. 13.076% of them were having their monthly income as 15,000 to 25,000. Finally 8.69% of them were having their monthly income as above 55,000.
- 40.58% of the sample respondents were spends their income as expenditure towards their family per month is from 20,000 to 30,000. 16.67% of the sample respondents were spends their income as expenditure towards their family per month is from 10,000 to 20,000 and 30,000 to 40,000. 13.04% of the sample respondents were spends their income as expenditure towards their family per month is from 40,000 to 50,000 and above 50,000.
- The major source is from TV advertisement as 26.82%, 20.38% by family and their friends, 18.74% and 18.21% through Website and newspaper advertisement respectively; 15.85% of the respondents were purchased their products through online from other sources too.
- 28.26% of the respondents accept all the reasons which are mentioned in the table above. 22.46% of the respondents were chosen this online shopping for its comfortable. 21.02% respondents for time saving and 16.67% of them for product comparison and 11.59% of the respondents for the availability of products.
- 28.26% of the respondents were purchased their products according to their need. 22.46% and 21.02% of them occasionally and once in a year respectively, 16.67% of the respondents were purchased for six months once and 11.59% only frequently purchased their products.
- 27.56% of the respondents purchased electronic equipment, 24.63% and 21.01% of the respondents were purchased clothing and their ticket for cinema to travel respectively. 13.76% and 13.04% of them purchased their computer hardware and book respectively through online.
- 35.55% of the respondents were through cash on delivery. 23.28% of the respondents through debit card, 20.29% of the respondents through online banking transactions

and 10.86% and 10.02% of the respondents were through credit card and other source they were paid.

- 40.57% of the respondents felt that inability to touch and feel the product, 24.65% of the respondents were faced technical problems at the time of online shopping, 18.84% of the respondents were faced the fake online stores and 15.94% of the respondents were having phishing scams.
- 27.53% of the respondents were accepting all the above mentioned measures. 23.18% and 21.04% of the respondents were accepting to use strong password and beware of fake website respectively. 17.39% of them were accepting to save the evidence and to log out. 10.86% of the respondents were accepting to use credit card than the debit card.

Conclusion

The study has been made a thorough analysis of economic analysis in buying pattern of the consumer in online shopping with reference to Thoothukudi District. In this learning, the opinion emerged that though there are many products available in the market, a large number of people prefer to purchase products through online because all kinds of goods are available while searching in online web stores. It has made the people to get whatever they want without struggle and they get it just a tap ahead.

References

1. Rupali Rajesh, Evaluating the factors influencing Online Shopping and Its Consumer Satisfaction in Pune Area, International Journal of Social Sciences ISSN 2454-5899 , Volume 4 Issue 1, pp.54-76, March 2018.
2. Gunjita Kumar, Influence of Demonetization on Consumer's Buying Behaviour towards Online Shopping. Journal of interdisciplinary research 2017.
3. Ahmed audumaiyaki, Correlates of consumer online buying behaviour. International journal of management – 2016.
4. HuaZhong and Ping Qing, Rural consumers' online shopping. International journal of retails & distribution management 2016.
5. Dr.R.Gopal and Deepikajindoliya, Consumer buying behavior towards online shopping. International Journal of information research and review 2016.
6. Sarita Devi, ParulSaini, Online shopping: Interplay of influencing factors, risks and benefits. South Asian Journal of Marketing and Management Research, vol.5, Issue 2, ISSN: 2249-877X, pp: 30-42.
7. Sanjay Kumar. Online Shopping-A Literature Review, Proceedings of National



Conference on Innovative Trends in Computer Science Engineering held at BRCMCET, Bahal on 4th April 2015 .

8. G.R.Shalini and K.S.Hemamalini, A study of online shopping website characteristics and its impact on consumer intention to purchase online. International journal of service industry management 2015.

9. IvaturiMurali Krishna and Prof. G.V.Chalam, Attitude of consumers towards online-marketing. International Journal of emerging research in management and technology 2015.

10. Mohammed Jamal Uddin ACMA and Tunazzina Sultana, Consumer preference on online purchasing. Journal of direct marketing 2015.

AN AUTOMATED SMART IRRIGATION SYSTEM USING NODE MCU MICRO-CONTROLLER MODULE FOR MONITORING THE AGRICULTURAL

W. Jenslin Divona¹, P. Padmavathy¹ and P. Rajesh Kumar²

¹Department of Physics, St. Mary's College, Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

²Research Associate DRDO, Bangalore

Abstract

Smart agricultural system is considered as an emerging technique, where IoT (Internet of Things) technology can be incorporated in the field of agriculture. Sensors are able to provide information and take information from the agricultural field through IoT. Monitoring environmental conditions is an important concern in the field of agriculture. For improving the productivity of agricultural yields, location wise proper monitoring is required. In this work, a smart agricultural system is designed to monitor the parameters and to control the agricultural equipment. This low power system embedded with sensors like soil temperature, soil moisture, soil humidity sensors, air temperature and air humidity sensors along with an automatic water pumping mechanism. A centralized data monitoring system manipulates the data from the different locations. GPS is employed to get location information and it uses for assigning the device identification number. The collected data remains stored in the mobile storage by means of IoT platform for data processing. A Mobile application namely blynk which helps to show the status of the parameters. This system monitors both atmospheric and soil parameters. The attached equipment's can be controlled automatically or by a tele command.

Keywords: sensor, node MCU, IoT, DHT11 sensor.

Introduction

This smart irrigation system allows measurement of various factors such as soil temperature, soil humidity, soil moisture and pH without human intervention. It is very important to monitor temperature, humidity, moisture and pH of soil for obtaining high-quality environment for a specific crop [2]. The operational way in order to circumvent interference to the environment and increase its effectiveness is to use an isolated monitoring system. In our work, we design and develop a low-cost system for real time monitoring of soil parameters in the environmental conditions without the above issues. We use ESP32 chip developed by Espressif Systems as our core controller in our design. [1] The various sensors

such as temperature sensor, DHT11 sensor allows monitoring of different environments. They accumulate the information from the soil and exchange data with external users. The design structure includes a specific IoT component to contact sensor data from the microcontroller and data being uploaded into the cloud, can be used to view it on the IoT platform.

Materials and methods

System Requirements

Software requirements

1. operating system- Windows 10
2. Arduino Software
3. Processor – 2.30 GHz
4. 4 GB RAM

Hardware Requirement

1. Node MCU micro-controller
2. Soil moisture sensor
3. DHT 11 sensor module
4. Relay circuit
5. DC Motor

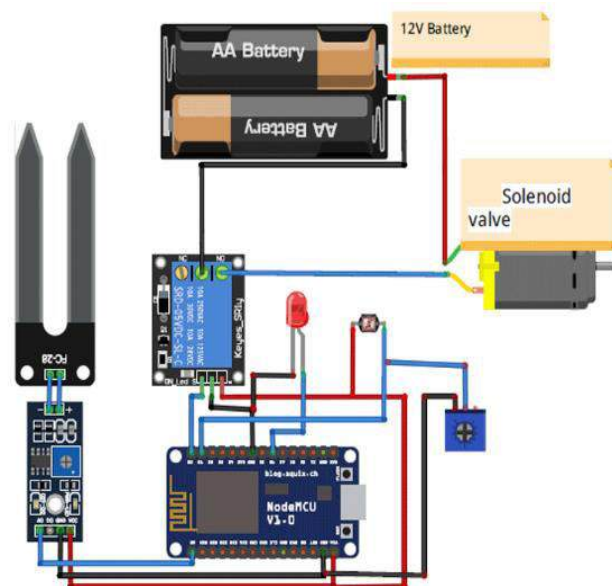


Fig 1.1 System design

Hardware implementation

The hardware implementation of the proposed system is discussed here. The system is meant for monitoring soil parameters like soil temperature, soil humidity, and soil moisture along with soil pH by wireless sensor network (WSN). The sensors used in this system are soil temperature sensor, soil moisture sensor, soil humidity sensor and pH sensor. These sensors will give the collected data to the cloud by means of Wi-Fi. The collected information is processed by microcontroller ESP32. The OLED (organic light emitting diodes) display screen will continuously display the collected parameter data.

Hardware Used

DHT11

DHT11 is a general, affordable digital temperature and humidity sensor. The output can be fetched in digital values. It lacks the use of any ADC. It consists of a capacitive sensor, which measures the humidity. It reads out data with a delay of 2 seconds. DHT11 is a commonly used Temperature and humidity sensor. The sensor comes with a dedicated NTC to measure temperature and an 8-bit microcontroller to output the values of temperature and humidity as serial data. The sensor is also factory calibrated and hence easy to interface with other microcontrollers. The sensor can measure temperature from 0°C to 50°C and humidity from 20% to 90% with an accuracy of $\pm 1^\circ\text{C}$ and $\pm 1\%$ respectively. So, to measure in this range then this sensor might be the right choice. A resistive soil moisture sensor works by using the relationship between electrical resistance and water content to gauge the moisture levels of the soil. You'll observe these sensors to possess two exposed probes that are inserted directly into the soil sample.

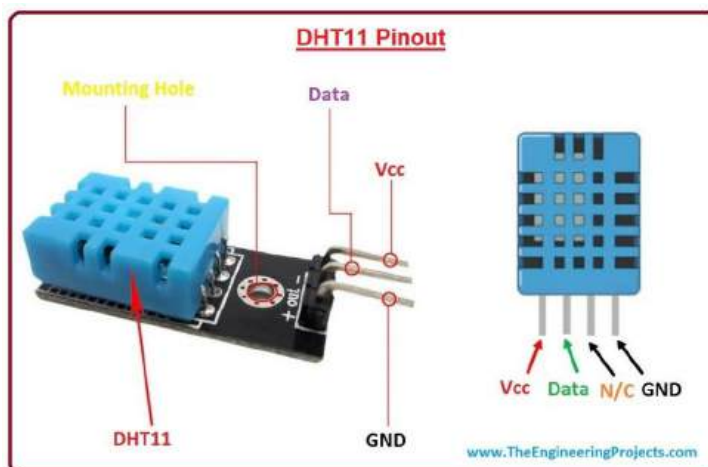


Fig 1.2 DHT11 sensor

Soil moisture sensor

A electrical current is sent from one probe to the other, which allows the sensor to measure the resistance of the soil between them .When the water content in the soil is high, it has a higher electrical conductivity (water is a good conductor of electricity!). Hence, a lower resistance reading is obtained which indicates high soil moisture. When the water content in the soil is low, it has poorer electrical conductivity. Hence, a higher resistance reading is obtained, which indicates low soil moisture.

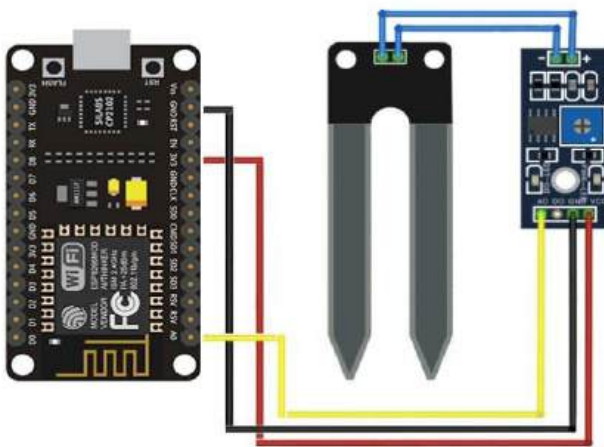


Fig 2.1 Soil moisture sensor

Node MCU ESP8266

The Node MCU ESP8266 development board comes with the ESP-12E module containing ESP8266 chip having Tensilica Xtensa 32-bit LX106 RISC microprocessor. This microprocessor supports RTOS and operates at 80MHz to 160 MHz adjustable clock frequency. Node MCU has 128 KB RAM and 4MB of Flash memory to store data and programs. Its high processing power with in-built Wi-Fi / Bluetooth and Deep Sleep Operating features make it ideal for IoT projects. Node MCU can be powered using Micro USB jack and VIN pin (External Supply Pin).

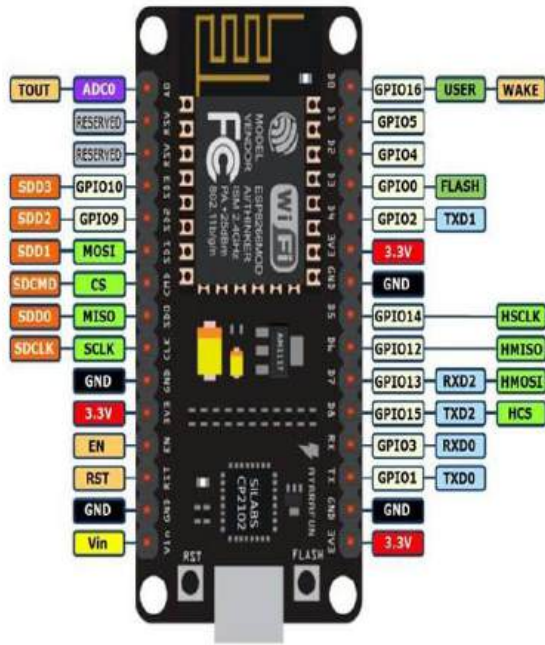


Fig 2.2 Node MCU ESP8266

Node MCU ESP8266 Specifications & Features

- Microcontroller: Tensilica 32-bit RISC CPU Xtensa LX106
- Operating Voltage: 3.3V
- Input Voltage: 7-12V
- Digital I/O Pins (DIO): 16
- Analog Input Pins (ADC): 1
- UARTs: 1
- SPIs: 1
- I2Cs: 1
- Flash Memory: 4 MB
- SRAM: 64 KB
- Clock Speed: 80 MHz
- USB-TTL based on CP2102 is included onboard, Enabling Plug n Play
- PCB Antenna
- Small Sized module to fit smartly inside the IoT projects

Relay module

Relay is an electromagnetic device which is used to isolate two circuits electrically and connect them magnetically. They are very useful devices and allow one circuit to switch another one while they are completely separate. They are often used to interface an electronic circuit (working at a low voltage) to an electrical circuit which works at very high voltage.

For example, a relay can make a 5V DC battery circuit to switch a 230V AC mains circuit. Thus, a small sensor circuit can drive, say, a fan or an electric bulb.

A relay switch can be divided into two parts: input and output. The output section has a coil which generates magnetic field when a small voltage from an electronic circuit is applied to it. This voltage is called the operating voltage. Commonly used relays are available in different configuration of operating voltages like 6V, 9V, 12V, 24V etc. the output section consists of contactors which connect or disconnect mechanically. In a basic relay, there are three contactors: normally open (NO), normally closed (NC) and common (COM). At no point state, the COM is connected to NC. When the operating voltage is applied the relay coil gets energized and the COM changes contact to NO.

DC motor

Electrical DC Motors are continuous actuators that convert electrical energy into mechanical energy. The DC motor produces a continuous angular rotation that can be used to rotate pumps, fans, compressors, wheels, etc., When the water level in the soil varies, the moisture sensor will detect the level and send that information to microcontroller ESP32. The microcontroller will compare the measured value with the threshold value and the database will trigger an action to the decision logic. Whenever the water content in the soil is low, the DC motor starts pumping water until the moisture value reaches the threshold.



Fig 2.3 DC motor

Software requirements

- Microsoft designed Windows 10 to deliver a more personal computing experience across a range of devices. An experience optimized for each device type, but familiar to all. Windows 10 will power an incredibly broad range of devices.
- The open-source Arduino Software integrated development environment(IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board.

- A processor can run a certain number of instructions per second. The number of instructions it can run in a second is known as its clock speed, and this number is typically given in megahertz (Mhz) - meaning millions of instructions per second - or in gigahertz (Ghz) - meaning billions of instructions per second. A 2.3-Ghz processor can run 2.3 billion instructions per second.
- RAM is the amount of main memory that computer programs have available to use. A computer with 4GB of RAM means that it has approximately 4 billion bytes of memory for programs to use.

Result and discussion

So, in the present work, by using IoT, it is capable of monitoring the soil constraints by internet connection. In our implementation model, two sensors were connected to the core controller ESP32 with integrated Wi-Fi module. The ESP32 accessed the data from these sensors, processed it and sent it to IoT platform using Wi-Fi network. ESP32 was used as the core controller here. It is a powerful module that targets a wide variety of applications, especially low power sensor networks. DS18B20 was used as the soil temperature sensor. It is a programmable one wire temperature sensor used to measure temperature in harsh environments such as chemical solutions, mines or soil, etc. The sensor's construction is simple and can also be purchased with a waterproof option to facilitate the mounting process. It operates in the temperature range from 55°C to 150°C. Calibration is not required for this temperature sensor. Temperature sensor is accurate up to $\pm 0.4^{\circ}\text{C}$ at normal room temperature and $\pm 0.8^{\circ}\text{C}$, at a range of 0°C to +100°C. DHT11 was used as an air temperature and humidity sensor. It is a numerical temperature and moisture sensor that gives the output of the hotness and moistness. Humidity sensor operates in the humidity range 0 to 99% relative humidity. Calibration is not required for the humidity sensor. Humidity sensor is accurate up to $\pm 1\% \text{RH}$. The soil moisture sensor was used to provide the quantity of moisture content existing in the soil. This sensor has double probes to permit the current over the soil and then notice that resistance to get the moisture level. The better the volume of water sorts the soil passes electricity more effortlessly and waterless soil passes electricity poorly. For the analysis, a sensor node is installed in the field and monitors the parameters such as soil moisture, temperature, and humidity in regular intervals of a day. Here the time interval at which the soil moisture is under the threshold is monitored and air temperature, humidity is also monitored for determining how much water needs to be sprayed. From the measurements we analysed, the soil moisture and amount of water need to be pumped is defined. From the

measurements we analyse, when the air temperature increases in day time The relation with the soil moisture and amount of water needed to be pumped is defined by this system.

Conclusion & futurescope

In this research paper work, the proposal and design development of a cost-effective system for monitoring soil parameters is presented. The system is implemented using IoT technology and consists of different soil parameter sensors, ESP 32 microcontroller and a Wi-Fi module. With the help of ESP32 and various sensors we measured soil temperature, humidity, moisture, air humidity, air temperature and pH values of soil. It is low cost yet efficient and does not require people on duty. The core controller is capable of collecting, analyzing and sending data to the web server using IoT. The collected information can be observed in the server anywhere anytime in the world. Wireless sensor Networks are extensively used for real time and research purposes. For increasing the efficiency in agricultural monitoring wireless sensor network (WSN) provides a high accuracy with respect to the parameters and thereby reducing manual energy. This system tested under different atmospheric conditions and it proves that this low power device can be manufactured with low cost for industrial purposes. With the use of camera, computer vision algorithm can be employed to detect the plant disease also. The implementation of Smart Garden system using the Internet of Things has been verified to satisfactorily work by connecting different parameters of the soil to the cloud and was successfully controlled remotely through a mobile application. The system designed not only monitors the sensor data, like moisture, humidity, temperature and ultrasonic but also actuates other parameters according to the requirement, for example, if the water level in tank is reduced to a minimum value, then the motor switch is turned on automatically to the water level of the tank reaches the maximum value.

The initial cost and the installation of this system are cheap and hence it can be implemented anywhere. With the development of sensor technology, the system can be elevated to the next level which helps the users to utilize their investment in an economic manner. If soil nutrient sensors can be installed, then the system can be modified to supply fertilizers to the garden precisely. This system saves manpower and efficiently utilizes the water resources available ultimately leading to more profit. The feedback provided by the system will improve the implementation of the gardening process.



References

- [1] Bennis, H. Fouchal, O. Zytoune, D. Aboutajdine, “Drip Irrigation System using Wireless Sensor Networks” Proceedings of the Federated Conference on Computer Science and Information Systems, ACSIS, Vol. 5, 2015.
- [2] Nikhil Gowda, Suhas Shastry, Yashwanth J, Achyutha Preksha A, “IoT based Water Supply Monitoring and Soil Moisture Detection System”, International Journal of Computer & Mathematical Sciences, Volume 6, Issue 5 May 2017.
- [3] V. Vinoth Kumar, R.Ramasamy, S.Janarthanan, M.VasimBabu, “Implementation of IoT in Smart Irrigation System using Arduino Processor”, International Journal Of Civil Engineering and Technology (IJCIET) Volume 8, Issue 10, October 2017.

ULTRASONIC STUDIES OF ZnO-DISTILLED WATER NANOFLUIDS

B. Sangeetha and R. Monica

Department of Physics, St. Mary's College (Autonomous), Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

The propagation of sound through random media has recently piqued people's curiosity. Such media include colloidal suspension, porous material, magnetorheological medium, and nanofluid. A colloidal dispersion of nanoparticles in fluids that function as transporters is referred to as a nanofluid. Nanofluids have sparked interest due to their many uses, which include temperature control technology. In tightly linked systems, the molecular characteristics of nanofluids, such as sound transmission, change and are controlled by the cohesive properties of liquids. Various base fluids, such as distilled water are used and the ultrasonic velocity, density, and viscosity are determined. Ultrasonic methods are utilized to characterize the nanofluids that have been generated. Ultrasonication is also used to prepare Nanofluids for analysis with an ultrasonic interferometer. Other theoretical properties examined were adiabatic compressibility, intermolecular free length, acoustic impedance, relaxation time, and Auerbach surface tension.

Keywords: ZnO Nanofluids, Ultrasonic velocity, Viscosity, Auerbach surface tension, Specific heat ratio.

Introduction

Nanofluids are a novel type of heat transfer fluids that comprise nano-sized particles, fibers, or tubes contained in a carrier liquid. ^[1-4] The productivity and lifetime of the equipment are determined by the efficiency of the heat transfer fluid. ^[5] Because of the benefits of heat transfer applications, nanofluids have grown in popularity in recent years. The main focus of nanofluid research and application is the creation of stable nanofluids. ^[6-11] The nanofluids presented in this paper were prepared using dispersion techniques. The dispersion technique is a two-step process with the benefit of preparing nanofluid on a big scale. ^[12-16]

According to the analysis of the literature, researchers concentrated on enhancing the stability, thermal conductivity, and heat transfer application of ZnO nanoparticles created with suspension basefluids using the method such as adding surfactant and altering the liquid concentration. As a result, the current study aims to propose a fundamental idea for the synthesis of nanoparticles through the use of basefluids and ultrasonic characterization. To

make nanofluids, distilled water was used as a base fluid, and 0.1g of ZnO nanoparticles were ultrasonicated with basefluid water to maximize enhancement.

Materials and methods

Nanofluids were prepared using two-step method. In this method basefluids like distilled water were used to make nano fluids in 1wt%. 0.1 g of nanoparticles of ZnO were added with the base fluid of distilled water and ultrasonically vibrated for 30 mins in an ultrasonicator to obtained the nanofluid. The color of the suspension turned and nanofluid was obtained. All the prepared nanofluids samples were kept in air-tight bottles.

After ultrasonication the ultrasonic velocity (U), density (ρ), and viscosity (η) of nanofluids were measured. Theoretical studies such as adiabatic compressibility (β_a), Intermolecular free length (L_f), Acoustic Impedance (Z), Relaxation Time (τ), Auerbach surface tension (σ) were also analyzed using the experimental data.

$$\beta_a = 1/ \rho U^2 \tag{1}$$

$$L_f = k (\beta_a)^{1/2} \tag{2}$$

$$Z = U \rho \tag{3}$$

$$\tau = (4/3) \beta \eta \tag{4}$$

$$\sigma = 6.3 \times 10^{-4} U^{3/2} \rho \tag{5}$$

Results and discussion

Using distilled water as a base fluid, the ultrasonic method was used to measure ultrasonic velocity (U), relative density (ρ), and viscosity (η) experimentally. To create a ZnO nanofluids solution, 0.1g of synthesized ZnO nanoparticles were ultrasonicated for 30 minutes with distilled water as a base fluid. The experimental data was also used to analyze theoretical studies such as adiabatic compressibility (β_a), intermolecular free length (L_f), acoustical impedance (Z), relaxation time (τ) and Auerbach surface tension (σ). The graph was also plotted using the previously indicated data to obtain a good agreement in findings, which are presented in figs. 1.1–1.8.

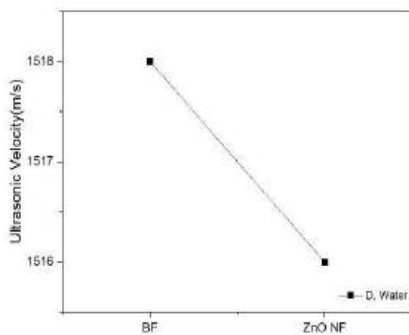


Fig 1.1: Ultrasonic Velocity

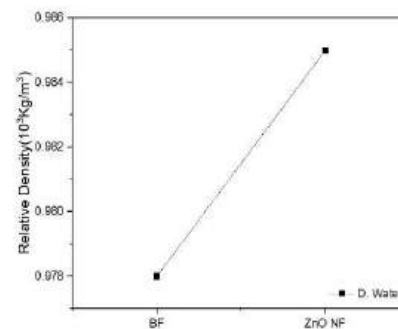


Fig 1.2: Relative Density

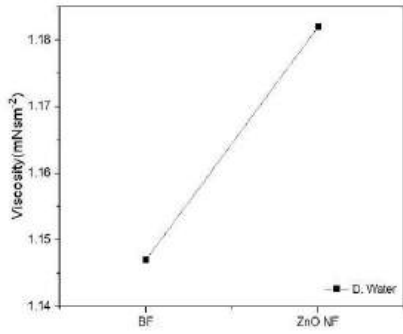


Fig 1.3: Viscosity

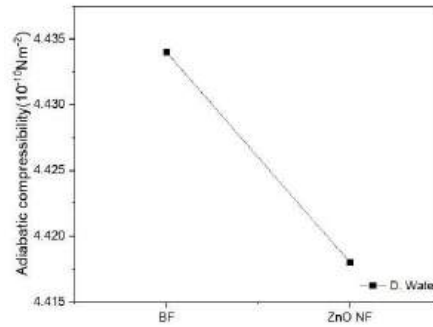


Fig 1.4: Adiabatic Compressibility

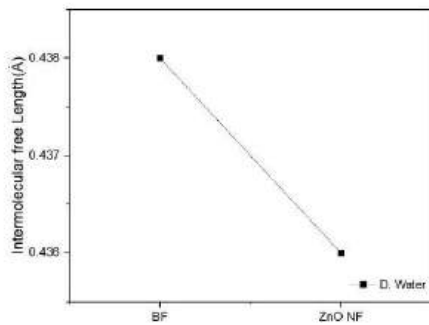


Fig 1.5: Intermolecular free length

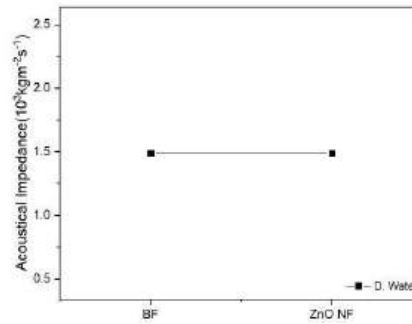


Fig 1.6: Acoustical Impedance

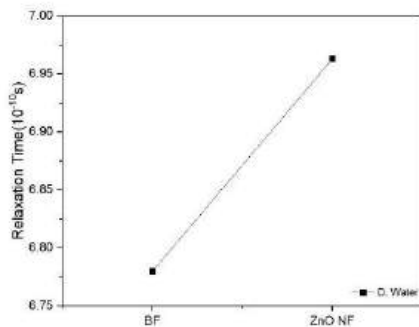


Fig 1.7: Relaxation Time

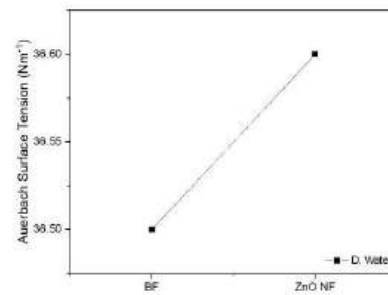


Fig 1.8: Auerbach Surface tension

When distilled water with ZnO nanofluid is compared to conventional distilled water, the ultrasonic velocity falls marginally. As demonstrated in fig. 1.1, this nanofluid exhibits molecular interactions with a maximum range of 1518 m/s. In fig. 1.2, the relative density rises from distilled water to ZnO with distilled water nanofluid, indicating the existence of metal oxide composition which shows the density rising behavior. Whereas viscosity may be observed to exhibit the same behavior as density, viscosity rises when the metal oxide content is added, as illustrated in fig. 1.3.

The adiabatic compressibility, intermolecular free length of distilled water, and ZnO with distilled water nanofluid exhibit the same type of behavior as seen in figs. 1.4 and 1.5 when the metal oxide content increases. The acoustical impedance, relaxation time, and

Auerbach surface tension of distilled water and ZnO with distilled water nanofluid exhibit comparable behavior as illustrated in fig 1.6 – 1.8 when the metal oxide concentration rises.

Conclusion

ZnO with water based nanofluids shows the molecular interactions with a maximum range of 1518 m/s, as shown in fig. 1.1. Relative density increases from distilled water to ZnO with distilled water nanofluid reflects the metal oxide composition presence and it shows the density increasing in behavior. The acoustical impedance, relaxation time and Auerbach surface tension of distilled water and ZnO with distilled water shows the similar behavior. All of the experimental data also provides a theoretical perspective on nanofluids. From this present study, water-based nanofluids were highly reliable for synthesis and applications of nanofluids.

References

- [1] Kabra, P & Chimankar, O P (2020), ‘Ultrasonic and Spectroscopic Study of Risperidone and Polyethylene Glycol Suspension’, *Journal of Pure and Applied Ultrasonics*, vol. 42, no. 1, pp. 1-8
- [2] Patel, Y V & Parsania, P H (2002), ‘Ultrasonic velocity study of poly R, R', 4, 4'-cyclohexylidene diphenylene diphenyl ether-4, 4'-disulfonate solutions at 30, 35 and 40° C’, *European polymer journal*, vol. 38, no. 10, pp. 1971-1977
- [3] Dhasi, V, Wadhvani, R, Akhtar, Y, Pandey, J D, & Vyas, V (1998), ‘Ultrasonic and thermodynamic studies of ternary solutions’, *Acta Acustica united with Acustica*, vol. 84, no. 5, pp. 976-979
- [4] Choi, S U & Eastman, J A (1995), Enhancing thermal conductivity of fluids with nanoparticles No. ANL/MSD/CP-84938; CONF-951135-29, Argonne National Lab, IL United States
- [5] Phiwdang, K, Suphankij, S, Mekprasart, W & Pecharapa, W (2013), ‘Synthesis of CuO nanoparticles by precipitation method using different precursors’, *Energy procedia*, vol. 34, pp. 740-745
- [6] Zhao, P, Zhao, H, Yu, J, Zhang, H, Gao, H, & Chen, Q (2018), ‘Crystal structure and properties of Al₂O₃-Cr₂O₃ solid solutions with different Cr₂O₃ contents’, *Ceramics International*, vol. 44, no. 2, pp. 1356-1361
- [7] Gaaz, T S, Sulong, A B, Akhtar, M N, Kadhum, A A H, Mohamad, A B & Al-Amiery, A A (2015), ‘Properties and applications of polyvinyl alcohol, halloysite nanotubes and their nanocomposites’, *Molecules*, vol. 20, no. 12, pp. 22833-22847

- [8] Desa, A L, Hairom, N H H, Sidik, D A B, Misdan, N, Yusof, N, Ahmad, M K & Mohammad, A W (2019), 'A comparative study of ZnO-PVP and ZnO-PEG nanoparticles activity in membrane photocatalytic reactor MPR for industrial dye wastewater treatment under different membranes', *Journal of Environmental Chemical Engineering*, vol. 7, no. 3, pp. 103143
- [9] Huang, C., Mou, W., Li, J. and Liu, Y., (2022). Extremely Well-Dispersed Zinc Oxide Nanofluids with Excellent Antibacterial, Antifungal, and Formaldehyde and Toluene Removal Properties. *Industrial & Engineering Chemistry Research*, vol. 61, no. 11, pp.3973-3982.
- [10] Sharma, R., Chauhan, P., Sharma, A.K., Katiyar, A., Singh, H.K., Rinawa, M.L. and Kumar, P.M., (2022). Characterization of ZnO/nanofluid for improving heat transfer in thermal systems. *Materials Today: Proceedings*.
- [11] Sengwa, R.J., Saraswat, M. and Dhatarwal, P., (2022). Comprehensive characterization of glycerol/ZnO green nanofluids for advances in multifunctional soft material technologies. *Journal of Molecular Liquids*, vol. 355, p.118925.
- [12] Ashour, A.F., El-Awady, A.T. and Tawfik, M.A., (2022). Numerical investigation on the thermal performance of a flat plate solar collector using ZnO & CuO water nanofluids under Egyptian weathering conditions. *Energy*, vol. 240, p.122743.
- [13] Qamar, A., Anwar, Z., Ali, H., Imran, S., Shaukat, R. and Abbas, M.M., (2022). Experimental investigation of dispersion stability and thermophysical properties of ZnO/DIW nanofluids for heat transfer applications. *Alexandria Engineering Journal*, vol. 61, no. 5, pp.4011-4026.
- [14] Nwaokocha, C., Momin, M., Giwa, S., Sharifpur, M., Murshed, S.M.S. and Meyer, J.P., (2022). Experimental investigation of thermo-convection behaviour of aqueous binary nanofluids of MgO-ZnO in a square cavity. *Thermal Science and Engineering Progress*, vol. 28, pp.101057.
- [15] Ma, M., Xie, M. and Ai, Q., (2022). Study on photothermal properties of Zn-ZnO/paraffin binary nanofluids as a filler for double glazing unit. *International Journal of Heat and Mass Transfer*, vol. 183, p.122173.
- [16] Meraje, W.C., Huang, C.C., Barman, J., Huang, C.Y. and Kuo, C.F.J., (2022). Design and experimental study of a Fresnel lens-based concentrated photovoltaic thermal system integrated with nanofluid spectral splitter. *Energy Conversion and Management*, vol. 258, pp.115455.

SYNTHESIS AND CHARACTERIZATION OF BIOPLASTIC FROM *AVENA SATIVA* AND *ELEUSINE CORACANA*

M. Amirtha and J. Antony rajam

Department of Chemistry, St. Mary's College (Autonomous), Thoothukudi

Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Bioplastics are plastics that can be used just like conventional plastics but will disintegrate by the activity of microorganisms into water and carbon dioxide. Starch is a natural polymer material that can be used for bioplastic production. ORP (Oats-Ragi bio-Plastic) was synthesized from Oats (*Avena sativa*) and Ragi (*Eleusine Coracana*) using vinegar and glycerol. This work focuses on the performance analysis of ORP using solubility test in water and various solvents, swelling ratio test, degradability of ORP in the natural soil and degradability of ORP in the marine environment. Further the synthesized biopolymer was characterized by using UV, XRD, FT-IR and TGA analysis. Due to the bio-degradability and renewability of biopolymers, petroleum-based plastics can be replaced with bio-based polymers in order to minimize the environmental risks. Bioplastics are biodegradable, biocompatible with humans and non-toxic to marine organisms.

Keywords: Bioplastic, degradation, bio polymer, marine environment, swelling ratio, starch.

Introduction

Bioplastics can also be biobased (originated from renewable materials) and biodegradable (that can be back to nature). In terms of renewability and production, some of the most widely known biobased plastics nowadays are polylactic acid (PLA), starch-based plastics, protein-based plastics, cellulose based plastics. Although bioplastics are commonly considered to be more environmentally friendly than petroleum-based plastics, that is not necessarily the case when considering the life cycle of the materials. Bioplastic fabrication processes result in a large number of pollutants, because of the fertilizers and pesticides utilized to grow the plants and the chemical processing needed to change organic materials to plastics^[1]. Starch-based products are used in several sectors (e.g. biodegradable and compostable carrier bags, catering items, waste management, mulch film, bio-filler for the automotive sector etc.) and they are biodegradable and compostable as shown by external laboratories^[2]. Starch constitutes about 60 % of oat grain. It is mainly a constituent of endosperm. There is considerable difference observed between the physicochemical properties of oat starch and other cereal starches. Oat starches showed higher swelling factor,

decreased amylose leaching, coleaching of a branched starch component and amylose during pasting process, higher peak viscosity and set back, low gel rigidity, greater susceptibility towards acid hydrolysis, greater resistance to α -amylase action and high free-thaw stability. Ragi consists of about 65% of starch and 11.5% of dietary fibre. Its starch has amylose and amylopectin fractions in the ratio of 25:75. The seed coat of finger millet contains phytochemicals, which may have health benefits. Ragi starch with the highest amylose content had the highest solubility.



Fig. 1 Oats (*Avena sativa*)



Fig. 2 Ragi (*Eleusine coracana*)

Materials and methods

Materials

- ❖ Oats starch
- ❖ Ragi starch
- ❖ Vinegar
- ❖ Glycerol
- ❖ Distilled water

Preparation of bioplastic

Processing of bioplastic involves the Oats starch and Ragi starch. 3.5g of Oats Starch was dissolved in 10ml of distilled water in a 50ml beaker. Similarly 3.5g of Ragi Starch was dissolved in 10ml of distilled water in a 50ml beaker. The two solutions were then poured

into a 250ml beaker. To this, 5ml of vinegar was added and stirred well. The beaker was then heated to 40°C in a hot plate. To this mixture, 4ml of the plasticizer, glycerol was added and the mixture was heated in a hot plate for a certain period of time. The heating process was stopped when the mixture becomes thick paste. It was immediately poured and moulded on aluminium sheet, when it was hot. Make sure that the paste was spreaded equally in the aluminium sheet. After this, the sheet was kept on sunlight for 2 days, so that it was dried completely. Finally the bioplastic film thus formed was peeled off from the aluminium sheet. The synthesized bioplastic was named as ORP.

Results and discussion

Water solubility test

The ORP sample was immersed in 100 mL distilled water and taken out every 4 hours, dried and weighed. It was noted upto 24 hours [5, 15].

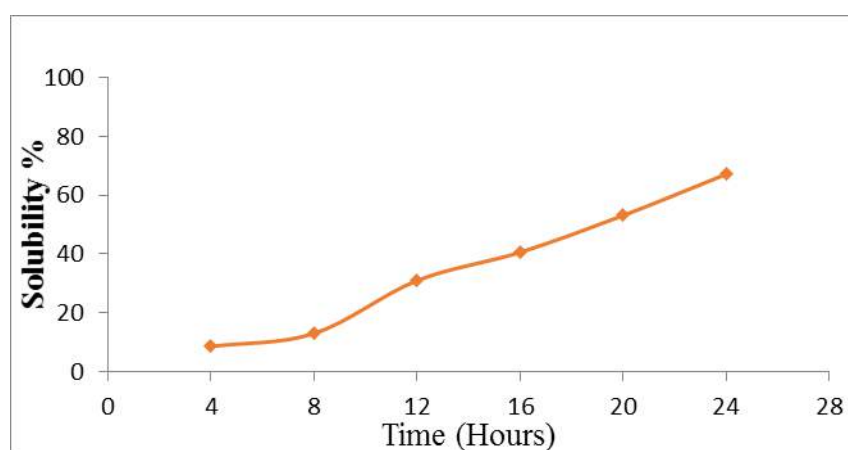


Fig. 3 Plot of Time Vs Solubility %

The solubility of ORP in water increases every 4 hours. At initial the weight was 0.64g. After 4 hours the solubility of ORP was 8.57%. After 24 hours the solubility of ORP was 67.19%.

Solubility in various solvents

The solubility of ORP in various solvents like water, Benzene, Toluene, Ethanol and Acetone were tested after 24 hours. ORP after immersed in various solvents were taken out after 24 hours and weighed. It was compared with their initial weights. It was found that ORP has high solubility value of 66.7% in water, very low solubility of 1.25% in ethanol and medium solubility value of 36.36% in benzene.

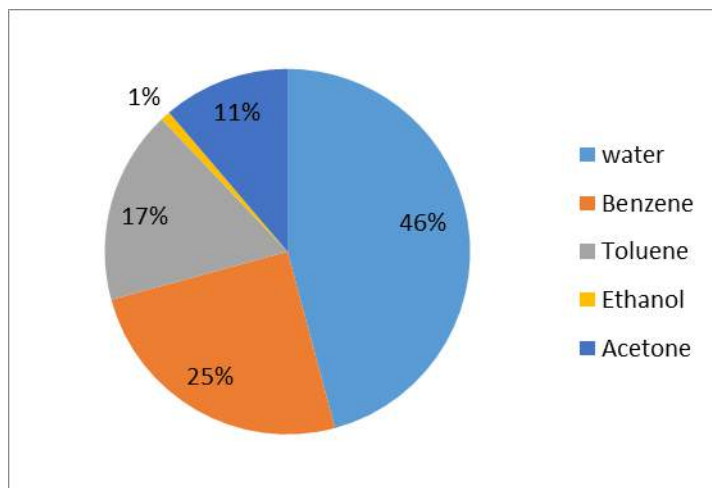


Fig. 4 Solubility % of ORP in various solvents

Swelling ratio test

The dried ORP was cut into equal pieces and immersed in ultrapure water for 10 minutes and the weight of these swelling materials was measured. From the average of the readings the swelling ratio for ORP was found to be 104.84 %. The ORP shows the slight swelling in an aqueous solution [2, 16].

Biodegradability in the soil

The ORP samples were cut into equal pieces. Garden soil was collected, moistened and stored in a container. The samples were buried 2 cm inside the soil and kept at room temperature. They were monitored for 30 days. The weight of the samples was measured before (day zero) and after the testing (day 30).

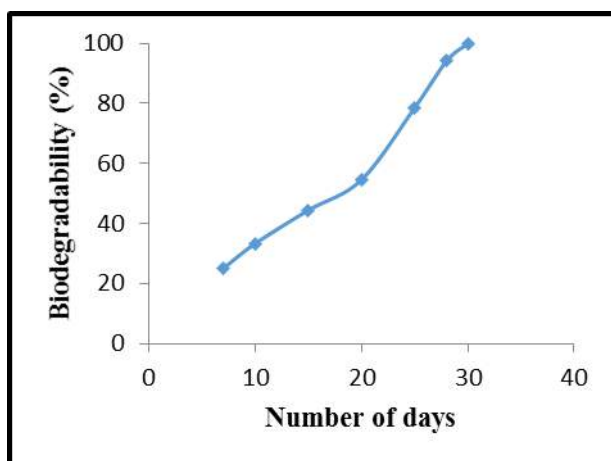


Fig. 5 Plot of No. of days Vs biodegradability %

The biodegradability behaviour reduced the mass of ORP^[3]. The initial mass of ORP was 0.64g on day 0 and reduced to 0.03g on day 28 with the optimum rate of weight loss of 94.11%. The ORP completely decomposed after 30days.

Biodegradability in the marine environment

The ORP were cut into equal pieces. It was then kept inside the marine environment and monitored every two days ^[4]. After 12 days, the sample were taken out and weighed.

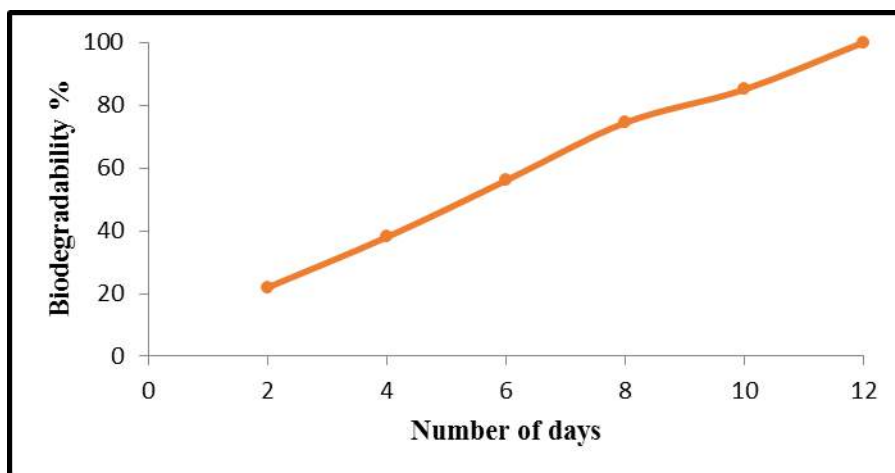


Fig. 6 Plot of No. of days Vs biodegradability % in the marine environment

The biodegradability behaviour reduced the mass of ORP. The initial mass of ORP was 0.64g on day 0 and reduced to 0.03g on day 10 with the optimum rate of weight loss of 85%. The ORP completely decomposed after 12 days.

UV-Visible absorption spectroscopy

The spectrum was recorded in the range 200-900nm. For ORP the maximum absorbance obtained at 344nm. This is similar to the UV absorption of starch based bioplastics. This indicates that the bioplastic absorbed UV light especially in the UV region ^[5, 14].

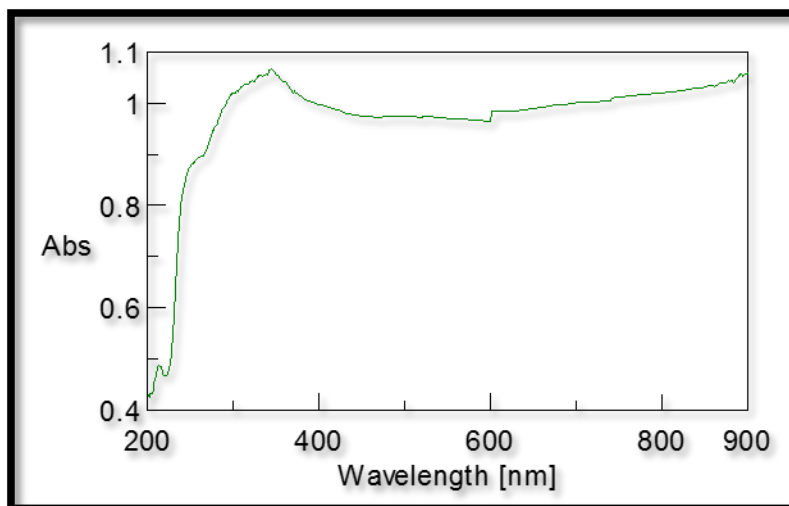


Fig. 7 UV Visible spectrum of ORP

FT-IR Studies

In the spectrum band at **1018.41 cm⁻¹** and **1149.57 cm⁻¹** corresponding to the stretching vibration C-O bond. The band around **3286.70 cm⁻¹** can be referred to the O-H stretching. The presence of carboxylic acid can be confirmed by the O-H band at **2924.09 cm⁻¹** [13]. The band around **2854.65 cm⁻¹** can be referred to the C-H stretching vibration for the presence of alkane [6, 7, 12].

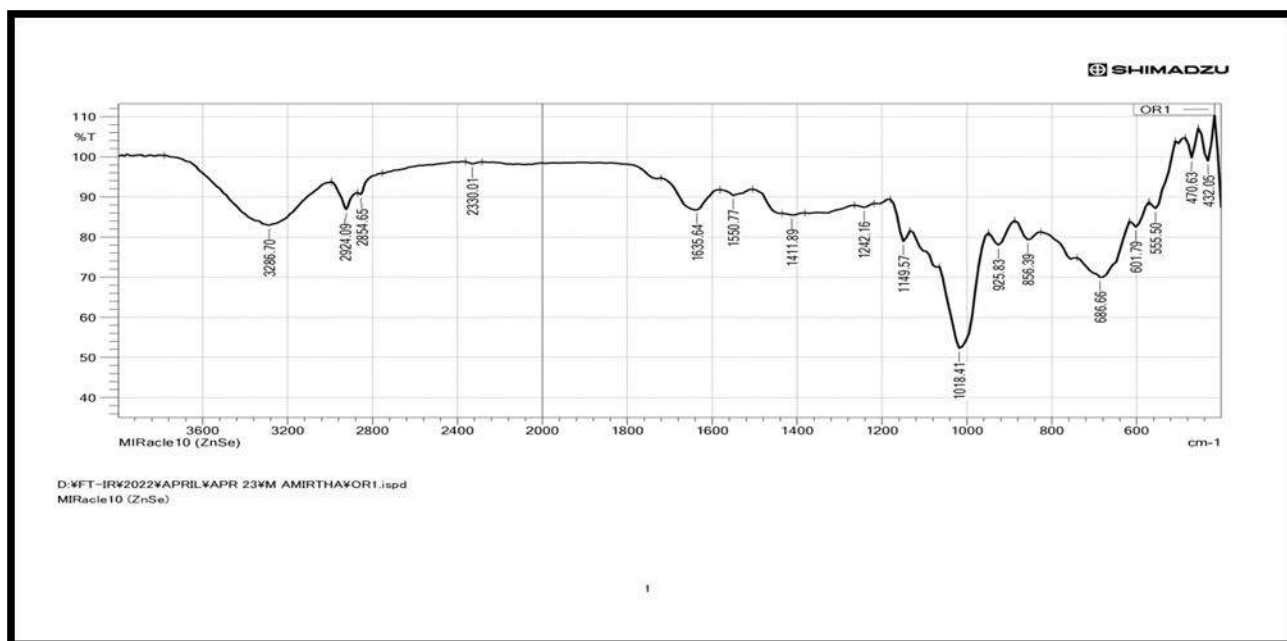


Fig. 8 FT-IR Spectrum of ORP

3.8 X-Ray Diffraction (XRD)

The characteristic peaks at 2θ : 17.18, 20.20 are evident that the diffraction pattern is probably due to the strong interaction between the hydroxyl groups of the starch molecules are replaced by hydrogen bonds formed between plasticizer and starch during processing. Hence the ORP possess amorphous form [8].

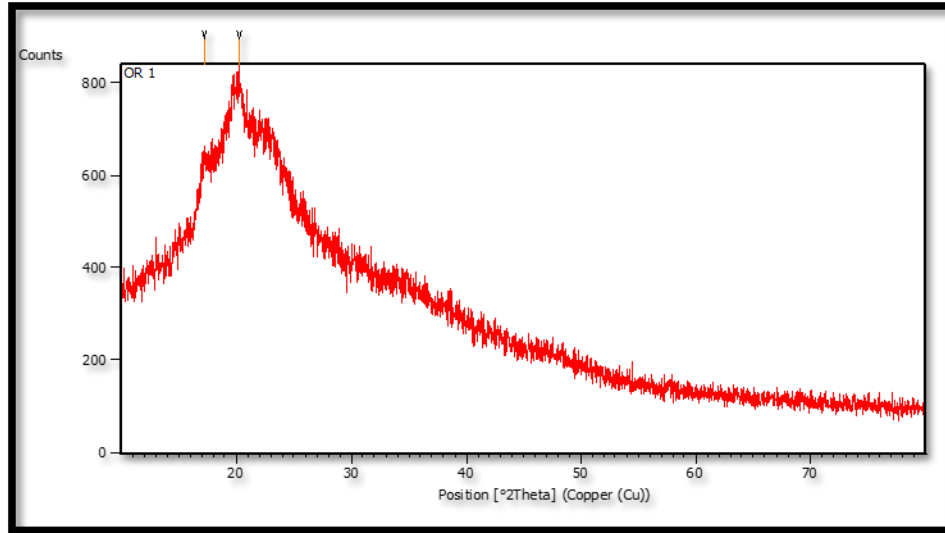


Fig. 9 XRD Spectrum of ORP

Thermogravimetric analysis

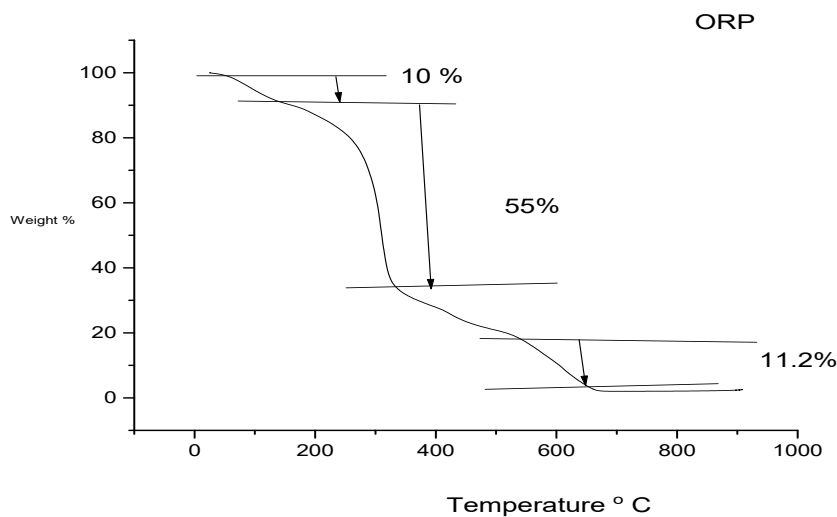


Fig. 10 TGA curve for ORP

The TGA for ORP shows the 10% decomposition at 100 -200° C and half of the decomposition of ORP at 200- 320° C and the complete decomposition takes place above 675°C. Thus the ORP possess good thermal stability [9 - 11].

Conclusion

The ORP bioplastic has very good solubility in water and has very low solubility in ethanol. The biodegradability test in the natural soil shows that the ORP takes 30 days to completely degrade. The biodegradability test in the marine environment shows that the ORP takes 12 days to completely degrade. The UV-Visible spectrum of ORP was obtained at 344 nm. This indicates that it was observed in the UV region. The OR sample absorbs the UV-Visible light. Hence it is beneficial to use ORP in food packaging. The FT-IR studies showed the adsorption peaks at 1018.41, 1149.57, 3286.70, 2924.09 and 2854.65 cm^{-1} corresponds to C-H, O-H and C-O stretching. This indicates that the formation of ORP only occurs by the polymerization. The structural properties were studied using XRD analysis and the characteristic peaks at 2θ : 17.18, 20.20 indicating the amorphous nature of ORP. The TGA curve for ORP shows that the temperature needed for half of the decomposition was 200-300°C and the ORP completely decompose above 675°C.

References

1. Trieu Khoa Nguyen et al, 2022, “Development of Starch-Based Bioplastic from Jackfruit Seed”, *Advances in Polymer Technology*, DOI: 10.18517/ijaseit.7.5.1292
2. Francesco Razza, Francesco Degli Innocenti, 2012,” Bioplastics from renewable resources: the benefits of biodegradability”, *Asia-Pacific Journal of Chemical Engineering*
3. Norhafezah Kasmuri, Muhammad Safwan, Abu Zait,2018 “Enhancement of Bio-plastic using Eggshells and Chitosan on Potato Starch Based”, *International Journal of Engineering & Technology*, DOI: 10.14419/ijet.v7i3.32.18408
4. Xin-Feng Wei et al, 2021, “Microplastics generated from a biodegradable plastic in freshwater and seawater”
5. Edi Syafri et al, 2017, “Effect of Precipitated Calcium Carbonate on Physical, Mechanical and Thermal Properties of Cassava Starch Bioplastic Composites”, *International Journal on Advanced Science Engineering Information Technology*, DOI:10.18517/ijaseit.7.5.1292
6. Noryawati Mulyono et al, 2015, “Development of bioplastic on cassava flour and its starch derivatives for food packaging”, *Journal of Harmonized Research*
7. Maulida, M. Siagian, P. Tarigan, “Production of Starch Based Bioplastic from Cassava Peel Reinforced with Microcrystalline Cellulose Avicel PH101 Using Sorbitol as Plasticizer”, *Journal of Physics: Conference Series 710*, **2016**



8. Saiful, H. Helwati, S. Saleha, T. M. Iqbalsyah, 2018 “Development of bioplastic from wheat Janeng starch for food packaging”
9. Akshaya Krishnamurthy et al, 2019, “Synthesis and characterization of eco-friendly bioplastic from low-cost plant resources”
10. Bayer et al, 2014, “Direct transformation of edible vegetable waste into bioplastics Macromolecules”
11. A. B. D. Nandiyanto et al, 2020, “Mechanical and biodegradation properties of cornstarch-Based bioplastic material”
12. Liqaa Hamid et al, 2021, “Fabricating Starch-Based Bioplastic Reinforced with Bagasse for Food Packaging”
13. M. K. Marichelvam, 2019, “Corn and Rice Starch-Based Bio-Plastics as Alternative Packaging Materials”
14. Anagha Ashok, R. Abhijith, C. R. Rejeesh, 2018, “Material characterization of starch derived bio degradable plastics and its mechanical property estimation”
15. Masanori Yamada et al, 2020 “Preparation of bioplastic using soy protein”
16. M. Selvakumar, P. Sivakumar, 2019, “Bioplastics –An Eco-Friendly Alternative to Petrochemical Plastics, *Journal current world environment*”
17. Mehran Ghasemloua et al, 2018, “Biodegradation of novel bioplastics made of starch, polyhydroxyurethanes and cellulose nanocrystals in soil environment”

**GREEN SYNTHESIS AND CHARACTERISATION OF COPPER OXIDE AND
TELLURIUM DOPED COPPER OXIDE NANOPARTICLES USING *BAUHINIA
PURPUREA* LEAF EXTRACT**

V. Malini and G. Murugeswari

Department of Chemistry, St. Mary's College (Autonomous), Thoothukudi
Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

The intense development of nanotechnology, copper oxide nanoparticles have terrible immense applications in electrical, optical and bio-medical applications. To safeguard the environment and to mortify the toxicity in chemicals, the present work was carried out for synthesizing CuO and Te doped CuO nanoparticles of using *Bauhinia purpurea* leaf extract and it shows a good result towards antibacterial agents. These green synthesized nanoparticles were subjected to characterization techniques, X-ray Diffraction (XRD), Scanning Electron Microscopy (SEM) with Energy Dispersive X- ray Analysis (EDAX), Fourier Transform Infrared spectroscopy (FTIR) and Ultraviolet–Visible spectroscopy (UV). From XRD, the average crystallite size for CuO and Te doped CuO nanoparticles was found to be in the nanometer range. The surface morphology and the elemental compositions of nanoparticles were confirmed by SEM with EDAX. Functional groups were observed by FTIR spectra.

Keywords: CuO, Te -doped CuO, *Bauhinia purpurea*, green synthesis.

Introduction

Nanotechnology

In Nanotechnology, the fundamental synthesis of metal and metal oxides was done to identify their multifarious in dispersity, sizes, shapes, chemical composition. Nanotechnology has made remarkable advances in terms of scientific exploration and applications in recent years. When compared to bulk materials, nanoparticles (NPs) exhibit fascinating and impressive characteristics like as durability, high permeability, various chemical and biological activities, and more applications. ^[1]

The present investigation was made to synthesize CuO and Te doped CuO by green synthesis using the leaf extracts of *bauhinia purpurea*. CuO nanocrystallites exhibit an enhancement of some potential properties including catalyst, superconducting materials, thermoelectric materials, sensing materials, gas sensors, semiconductors, solar energy

transformation, high tech superconductors and antibacterial activity of synthesis of Te doped CuO nanoparticle.

Green synthesis

Green synthesis is a more advanced method of synthesizing nanomaterials over other methods because of its simplicity, lower cost, and relatively higher reproducibility. **Green synthesis** of nanomaterials refers to the **synthesis** of different metal nanoparticles using bioactive agents such as plant materials, microorganisms, and various biowastes including vegetable waste, fruit peel waste, eggshell, agricultural waste, and so on.

Te doped CuO applications

Tellurium has been used to vulcanise rubber, to tint glass and ceramics, in solar cells, in rewritable CDs and DVDs and as a catalyst in oil refining. It can be doped with copper in semiconductor applications.

Materials and methods

Materials

- ❖ Fresh *bauhinia purpurea* leaves
- ❖ Copper nitrate is of LR grade
- ❖ Potassium tellurite is of HI – LR grade purchased from himedia
- ❖ Sodium hydroxide is of LR grade purchased from isochem

Preparation methods

Preparation of leaves extract

10 g of fresh leaves of *bauhinia purpurea* was washed and cut into small pieces. The leaves were taken in 500 mL glass beaker along with 300 mL of distilled water. The mixture was then boiled for 40 minutes until the colour of aqueous solution changes from colourless to dark green colour. The extract was cooled to room temperature and filtered using filter paper. The unused extract was stored in refrigerator in order to be used for further experiment.

Preparation of copper oxide nanoparticle

5.5 g $\text{Cu}(\text{NO}_3)_2$ was dissolved in 100 mL of leaf extract in a beaker. This solution was kept under constant magnetic stirring till $\text{Cu}(\text{NO}_3)_2$ totally dissolved in the leaf extract. The temperature of the beaker was raised to 80°C by electric hot plate heating, meanwhile 5 g of sodium hydroxide was dissolved in 25 mL of distilled water in a separate beaker. From the prepared NaOH solution, 15 mL of NaOH is added to the beaker with constant stirring drop by drop touching the walls of the beaker. The green solution turned into a blue colour solution. The reaction was allowed to produced for 2 hours after complete addition of NaOH,

after the complete reaction, the solution was removed by washing with distilled water for 5 times. After complete washing of the crude it was kept at muffle furnace for 4 hours at 500° C. The black colour powder of CuO nano particle was obtained.

Preparation of tellurium doped with copper oxide nano particles

The above procedure followed and the addition of 1 g of tellurium was dissolved in 50 ml of distilled water.

RESULTS AND DISSCUSSION

UV – Visible Absorption Spectroscopy UV for undoped CuO nanoparticles

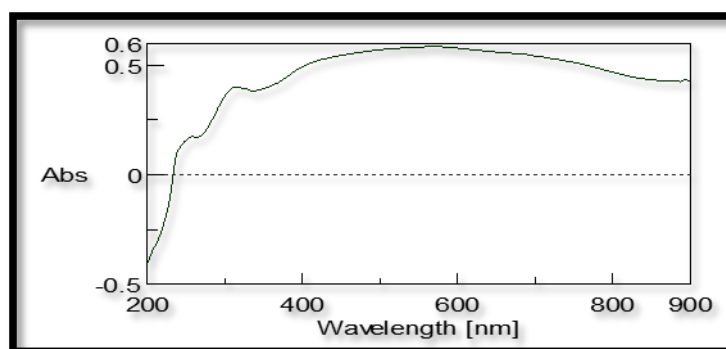
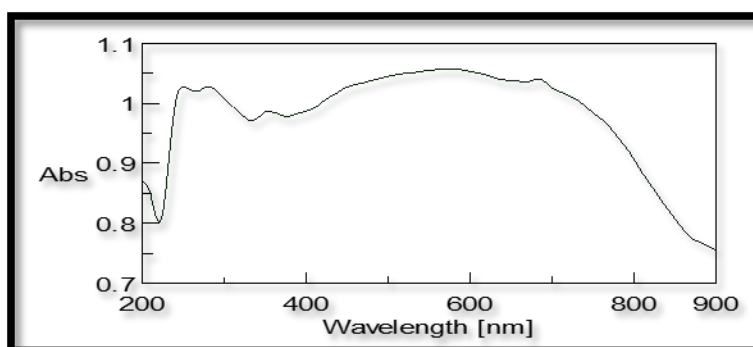


Fig. 1 UV for undoped CuO NPs

The UV – Visible spectrum of CuO nanoparticles using green synthesis was shown in above Fig. The spectrum was recorded in the range 200 – 900 nm. The adsorption maximum is obtained at 556 nm and the blue shift is attributed to the smaller size of nanoparticles. This indicates the formation of smaller particles. [2][3] The band gap energy of CuO nanoparticles 2.2ev.

UV for Te doped CuO nanoparticles

The UV – Visible spectrum of CuO nanoparticles using green synthesis was shown in below Fig. The spectrum was recorded in the range 200 – 900 nm. The adsorption maximum is obtained at 574 nm and the blue shift is attributed to the smaller size of nanoparticles.



This indicates the formation of smaller particles.

Fig. 2 UV for Te doped CuO NPs

The band gap energy of CuO nanoparticles **2.16ev**.

FT – IR for undoped CuO nanoparticles

The stretching frequency involved in CuO nanoparticles were detected by FT – IR analysis. The IR spectra of the sample were recorded in the range 400 – 3800 cm^{-1} . The stretching at 601,470 cm^{-1} could be assigned as the Cu - O stretching. The band shown at 848 cm^{-1} which indicates C- H bending vibration. The band shown at 455, 470 cm^{-1} which indicate the C – C stretching. [4][5]

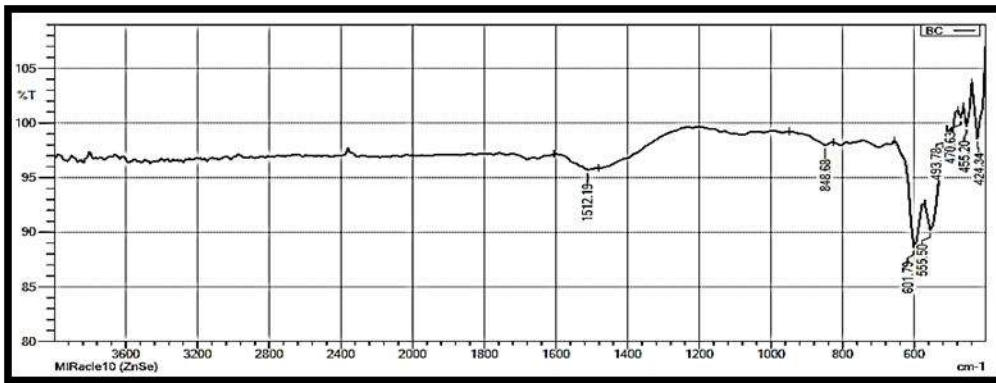


Fig. 3 FT- IR for undoped CuO NPs

FT – IR for Te doped CuO nanoparticles

The Te doped CuO nanoparticles were detected by FT – IR the range 400 – 3800 cm^{-1} . The stretching frequency at 671, 771 cm^{-1} could be assigned for Te – O band. The band at 948 cm^{-1} for C- O stretching. The band 408,439,462 cm^{-1} for C – C stretching. The band at 810 cm^{-1} for C – H stretching. [4]

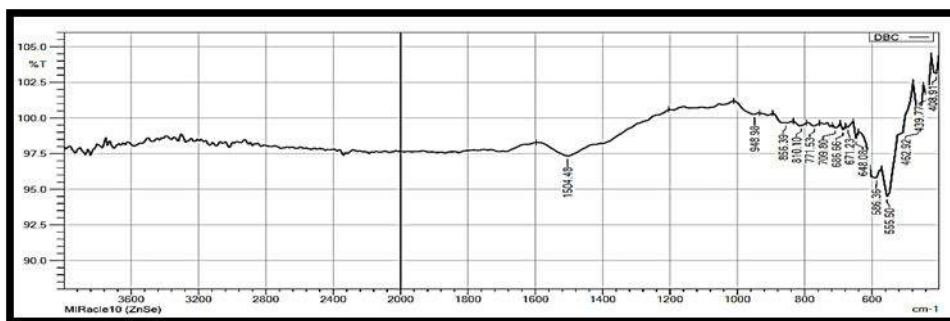


Fig. 4 FT – IR for Te doped CuO NPs

SEM analysis for undoped CuO nanoparticles

The morphology and size distribution of the synthesized CuO nanoparticles can be measured by the Field Emission – Scanning Microscopy (FE – SEM). The average particle size ranges from 1 μm - 500 nm. The particles are spherical and they well separated from each

other. The figure (a, b) shows the different magnification as 1 μm , 500 nm, 200 nm, 200 nm.

[4] [6]

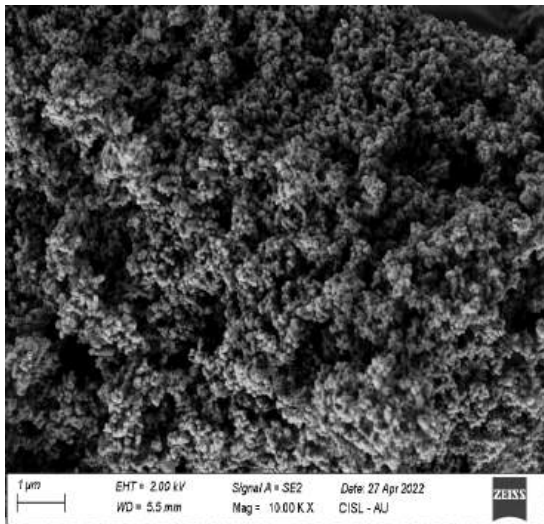


Fig. 5(a) SEM

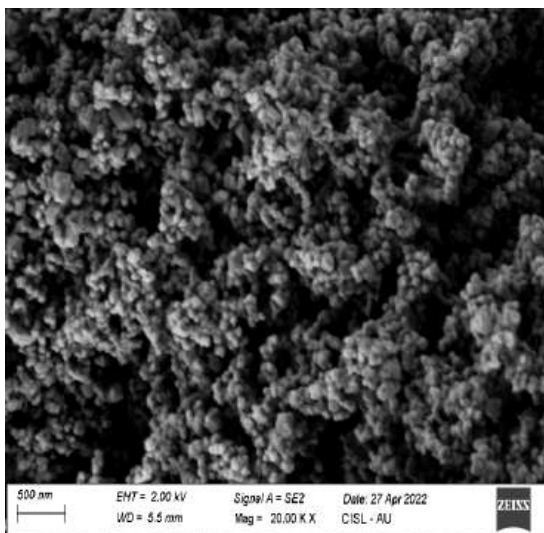


Fig. 5(b) SEM

SEM analysis for Te doped CuO nanoparticles

The morphology and size distribution of the synthesized CuO Nanoparticles can be measured by the Field Emission – Scanning Microscopy (FE – SEM). The average particle size ranges from 200 nm- 500 nm. The figure (a, b) shows the different magnification as 500 nm, 400 nm, 300 nm, 200 nm.

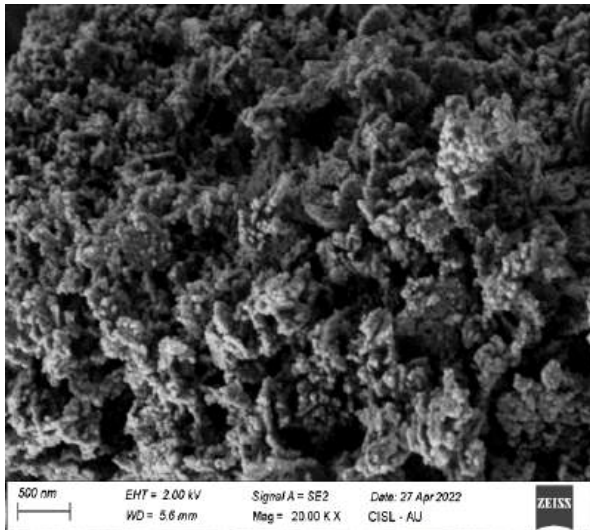


Fig. 6a SEM

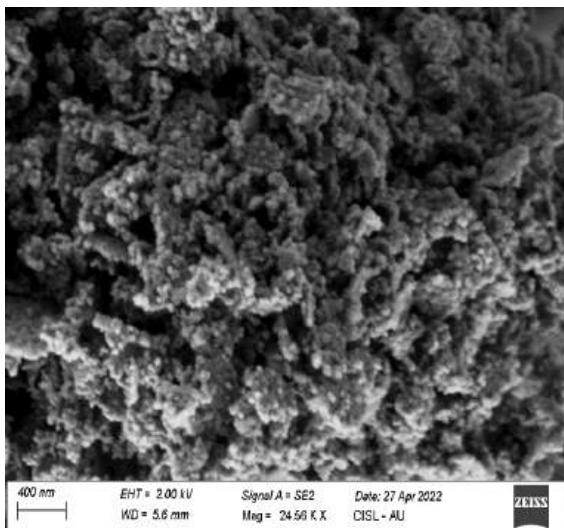


Fig. 6b SEM

EDAX analysis for undoped CuO nanoparticles

The elemental composition of undoped CuO Nanoparticles can be obtained by Energy Dispersive X – Ray analysis. The presence of copper and oxide elements in the synthesized CuO Nanoparticles was shown in the below figure [4] [6]

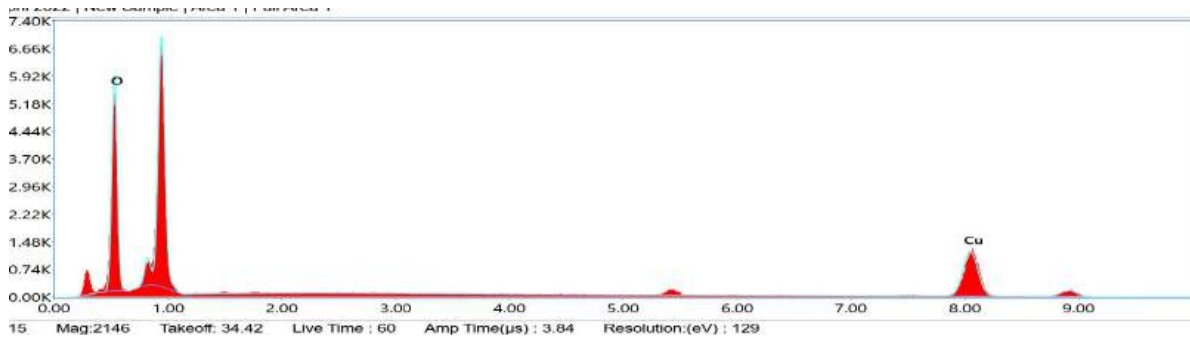


Fig.7 EDAX for undoped CuO NPs

EDAX analysis for Te doped CuO nanoparticles

The elemental composition of undoped CuO nanoparticles can be obtained by Energy Dispersive X – Ray analysis. The presence of copper, oxide, tellurium elements in the synthesized CuO Nanoparticles was shown in the below figure.

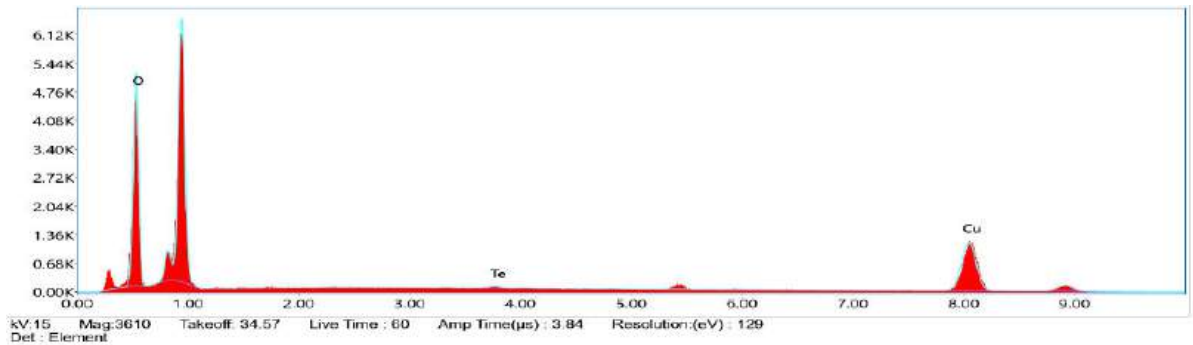


Fig. 8 EDAX for Te doped CuO NPs

Table 3.1 Atomic composition of Te doped CuO nanoparticle

Element	Atomic %	Weight %
Oxide	55.26	23.57
Copper	44.38	75.19
Tellurium	0.36	1.24

X – Ray Diffraction Spectroscopy

Structural parameter of CuO nanoparticles calculated from the XRD pattern. The prepared CuO Nanoparticles were face centered cubic (FCC) structure. The presence of several peaks indicates random orientation of the crystallites structure. The average size (D) was calculated using the known scherrer's formula ^{[4] [5]}

$$D = k \lambda / \beta \cos \theta$$

XRD for Undoped CuO nanoparticles

The average crystallite size (D) of synthesized nanoparticles was found to be **43.4116 nm**. The spectrum of CuO exhibits sharp peaks at 2θ equal to 35.4075, 38.7008. These peaks are identified to originate from pattern {111}, {200} respectively. ^[7] The lattice value for the synthesized nanoparticle was found to be **4.3904 Å** the XRD result.

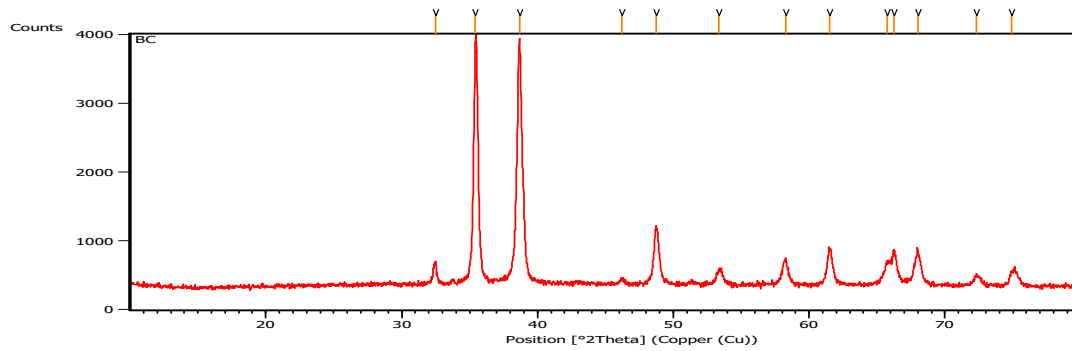


Fig. 9 XRD for undoped CuO NPs

Table 3.2 The average crystallite size (D)

Position 2θ	θ	$\text{Cos}\theta$	B	D
32.4822	16.2411	0.9600	0.0035	43.8788
35.4075	17.7037	0.9526	0.0032	48.2667
38.7008	19.3504	0.9435	0.0032	48.2667
46.2124	23.1062	0.9197	0.0070	22.6250
48.7308	24.3654	0.9109	0.0029	55.6923
53.3739	26.6869	0.8934	0.0040	41.3714
58.2595	29.1297	0.8735	0.0040	42.5882
61.5203	30.7601	0.8593	0.0052	32.9091
65.7438	32.8719	0.8398	0.0046	38.1053
Average value = 43.4116nm				

XRD analysis for Te doped CuO nanoparticle

The spectrum of Te doped CuO exhibits sharp peaks at 2θ equal to 38.7851, 48.7583. These peaks are identified to originate from pattern {111}, {200} respectively [6]. The increase in FWHM suggests that Te is incorporated into the CuO matrix. The lattice value for the synthesized nanoparticle was found to be **3.7321 Å** the XRD result.

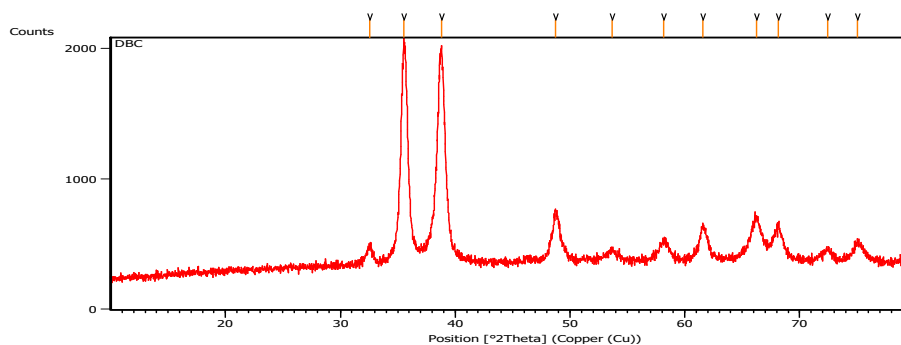
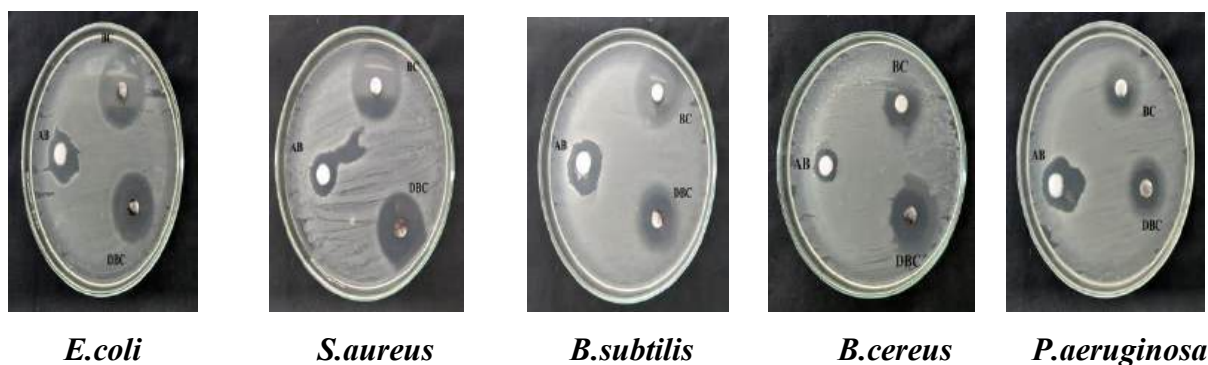


Fig.10 XRD for Te doped CuO NPs

Table 3.3 The average crystallite size (D)

Position 2θ	θ	$\text{Cos}\theta$	B	D
32.5796	16.2898	0.9598	0.0047	32.1778
35.5033	17.7517	0.9524	0.0093	16.4545
38.7851	19.3926	0.9433	0.0093	16.6437
48.7583	24.3792	0.9108	0.0041	39.1351
53.6540	26.8270	0.8924	0.0093	17.4458
58.1749	29.0875	0.8739	0.0117	14.1961
61.5366	30.7683	0.8592	0.0082	20.6857
Average = 20. 6577 nm				

3.6 Antibacterial activity



Bacteria	Inhibition zone in mm		
	Antibiotic Ampicillin	Undoped (BC)	Doped (DBC)
<i>E.coli</i>	13	21	18
<i>Staphylococcus aureus</i>	11	21	20.5
<i>Bacillus subtilis</i>	14	20	14
<i>Bacillus cereus</i>	10	13	14.5
<i>Pseudomonas aeruginosa</i>	12	13	10

The antibacterial activity of the two green synthesised CuO Nanoparticles were evaluated using disc diffusion method and the antibacterial efficacy was judged based on the zone of inhibition around the wells. In undoped CuO the inhibition was *E.coli* = *staphylococcus aureus* > *bacillus subtilis* > *bacillus cereus* = *pseudomonas aeruginosa*. In Te doped CuO

Nanoparticles the inhibition was staphylococcus aureus > E.coli > bacillus cereus > bacillus subtilis > pseudomonas aeruginosa.

Conclusion

CuO and Te doped CuO nanoparticlcs were prepared by green synthesis using *Bauhinia purpurea* leaf extracts. The prepared nanoparticles were characterized using several techniques such as **UV – Visible, FT – IR, XRD, SEM, EDAX, antibacterial activity.**

References

- [1] Hongxia Zhao, Muthuchamy Maruthupandy, Fahd A. Al-mekhlafi, Gnanasekaran Chackaravarthi 2022 Biological synthesis of copper oxide nanoparticles using marine Endophytic actinomycetes *Journal of King Saud University – Science*
- [2] Yunchang Fan, Di Wu, Sheli Zhang, Lei Zhang 2022 Effective photodegradation of 4-nitrophenol with CuO nano particles *Green chemical engineering*
- [3] Emeka Charles Nwanna, Patrick Ehi Imoisili, Tien-Chien Jen 2022 Green synthesis preparation and evaluation of CuO Doped SnO₂ *journal of materials research and technology*
- [4] Athisa Roselyn Maheo, Scholastica Mary Vithiya B. A, Augustine Arul Prasad T. 2022 Biosynthesis and characterization of Eupatorium adenophorum and chitosan Mediated Copper oxide nanoparticles and their antibacterial activity *Results in Surfaces and Interfaces*
- [5] A.P. Angeline Mary et.al 2019 Sugarcane juice mediated synthesis of copper oxide nanoparticles, Characterization and their antibacterial activity *Journal of King Saud University – Science*
- [6] D. Reshmi Agnes Preethi, A. Philominal 2022 Green Synthesis of Pure and Silver Doped Copper Oxide Nanoparticles Using Moringa Oleifera Leaf Extract *Materials Letters: X*
- [7] Sumita Choudhary et.al 2016 Growth and characterization of single phase Cu₂O by thermal oxidation of thin copper film
- [8] Sunday Adewale Akintelu, Aderonke Similoluwa Folorunso 2020 Green synthesis of copper oxide nanoparticles for biomedical application *Heliyon*
- [9] Madalina Elena Grigore et.al 2016 Methods of Synthesis, Properties and Biomedical Applications of CuO Nanoparticles
- [10] A. Azam, A.S. Ahmed, M. Oves, M.S. Khan, A. Memic, 2012 Size-dependent Antimicrobial properties of CuO nanoparticles against gram-positive and -negative Bacterial strains, *Int. J. Nanomed.* 3527–3535.



- [11] G. Sharmila, M. Thirumarimurugan, V.M. Sivakumar 2017 Optical, catalytic and Antibacterial properties of phytofabricated CuO nanoparticles using Tecoma Castanifolia leaf extract, Optik – Int. J. Light Elect. Opt. 127 7822–7828.

SYNTHESIS OF PAPER PULP FROM AGRICULTURAL WASTES USING SODA PULPING

S. Mareeswari and D. Carolin Jeniba Rachel

Department of Chemistry, St. Mary's College (Autonomous), Thoothukudi

Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Paper is one of the products that are used for many purposes. In line, with the increasing demand for paper was leading to rapid environment destruction. The present environmental issue can resolve by using non-timber resources for making paper. In this present work, synthesis of paper pulp from the agricultural wastes by using soda pulping method. The synthesized pulps were characterized using UV, FT-IR, XRD. The XRD studies shows the prepared pulps are amorphous in nature. The vibration and stretching frequencies of the pulp were determined by using FT-IR. The absorbance of the pulps were determined by using UV-visible spectroscopy. The pulps were tested by various methods to determine the lignin content, cellulose contents and the extractives which present in the synthesized pulps.

Keywords: Soda Pulping, Agricultural waste paper synthesis, Rice and Wheat Bran Paper, Paper synthesis

Introduction

Chemical pulp is produced by combining wood chips and chemicals in large vessels called digesters. There, heat and chemicals break down lignin, which binds cellulose fibres together, without seriously degrading the cellulose fibres. Chemical pulp is used for materials that need to be stronger or combined with mechanical pulps to give a product different characteristics[1]. The main benefit of chemical pumping is that the pulp fibers produced are long and strong. These long fibers can be used to make much stiffer, stronger paper products. Chemical pulp is used for high-quality white paper and other quality paper products. Brans began to be used as a raw material to make paper due to its fibrous characteristic. This study will feature the brans and its capability as a great source of pulp to make paper. Aside from that, the research only aims to see the benefits and if it will be possible to utilize brans turned into paper mandatorily[3]. Moreover, tells about how beneficial it can be for the society and the environment. Thus, can make advantageous effects to our daily living. The findings of the study will greatly contribute to the benefits of employing brans as a raw material instead of

throwing them away. It will also be a great endeavor in promoting the idea of using residues like Rice and wheat brans, as a component to make a new and satisfying creation [2].

Materials

Preparation of Paper Pulp from Wheat bran:

The raw material was washed well with double distilled water, and it was dried in oven for 100⁰ C for an hour. Then, it was weighed and dissolved in the pulping liquid. The pulping liquid is a mixture of (NaOH+Na₂S) in the ratio of 5:2. The pulping liquid contains wheat bran was heated to 180⁰ C for 90 minutes and then it was separated as brown stock and black liquor. The brown stock contains lignin and cellulose and the black liquor contains dissolved lignin and then it was cooled to room temperature. The pulp was filtered and washed thoroughly with water to remove the alkalinity and sulphidity present in the pulp. It was washed about five to six times and then the filtrate of black liquor can be used for lignin separation if, needed. The pulp was bleached with 1:1 H₂O₂ and washed with water and dried in oven at 100⁰ C for an hour. The paper pulp was obtained. The synthesized paper pulp from Wheat bran was named as Wp.

Similarly the Paper pulp from Rice bran and the Pulp from Rice and Wheat Bran was synthesized and it was named as Rp and RWp respectively.

Results and discussion

Lignin

Kappa number

The kappa number of the Rp, Wp, RWp are 10,9,12 respectively. From this values, klason lignin values can be calculated as

$$\text{klason lignin} = 0.15 \times \text{kappa number}$$

Fig 1 represents the klason lignin values are linear to the kappa number of the pulp. It represents the high kappa number requires high bleaching values means it requires strong bleaching agent. [2,3,7].

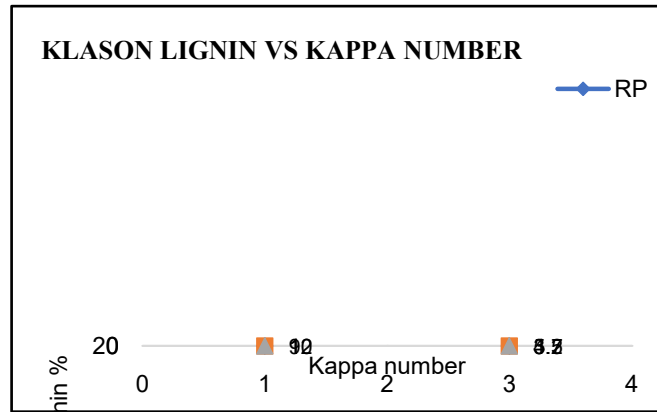


Fig 1 klason Lignin vs Kappa Number

Acid -Insoluble lignin:

The acid insoluble lignin content for the pulps is 12.5%, 14%, 10.3 % for Rp, Wp, RWp respectively. In Fig 2 the plot between percentage of the insoluble lignin and the weight of the pulp obtained is mentioned. Hardness, Bleachability, colour associated with lignin content present in the pulp. High amount of lignin in pulp requires strong bleaching agent [5,6,11].

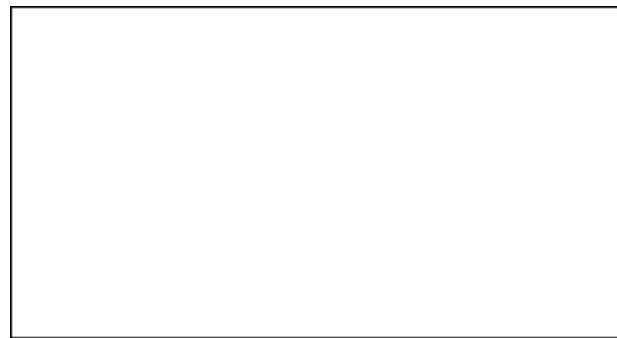


Fig 2 Acid insoluble lignin %

Cellulose:

In this Fig 3 shown the cellulose content of the pulps and the plot differentiated the Alpha, Beta and Gamma cellulose content of the Rp Wp, RWp pulps [1,10].

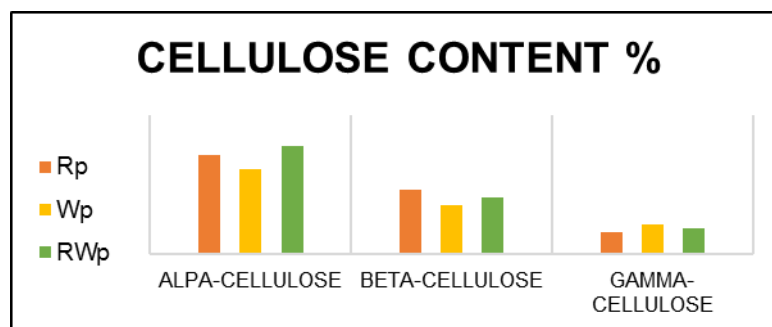


Fig 3 Cellulose Content %

Carboxylic Acid Content:

The carboxylic acid content of the synthesized pulps have neutralization point is given below [3].

TABLE 1 Pulps with Neutralization Point

Pulps	Neutralisation Point
Rp	5.4
Wp	4.5
RWp	6.7



Fig 4 Carboxylic Acid Content

Extractives

Ash content:

In this Fig 5, the ash percentage of the pulps are mentioned, they plotted between the weight of the pulp and the percentage of the ash obtained [3,9].

Table 2 Ash Percentage of the Pulps

Pulps	Ash Percent
Rp	9
Wp	7
RWp	4

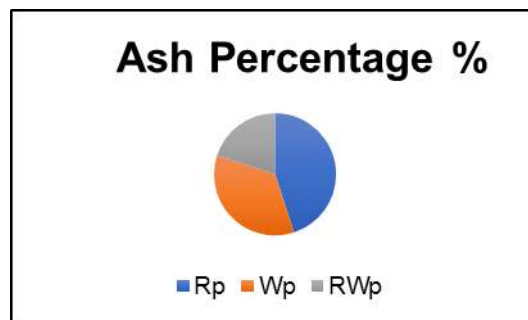


Fig 5 Ash percentage

Moisture Content %:

An increase in moisture in the paper might cause curling, printing troubles and bad quality paper. In Fig 6 The plot of the dry weight of the sample and the percentage of the moisture content is shown. The percentage of moisture content for Rp, Wp, RWp are 41.91%,34.46%,55.82% respectively [8,5].

Table 3 Moisture content in the Pulps

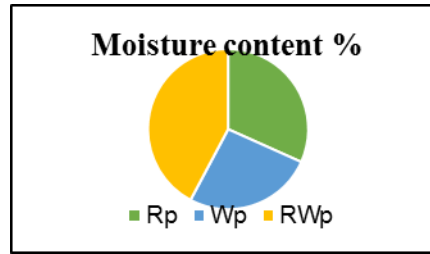


Fig 6 Moisture content %

UV -Visible Absorption Spectroscopy :

The UV -Visible spectrum of synthesized pulps was shown in Fig 7,8,9 for Rp, Wp, RWp respectively. The spectrum was recorded in the range 200-900nm. For Rp the maximum absorbance obtained at 456 nm. For Wp the maximum absorbance acquired at 440nm. For RWp the maximum absorbance attained at 498 nm. But the absorbance is maximum for RWP compared to RP and WP [3,4]. The absorbance at the range of 400 -550nm represents the C-O groups in cellulose.[13]

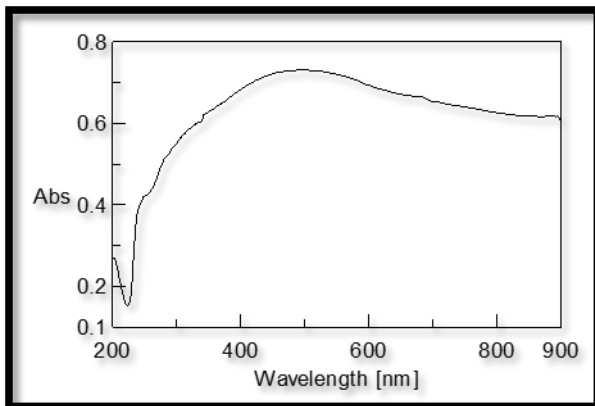


Fig 7 UV for Rp

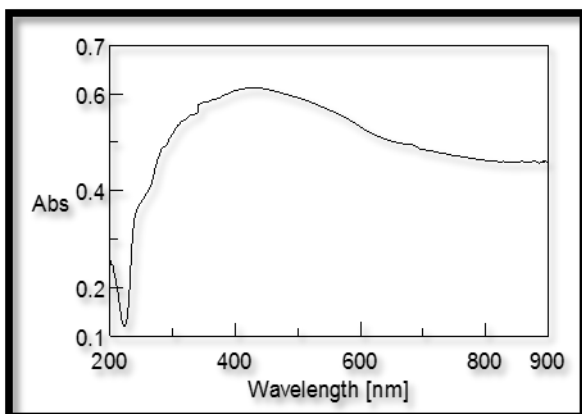


Fig 8 UV for Wp

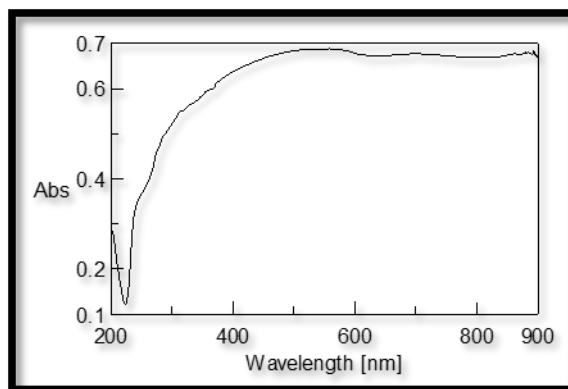


Fig 9 UV for RWp

FTIR:

The Stretching frequency involved in the synthesized paper pulps were detected by the FT-IR analysis. The region from 4000 cm^{-1} to 1900 cm^{-1} would be largely responsible for the O-H and aliphatic C-H stretching frequencies [6,7]. The region between 1530 cm^{-1} and 670 cm^{-1} represented carbon-hydrogen vibrational modes of the glucose unit of the cellulose chain. The region between 480 cm^{-1} to 430 cm^{-1} were responsible for C-C stretching of cycloalkanes in cellulose. The bands at 1365 cm^{-1} and 1315 cm^{-1} were due to CH deformation and CH_2 wagging frequencies and attributed to the xylan fractions in cellulose [4,5]

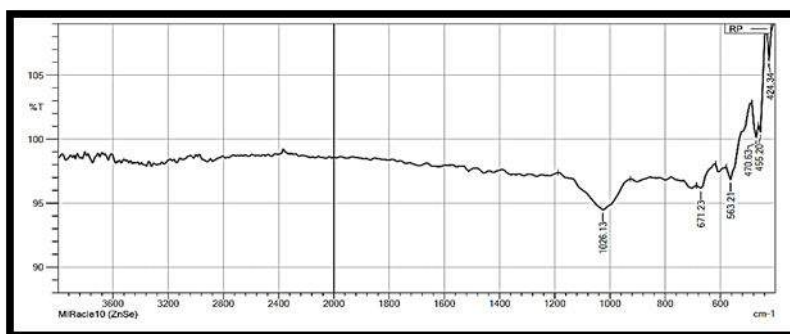


Fig 10 FT-IR spectrum of Rp

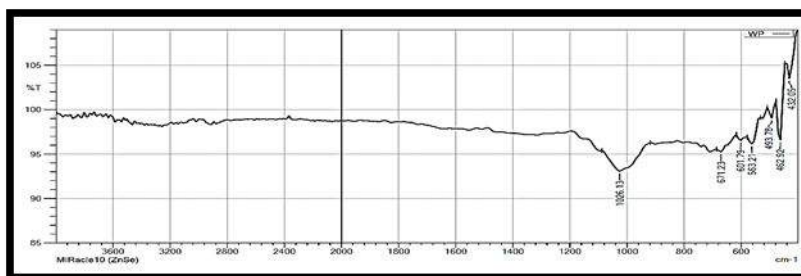


Fig 11 FT-IR spectrum of Wp

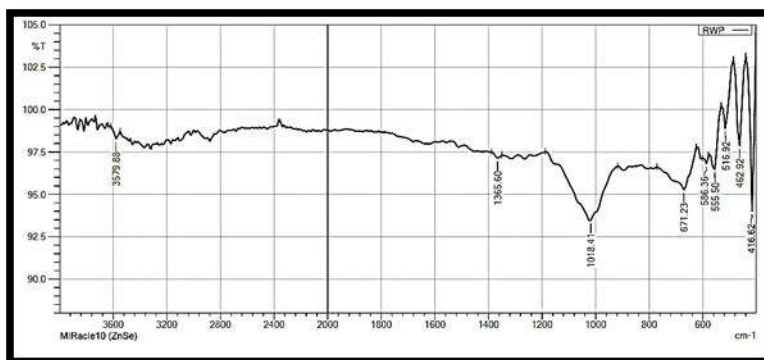


Fig 12 FT-IR spectrum of RWP

Table 4 FT-IR spectra for the pulps

Vibration	Wave number cm^{-1}
O-H stretching	3579.88
C-H stretching	1026.13,1018.41
CH deformation	1365.60
C-C stretching	470.63,462.92,455.20

XRD:

XRD analysis was performed to determine the crystallinity degree of obtained cellulose, the diffractogram was shown in Fig 13,14,15. XRD diffractogram showed the obtained cellulose has crystalline and amorphous region. Lignin and hemicellulose are polymer with amorph phase. [12]The removal of those components from the cellulose fibre led to the increase of crystallinity degree. This depolymerization structure of cellulose influences the crystallite size. The obtained cellulose has similar properties with the cellulose that obtained from any kind of sources, such as hemp, sisal, cotton, banana, etc [6,7].

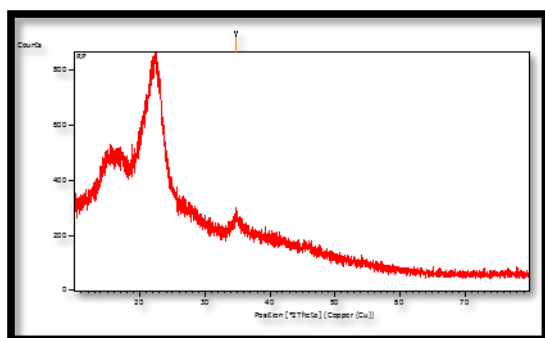


Fig 13 XRD Spectra for Rp

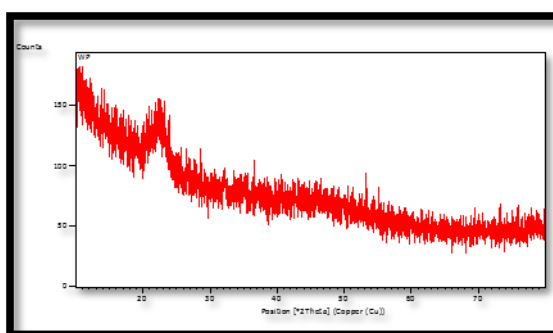


Fig 14 XRD Spectra for Wp

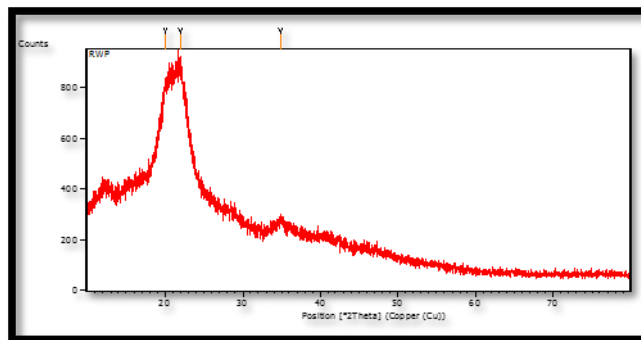


Fig 15 XRD Spectra for RWp

Conclusion

The kappa values of the pulp was plotted against the klason lignin values in which kappa numbers are linear with the klason lignin values which gives the synthesized pulps required strong bleaching ability. The acid insoluble lignin content of the pulp is $W_p > R_p > RW_p$ which means the pulp required strong bleaching agent. The cellulose content gives the amount of Alpha, Beta, Gamma cellulose present in the synthesized pulps. The carboxylic acid content was determined by using conductometric titration and the neutralisation points were plotted against the synthesized pulps, RWp has the high neutralisation point compared to Rp and Wp pulps. The ash content of the synthesized pulps were below 10% and it is nearest to 0.01%. The moisture content of the synthesized pulps was obtained as $RW_p > R_p > W_p$. The absorbance of the synthesized pulps are 456,440,498nm for Rp, Wp, RWp respectively. It represents the C-O groups in cellulose in synthesized pulps. The FT-IR shows the absorption peaks at 1026.13, 1018.41, 1365.60 cm^{-1} which indicated the synthesised pulps having cellulose. The structural properties of the synthesized pulps was characterized by using X-ray diffractogram analysis.

References

1. Biermann, Christopher J. (1993). *Handbook of Pulping and Papermaking*. San Diego: Academic Press. ISBN 0-12-097360-X.
2. Sixta, Herbert, ed. (2006). *Handbook of pulp*. Vol. 1. Winheim, Germany: Wiley-VCH. p. 9. ISBN 3-527-30997-7.
3. W. B. Wan Nazri and M. I. Ahmad Fitrie, "Preparation and Characterization of Physical Properties of Durian Skin Fibers Biocomposite," vol. 576, pp. 212–215, 2012.
4. L. Y. Mwaikambo and M. P. Ansell, "Chemical modification of hemp, sisal, jute, and kapok fibers by alkalization," *J. Appl. Polym. Sci.*, vol. 84, no. 12, pp. 2222–2234, Jun. 2002.
5. Bowyer J, Howe J, Pepke E, Bratkovich S, Frank M, Fernholz K. *Tree-free Paper: A Path to Saving Trees and Forests?* Minneapolis: Dovetail Partners Inc; 2014.



6. Brink M, Achigan-Dako EG. Plant resources of tropical Africa 16. Fibres. Wageningen: PROTA Foundation; 2012.
7. Soocheta AV, Teli M, Rosunee S. Extraction of 'Pandanus utilis' leaf fibre and its potential for ecofriendly product development. In: Sustainable Innovation 2013. Epsom; 2013.
8. Sixta, Herbert, ed. (2006). *Handbook of pulp*. Vol. 1. Weinheim, Germany: Wiley-VCH. p. 9. ISBN 3-527-30997-7.
9. Rudolf Patt et al. "Paper and Pulp" in Ullmann's Encyclopedia of Industrial Chemistry, 2005, Wiley-VCH, Weinheim. doi:10.1002/14356007.a18_545.pub4
10. P. Musekiwa et al June 2020 Optimization of pulp production from groundnut shells using chemical pulping at low temperatures ,Heliyon , DOI: 10.1016/j.heliyon.2020.e04184
11. M. Z. H. KHAN 2014 Paper Making from Banana Pseudo-Stem: Characterization and Comparison Journal of Natural Fibers, 11:199–211, ISSN: 1544-0478 print/1544-046X online DOI: 10.1080/15440478.2013.874962
12. . C. N. Saikia et al 9 April 1996 Evaluation of Pulp and Paper making characteristics of certain fast growing plants ,Wood Science and Technology 467-475
13. Upendra Kadre Feb 2018 Production of paper from Groundnuts shell ,conference world

MORPHOLOGICAL STUDIES ON SELECTED SPECIES OF TILIACEAE

S. Beulah Jerline and C. Eruthaya Abisha

PG and Research Department of Botany, St. Mary's College (Autonomous), Thoothukudi
Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Floristic studies are critical for plant resource conservation and management. The purpose of this study was to investigate and document the members of the Tiliaceae family. During the flowering season, the specimens were collected. For morphological examinations, each species was viewed several times to check whether there were any differences in the specimen. In this study, two species from the Tiliaceae family are reported under one genus. Some of the species are native to the area, while others are cultivated. Updated nomenclature, short descriptions, phenology, range, local and common names, and medicinal uses are supplied for each species. The study establishes a foundation for the conservation and management of the country's plant resource.

Keywords: Tiliaceae, *Corchorus aestuens L*, *Corchorus tridens L*, morphology

Introduction

Understanding the ecosystem of any geographic region requires knowledge and awareness of floristic composition. Indeed, insufficiency in taxonomic investigation has been a limiting factor in tropical ecology research Hedberg (1971).

The Tiliaceae family contains 62 genera and 800 species that are found in tropical and temperate climates, primarily in Southeast Asia and Brazil. There are 14 genera and approximately 110 species in the family in India. Singh *et al.*,(2000).

Following cotton, the genus *Corchorus* is one of the most important commercial natural fiber-producing groupings of crops (*Gossypium* spp.). It has a significant impact on the economy of the fibre business in several countries.

The genus *Corchorus* is found all over the world in tropical and subtropical climates. According to the Global Biodiversity Information Facility 2008, the genus *Corchorus* comprises 215 species, subspecies, variants, and forms. However, there are 60 species of *Corchorus* that are good. In many species, morphological characteristics are crucial for identification and delimitation. The goal of this work is to discover the morphological features of *Corchorus aestuensL* and *Corchorus tridensL* that can be utilised to distinguish the two species.

Materials and methods

Fresh plant materials of *Corchorus aestuans* L. and *Corchorus tridens* L. were obtained in February 2022 from the Sundaravelpuram and St.Marys'College Campuses in Thoothukudi. With the help of local floras available (Gamble and Fischer 1915-36) Binomial of the taxa are based on Flora of Tamilnadu (Mathew, K. M. 1981-84.), the plants were recognised. The plants listed below have been updated with new nomenclature, a brief description, and a common name. Physical observation was used to assess the macroscopical characteristics of the selected taxa's stem, leaf, inflorescence, and flowers. Plant length, Leaf area, Capsule length, Petiole length, Nodal diameter, and Inter nodal lengths were all measured quantitative macromorphological parameters.

Result and discussion

Scientific name: *Corchorus aestuans*L.

Family : Tiliaceae

Common name: Indian Mallow

*Corchorus aestuans*L. is a sublignified branching annual or perennial herb that grows up to 1.50 metres tall.

The stem is cylindrical in shape and has a delicately papillose, almost hairless surface. It has a green colour that is typically tinged with brownish-red. Simple hairs cover the pubescent branches.

Simple, alternating, and spaced leaves. The petiole is 5 to 55 mm long. It's a tiny, pubescent plant with two linear-lanceolate acuminate stipules that are 2.5 to 15 mm long and dark crimson in colour. The leaf blade is thin, elliptic to ovate-lanceolate and suborbicular in shape, constricted at the base, rounded to cordate, and sub-acute at the apex, obtuse or acuminate. A curving filament, purple and 15 mm long, extends from the base of the border to the first tine. The lamina is 1 to 10.5 centimetres long and 1 to 4.5 centimetres broad. Three veins emerge from the base. Both sides of the leaf blade are glabrous or slightly pubescent. In unequal tines, the edge is crenate-dentate. Yellow flowers, practically sessile, are arranged in a short cyme opposite the leaves in groups of one to three. The 5 sepals are oblique, cap-shaped, acuminate, smooth, and range in length from 3 to 9 mm. The 5 yellow petals are obovate in shape with a rounded tip, measuring 9 mm long and 3.5 mm wide. The stamens are plentiful and unattached. They are put into a cup, which is a receptacle expansion. The ovary is hairy and cylindrical. It is separated into five locules, each of which contains a large number of eggs in an axillary posture. The fruit is a glabrous erect cylindrical capsule with 3 or 5 spouts issuing at the apex and narrowing at the base. It has a length of 15 to 56 mm and a width of

4.5 to 4 mm. From base to peak, it features 6 to 8 longitudinal wings ribs. The fruit is densely packed with seeds. When fully ripe, it turns a reddish brown colour. Horizontal spreading; valves with or without divisions.

Corchorus aestuans L



ScientificName: *Corchorus tridens* .L.

Family : Tiliaceae

Common name : Horn fruited Jute

Corchorus tridens is a species of *corchorus*. *L.* is a plant with simple, alternating, petiolate, and pointed leaves. The limb is straight with a toothed edge. Flowers are grouped in bundles on the petioles' opposing side. They're big and yellow, with no sepals or petals and a lot of stamens. The fruit is a linear capsule with a trifold beak on top that opens in three valves and contains many polyhedral seeds. The stem is firm and cylindrical. It has a strong and glabrous appearance, with a subwoody base. The leaves are basic and arranged in a zigzag pattern. They are carried by a 5 to 15 mm long petiole. The petiole is finely pubescent, with two linear stipules that are 4 to 7 mm long and fast deciduous at the base. The lamina is linear lanceolate, with an acute corner at the top and a broad or truncated corner at the bottom. It is 6 to 10 cm in length and rarely exceeds 15 mm in width. It has a toothed edge. A filament up to 10 mm long and purple in colour bends back and extends the first teeth at the base of the limb. The base of the lamina is trinervated, with several pairs of secondary veins. The upper side is hairless, whereas the lower side contains a few small hairs running down the veins. The leaves are a vibrant green colour. Flowers are grouped in bundles of 2 to 6 opposing the petioles. The flowers are carried on a 1 mm long peduncle. The calyx is made up of five free

sepals with a linear shape and an apiculated apex. They measure 5 mm in length. The 5 mm long corolla is made up of 5 free petals with a rounded apex and a thin base. Yellow is the colour of the corolla. There are a lot of stamens. The ovary is rectangular, with a short style on top. The fruit is a three-valved dehiscent linear trigonal cross-section capsule. The capsules have a longitudinal striated pattern. They range in length from 3 to 5 cm and have a diameter of 2 to 3 mm. They have a small beak that splits into three points at the top. The exterior wall has a glabrous appearance. A high number of seeds are contained in each capsule.

Corchorus tridens



Quantitative macro morphological measurements of studied taxa

Sl. No	Parts	<i>Corchorus aestuans</i>	<i>Corchorus tridens</i>
1.	Leaf area	7.37 sq.cm	13.5 sq.cm
2.	Capsule length	1.82 cm	3.9 cm
3.	Petiole length	1.2 cm	0.73 cm
4.	Nodal diameter	0.77 cm	0.81 cm
5.	Inter nodal length	2.27 cm	4 cm

Summary and conclusion

Corchorus aestuensL. and *Corchorus tridensL.* are wild species with low yields, but they are excellent sources of biotic and abiotic stress resistance and fibre of the highest quality. *Corchorus aestuensL.* and *Corchorus tridensL.* are abiotic stress tolerant and generate the finest fibres. The introduction of these agronomically significant features into the genomes of cultivated *Corchorus* species would improve jute fibre quality. Comprehensive interspecific hybridization techniques are required for this goal. Alternatively, transcriptomic, proteomic, and metabolomic techniques to discover the genes underlying the agronomically relevant properties of wild *Corchorus* species are required. This would pave the path for biotechnological techniques to improve jute fibre.

References

- Hedberg 1971**, Tropical Ecology and systematic botany Ecology and the less developed countries bulletins From the ecological research committee.
- Singh, N.P.** D.K. Singh, P.K. Haajra & B.D.Sharma. 2000. flora of India (Introductory vol., parts II) Botanical survey of India, Kolkata
- Gamble, J.S.** (&C.E.C. Fischer) 1915-36. *Flora of the Presidency of Madras*, Adlard & Son Ltd, London. Global biodiversity information Facility 2008
- Mathew, K.M** 1981-84. The Flora of Tamil Nadu Carnatic, 3 vols. Rapinat Herbarium, Tiruchirapalli.

PHYTOCHEMICAL SCREENING AND ANTI-BACTERIAL ACTIVITY OF *CARICA PAPAYA* LEAF AND STEM

Y. Abinaya and P. Hermalin

PG and Research Department of Botany, St. Mary's College (Autonomous), Thoothukudi

Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

The study evaluated the qualitative analysis of phytochemical and antimicrobial activity of various solvent extracts of *Carica papaya* leaf and stem. The chemical solvents acetone, chloroform, benzene, petroleum ether and aqueous were used. Phytochemical screening indicated the presence of alkaloids, carbohydrates, tannins, saponins and phenolic compounds in the extracts. The study also assessed the antibacterial activity of *Carica papaya* against *Escherichia coli*, *Vibrio cholerae*, *Staphylococcus aureus* and *Bacillus subtilis* using disc diffusion methods. *Staphylococcus aureus* and *Bacillus subtilis* were used as gram positive strains and *Escherichia coli* and *Vibrio cholera* were used as negative bacterial strains in the antibacterial activity. The maximum inhibitory zone was found in chloroform extracts. The result confirmed that *Carica papaya* leaf and stem could be potent source of antibacterial activity and various secondary metabolites that can be used by pharmaceutical industries.

Keywords: *Carica papaya*, phytochemical, solvents, antibacterial activity.

Introduction

Plants, are just like the 'treasure box' hidden with a lot of active components that are essential for the process of developing new medicine. Medicinal plants not only considered as a readily available and affordable source, but they are also able to synthesize diverse active compounds which are effective in controlling and treating many diseases (Arvind *et al.*, 2013). It plays a significant role in ecological function, including defence mechanisms, by serving as antibiotic. These active compounds are known as secondary metabolites, such as phenols, tannins, alkaloids, flavonoids, glycosides, saponins and carbohydrates. *Carica papaya* is one of the medicinal plants that contributed as a remedy against a variety of diseases (Tiwari *et al.*, 2011).

Papayas are the fourth most traded tropical fruit, approximately 75% of the world's papayas are produced in only ten countries. It is a fast growing, woody tree, that well grown in temperatures between 70° to 90°F (Ayoola *et al.*, 2010). It requires full sun and well-drained porous soils. The plant contains many biologically active compound, two important

compounds are chymopapain and papain which are widely useful for digestive disorder and disturbance of the gastrointestinal tract (Krishna *et al.*, 2008). Traditionally, *C. papaya* leaves have been used for treatment of a wide-range of ailments, like in treatment of malaria, dengue, jaundice, immune modulatory and antiviral activity (Ahmad *et al.*, 2011). Papaya leaves acts as an acne medicine, increase appetite, ease menstrual pain, relieve nausea. It also contains carpaine, which has high antioxidant content that may be helpful for the prevention of atherosclerosis, diabetic heart disease, heart attacks and strokes. It also improves the immune system and prevents illnesses such as recurrent ear infections, colds and flu (Nwinyi *et al.*, 2010). Due to the presence of natural metabolites such as phenol, flavonoids, saponin and tannins are found in leaf, bark, and twigs of this plant that possesses both anti-tumor and pesticidal properties (Basalingappa *et al.*, 2018), especially phenolic compounds are the major bioactive phytochemicals found in plants with human health benefits (Cao *et al.*, 1996). In the present study, phytochemical investigation of *C. papaya* leaf and stem is carried out, as well as evaluation of antibacterial (Gram-positive and Gram-negative) activity of leaf and stem extracts was evaluated in acetone, chloroform, benzene, petroleum ether and aqueous extracts of *C. papaya*.

Materials and methods

Plant extracts

The *C. papaya* leaf and stem were collected as a fresh sample in Sorisipuram, Thoothukudi in the month of February–March (2022). The *C. papaya* leaf and stem were washed, and allowed to air dried for 2 weeks and ground to fine powder. The 10 gram of this powder is filled into soxhlet apparatus and extracted with 200 ml of acetone, chloroform, benzene, petroleum ether and aqueous solvent at a specific boiling point of the solvent for 3–4 hours. The prepared extract was used for further analysis.

Phytochemical investigation

The analysis of *C. papaya* leaf and stem extract in different solvents were carried out according to standard procedures. Phytochemical constituents such as alkaloids, carbohydrate, sugar, protein, phenolic compound, flavonoid, tannin, saponin and amino acids were determined qualitatively.

Test for Alkaloids

Each plant sample 0.5 g was dissolved in 5 ml diluted HCl in a steam bath and fattened with few drops of Mayer's reagents, giving rises to a cream pales yellow precipitates, indicating the presence of alkaloids.

Tests for carbohydrate (Molisch's test)

A few drops of Molisch's solution was added to 2 ml of aqueous solution of the extract, thereafter a small volume of concentrated sulphuric acid was allowed to run down the side of the test tube to form a layer without shaking. The interface was observed for a purple colour as indicative of positive for carbohydrates.

Test for sugar (Fehling's test)

2 ml of the test solution in a test tube was added into 5 ml mixture of equal volumes of Fehling's solutions I and II and boiled in a water bath for about 2 min. The brick-red precipitate was indicative of the presence of reducing sugars.

Test for protein (Biuret test)

An aliquot of 2 ml of filtrate was treated with one drop of 2% copper sulphate solution. Addition to this, 1 ml of ethanol (95%) was added, followed by excess of potassium hydroxide pellets, pink colour in the ethanolic layer indicated the presence of proteins.

Test for amino acid (Ninhydrin test)

Two drops of ninhydrin solution (10 mg of ninhydrin in 200 ml of acetone) were added to 2 ml of the filtrate. A characteristic purple colour indicated the presence of amino acid.

Test for phenolic compounds (Ferric chloride test)

Five drops of neutral 5% FeCl_3 solution was added in the decoction of papaya sample (5 ml). A dark green colour indicated presence of phenolic compounds.

Test for flavonoids (pew's test)

5 ml of the aqueous solution of the water extract was mixed with 0.1 g of metallic zinc and 8ml of concentrated sulphuric acid. The mixture was observed for red colour as indicative of flavanols.

Test for tannin (Ferric chloride test)

2 ml of the test solution of the extract were added to a few drops of 10% Ferric chloride solution (light yellow). The occurrence of brownish green or a blue black coloration, indicating the presence of tannin.

Test for Saponins (foam test)

3 ml of the test solution of the extract were mixed with 10 ml of distilled water in a test-tube. The test-tube was stoppered and shaken vigorously for about 15 min, 2 cm layer of foam indicated the presence of saponins.

Antibacterial activity

The test organisms were obtained from the Department of Microbiology, St. Mary's College (Autonomous), Thoothukudi. *Bacillus subtilis*, *Staphylococcus aureus* as gram positive bacteria and *Escherichia coli*, *Vibrio cholerae* as gram negative bacteria were used in the present study. The test bacterial strains were inoculated into nutrient broth and incubated at 37°C for 24 hrs. After the incubation period, the antibacterial activity of the extracts was measured by identifying the zone of inhibition in the petri plates.

Disc diffusion assay

Anti-bacterial activity was evaluated by agar medium using disc diffusion approach. The solidified medium was swabbed in the aseptic condition where the different bacterial strains were inoculated. The disc was previously soaked in the samples and placed in the agar plates. Finally, the antibacterial properties were determined by measuring the zone of inhibition (diameter). For positive control, ampicillin disc (100µg/ml) was used.

Zone Analysis: After incubation, the antibacterial activity of the extracts in conflict to each bacterial stain was once assayed through the nearest mm the zone of inhibition has measured the diameter.

Result and discussion

Phytochemical analysis was done to analyse the chemical constituents present in the acetone, chloroform, benzene, petroleum ether and aqueous extracts of *C. papaya* leaf and stem (Table 1). The phytochemical test showed the presence of all the bioactive compounds such as alkaloids, carbohydrates, protein, phenolic compounds, flavonoids, tannin, saponin and amino acid except sugar. Alkaloids are a wide group of naturally occurring organic compounds being a major part of the largest group of plant secondary metabolites (Rosales *et al.*, 2012). It also plays a prominent role in human medical history and are widely used for the treatment of various diseases such as neurological disorders (Hussain *et al.*, 2018), cancer (Dey *et al.*, 2018), metabolic disorder (Feng *et al.* 2019), and infectious diseases (Kishore *et al.*, 2009). In the present study alkaloid content were reported in acetone, chloroform and aqueous extracts of both leaf and stem. In our study the carbohydrate was showed in most of the organic solvents (Table1). Similar to that most of the other phytochemicals such as flavonoids, phenolic compounds, tannin, saponins, proteins, amino acids were reported in the organic solvents. This reflects the organic extracts which are more applicable than aqueous extracts, it could be due to the better solubility of the active components in organic solvents (Boer *et al.*, 2005).

Infectious diseases are a major cause of morbidity and mortality in India. Multiple resistant strains were used as antibiotics which are continuously used to cure the diseases. The results obtained from the above data represents, that the plant materials extracted with organic solvents were exhibited significant anti-bacterial activities, remarkably the solvent such as chloroform and aqueous leaf extracts showed maximum inhibitory activities against all test pathogens (Fig 1 & 2). In contrast to that, *S.aureus* growth was inhibited in acetone and benzene extracts. Likewise in chloroform stem extract performs the maximum inhibitory effect against the *E.coli*, *B. subtilis* and *V. cholerae*. *S.aureus* shows their maximum inhibitory activity in petroleum ether and benzene extract than the other solvents. All over these antibacterial studies proved that, the chloroform and aqueous extract of both leaf and stem were found to be most effective to inhibit the bacterial growth of all tested pathogenic organisms.

Conclusions

In this study the leaf of *Carica papaya* has a various chemical group in their chemical composition. Alkaloids and tannins were found in all five extracts of *Carica papaya*. Hence this plant should be evaluated further to assess its phyto-therapeutic properties. Along with that, the plant parts of *Carica papaya* leaves and stem showed good activity against dermatophytic and pathogenic bacteria.

In this study, chloroform and aqueous extracts showed maximum antimicrobial activity and the petroleum ether, acetone and benzene showed the least antibacterial activity, suggestive of the active compounds having antimicrobial potential be extracted using appropriate solvent. This study revealed that the *C. papaya* could be used as herbal medicine can be as effective as modern medicine to combat pathogenic microbes.

References

- [1] Arvind G, Debjit B, Duraivel S, Harish G, 2013. Traditional and Medicinal uses of *Carica papaya*. *J Med Car Pap*, vol 1(1):2320-3862.
- [2] Tiwari P, Kumar B, Kaur M, Kaur G, Kaur H, 2011. Phytochemical screening and Extraction: A Review. *Internationale Pharmaceutica Scientia*, vol 1(1):98-106.
- [3] Ayoola PB, Adeyeye A, 2010. Phytochemical and nutrient evaluation of *Carica papaya* (Pawpaw) leaves. *Int J Recent Res Appl Stud*, vol 5:325-328.
- [4] Krishna KL, Paridhavi M, Patel JA, 2008. Review on nutritional, medicinal and pharmacological properties of Papaya (*Carica papaya* Linn.). *Nat Prod Radiance*, vol 7:364-73

- [5] Ahmad N, Fazal H, Ayaz M, Abhasi BH, Mohammad I, Fazal L, 2011. Dengue fever treatment with *Carica papaya* leaves extracts. *Asian Pac J Trop Biomed*, vol 1(4): 330 – 333.
- [6] Chukwuemeka NO, Busola Anthonia AB, 2010. Antifungal effects of pawpaw seed extracts and papain on post harvest *Carica papaya* L. fruit. *African Antimicrobial Activities of Carica papaya L.* 1185, *Journal of Agricultural Research*, vol 5(12): 1531-1535.
- [7] Basalingappa KM, Anitha B, Raghu N, Gopenath TS, Karthikeyan M, Gnanasekaran A, Chandrashekrappa GK, 2018. Medicinal uses of *Carica papaya*. *J Nat Ayurvedic Med*, vol 2(6):000144.
- [8] Cao, Guohua, Emin Sofic, Prior RL, 1996. Antioxidant capacity of tea and common vegetables. *J Agricul Food Chem*, vol 44(11):.3426–3431
- [9] Rossales T, 2012. Phytochemical analysis and in-vitro antimicrobial activity of aqueous and solvent extracts of *Carica papaya* against clinical pathogens. *Int J Adv Res Biol Sci*, vol 1(1):73-77.
- [10] Hussain G, Rasul A, Anwar H, 2018. Role of plant derived alkaloids and their mechanism in neurodegenerative disorders. *International Journal of Biological Sciences*, vol. 14(3): 341–357.
- [11] Dey P, Kundu A, Chakraborty HJ, 2019. Therapeutic value of steroidal alkaloids in cancer: current trends and future perspectives. *International Journal of Cancer*, vol. 145(7): 1731–1744.
- [12] Feng X, Sureda A, Jafari S, 2019. Berberine in cardiovascular and metabolic diseases: from mechanisms to therapeutics. *Theranostics*, vol 9(7):1923–1951.
- [13] Kishore N, Mishra BB, Tripathi V, Tiwari VK., 2009. Alkaloids as potential anti-tubercular agents. *Fitoterapia*, vol 80(3): 149–163.
- [14] De Boer HJ, Kool A, Broberg A, Mziray WR, Hedberg I, Levenfors JJ, 2005. Antifungal and antibacterial activity of some herbal remedies from Tanzania, *Jornal of Ethanopharmacology*, vol 96:461-469.

Table 1: Phytochemical screening of leaf and stem extracts of *Carica papaya*

Tests	LEAF					STEM				
	Aq.	A	B	C	P.E	Aq.	A	B	C	P.E
Alkaloid	+	+	-	+	-	+	+	-	+	-
Carbohydrate	+	+	+	+	-	+	-	+	+	-
Sugar	-	-	-	+	-	-	-	-	-	-
Protein	+	+	-	+	-	-	-	-	+	-
Phenolic compound	-	+	+	+	-	+	+	-	+	-
Flavonoids	-	+	-	-	-	-	-	+	+	-
Tannins	-	+	+	-	-	+	+	-	-	-
Saponins	-	+	-	+	-	+	+	-	+	-
Amino acid	+	+	-	+	-	-	-	-	+	-

Table 2: Anti-bacterial activity of leaf and stem extracts of *Carica papaya* against different bacterial strains

Pathogens	Leaf						Stem					
	Amp.	A	B	C	P.E	W	Amp.	A	B	C	P.E	W
<i>E.coli</i>	9	3	7	8	4	6	8	3	4	7	4	8
<i>Bacillus</i>	6	4	3	3	3	5	11	4	6	10	5	3
<i>Staphylococcus</i>	10	9	7	5	2	3	6	3	5	4	6	4
<i>Vibriyo</i>	5	3	3	4	1	3	5	3	4	5	2	3

Note: Amp - Ampicillin

EVALUATION OF ANTIOXIDANT AND ANTIBACTERIAL PROPERTIES OF MARINE PUFFER FISH *AROTHRON IMMACULATUS* FROM THOOTHUKUDI COAST

S. Ananthselvi and S. Selvi

PG and Research Department of Zoology, St. Mary's College (Autonomous), Thoothukudi
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

The present study has been carried out to establish the occurrence of antioxidant and antibacterial activity of tissue extracts of *Arothron immaculatus* collected from Thoothukudi Coast. The antioxidant activity of methanolic extract of skin exhibited maximum DPPH free radical scavenging activity with 79%, 86.7%, 96% and 99.4% at 50 µg, 100 µg, 150 µg and 200 µg respectively. The antibacterial activity of crude acetic acid extracts of marine puffer fish *Arothron immaculatus* against ten bacterial strains has been evaluated. Skin, liver, muscle, intestine and ovary extracts of *Arothron immaculatus* prepared by using acetic acid. The antibacterial test was performed by Agar diffusion technique. The ovary extract showed maximum activity with the zone of inhibition with 19.0 mm radius at 10 mg/µl in *Bacillus cereus* (BC) and the muscle extract showed minimum zone of inhibition with 12.5 mm radius at 10 mg/µl in *Aeromonas hydrophilla*(AH). The results indicated that the Skin, liver, muscle, intestine and ovary tissue extracts of *Arothron immaculatus* may have potent antibacterial bioactive compounds of interest in the pharmaceutical industries.

Keywords: *Arothron immaculatus*, antioxidant activity, antibacterial activity, *Bacillus cereus*, *Aeromonas hydrophilla*, scavenging activity, zone of inhibition.

Introduction

Ocean offers a large biodiversity of fauna and flora which is estimated to be over 5,00,000 species and more than double that of the land^[1]. This rich diversity of marine organisms assumes a great opportunity for the discovery of new bioactive substances. Thus the marine environment is an exceptional reservoir for bioactive natural products, many of which exhibit structural features that are not found in terrestrial natural products^[2]. A number of natural products isolated from marine organism increases rapidly and now exceeds with hundreds of new compounds being discovered every year^[3].

Fish and its by-products represent a rich source of nutrients which are fundamental importance for healthy diets. It is not only rich in protein but also has a wide range of micronutrients including vitamins, minerals and polyunsaturated fatty acids ^[4]. Fish protein

hydrolysates have been identified as a rich source of bioactive peptides with valuable pharmaceutical potentials [5].

Tetraodontidae is diverse with species such as Puffer fish, Balloon fish, Blowfish, Bubble fish, Globe fish, Swell fish, Toad fish, Toadies, Honey Toads and Squab^[6]. They are commonly distributed in the tropics, but are relatively uncommon in temperate regions and completely absent from cold water. There are 189 species of puffer fishes and 28 genera in the family Tetraodontidae [7]. Puffer fishes are the second most poisonous vertebrate in the world while, the first being a “Golden Poison Frog” [8].

Puffer fish is able to produce toxin with associate microbes on the mucus of their body. The antimicrobial function of epidermal mucus appears to result from its mechanical and biochemical properties^[9]. Tetrodotoxin producing bacteria from *Arothron immaculatus* also hold promise for the development of effective antitumor compounds^[10].

Puffer fish poison is called TTX, which is one of the most potent nonprotein neurotoxins, binding to sodium channels in nerve and skeletal muscle, thereby blocking the propagation of action potentials resulting in asphyxiation and death [11]. Tetrodotoxin has low molecular weight with 319 small molecules with a unique cage structure. The basic molecule for TTX consists of a positively charged Guanidium group. The source of tetrodotoxin is accepted that bacteria in the fish’s intestinal tract [12]. Saxitoxin, the cause of paralytic shell fish poisoning and red tide, can also be found in certain puffers [13]. It is also important to note that puffer fish toxin is 100 times more potent than cyanide [14].

Yildirim *et al.*, [15] stated that the reducing power of a sample is an indicator of its antioxidant activity. The reducing power assay is used to evaluate the ability of an antioxidant to donate an electron or hydrogen. Wu *et al.*, [16] reported that DPPH is a stable free radical has been used to evaluate the ability of compounds as free radical scavengers or hydrogen donors and to evaluate the antioxidant activity.

Kumaravel *et al.*, [17] determined the *in-vitro* antimicrobial activity of tissue extracts of puffer fish *A.immaculatus* against clinical pathogens. The result confirms that puffer fish is a source of antimicrobial potency.

Jal *et al.*, [18] studied the bioactive potential of puffer fish *Arothron immaculatus* collected from South East Coast of India. The results of the study revealed that puffer fish *Arothron immaculatus* has bioactive compounds which can be utilized for further development as drug. Selvi and Joslin^[19] evaluated the antibacterial activity of marine puffer fish *Chelonodon patoca* from Thoothukudi Coast. The results revealed that the liver and muscle extracts exhibited potent antibacterial activity.

In India, studies on puffer fish are very limited. Hence, the aim of the present study is to assess antioxidant and antibacterial activity of tissue extracts of *Arothron immaculatus* collected from Thoothukudi Coast.

Materials and methods

Collection of Specimen:

Specimens of the puffer fish *A. immaculatus* were collected from fishing harbour Thoothukudi. They were kept in an ice-box and transported to the laboratory. The samples were maintained in a deep freezer at -20°C until use.

Antioxidant Activity:

Measurement of DPPH Radical scavenging activity:

The ability of the samples to annihilate the DPPH radical (1,1-diphenyl-2-picrylhydrazyl) activity was investigated by the method described by Blois [20]. Stock solution of the compound was prepared to the concentration of 10 mg/ml. Different concentration of the extracts (50 µg, 100 µg, 150 µg & 200 µg) of samples were added, at an equal volume to methanolic solution of DPPH (0.1 mM). The reaction mixture is incubated for 30 minutes at room temperature and the absorbance was recorded at 517 nm. The experiment was repeated for three times. Ascorbic acid was used as standard control. The capability of scavenging DPPH radical was calculated using the following equation.

$$\% \text{ of Inhibition} = \frac{\text{Control}_{Ab} - \text{Test}_{Ab}}{\text{Control}_{Ab}} \times 100$$

Antibacterial Activity:

Preparation of Acetic acid extract:

Specimens of *Arothron immaculatus* were thawed and dissected out into tissues like skin, liver, muscle, intestine, testes and ovary. Ten grams of each tissue was homogenised with 50 ml of 0.1% acetic acid and were kept in water bath around 45°C for 10 minutes, cooled and centrifuged off. Then it was stored in the deep freezer at -20°C for further use.

Bacterial Strains

The reference strains used to test antimicrobial activity includes *Bacillus cereusn* (BC), *Vibrio cholerae* (01) (VC01), *Vibrio cholera* (0139) (VC0139), *Escherichia coli* (EC), *Pseudomonas aeruginosa* (PA), *Aeromonas hydrophila* (AH), *Salmonella typhi* (ST), *Shigella flexneri* (SF), *Pseudomonas sp* (P.sp) and *Staphylococcus aureus* (SA).

Agar diffusion technique

The antibacterial activity of the acetic acid extracts of skin, liver, muscle, intestine, testes and ovary of puffer fish *A. immaculatus* was determined by the standard agar well

diffusion assay by using the technique of Perez *et al.*,^[21]. Petri plates were prepared by pouring approximately 20 ml of Muller Hinton Agar Medium and allowed to solidify. After solidification, culture of each microbial strain was swabbed to sterile cotton on the surface of medium. Sterilized paper discs prepared from Whatmann No. 1 were used for loading acetic acid extract. The paper discs were loaded with different concentrations viz 10 mg/10 μ l, 1 mg/10 μ l and 0.1 mg/10 μ l. The plates were incubated for 24 hours at 37°C and solvent control was performed in each case. Areas of inhibited microbial growth were observed as clear zone around the paper disc after 24 hours.

Results and discussion

The antioxidant activity was assessed for all the extracts and positive control based on their ability to scavenge the DPPH free radicals. The free radical scavenging activity of methanolic extract of skin and muscle of *A.immaculatus* was evaluated. The skin exhibited the strongest antioxidant activity. The results were shown in Table 1 and Fig 1 and 2. The effect of crude acetic acid tissue extracts of skin, liver, muscle, intestine and ovary of *Arothron immaculatus* were tested against ten bacterial strains for testing their antibacterial activities. The maximum zone was observed against the *Bacillus cereus* (BC) in the ovary extract of *Arothron immaculatus* and minimum zone was observed against *Aeromonas hydrophilla* (AH) in the muscle extract. The results were shown in Table 2 and Plate 1- 5.

Epidemiologic studies have suggested that some antioxidants of dietary constituent exhibit antioxidant properties may be acting as naturally occurring anticancer agents and may explain some of the differences in cancer incidence seen in populations with varying dietary intake ^[22]. Synthetic antioxidants are suspected to be toxic upon long – term exposure ^[23]. The mucus secretions in the epidermis acts as a biological barrier for the fish to protect from the environment ^[24]. Hencoock and Scott ^[25] stated that, antimicrobial peptides in marine organisms are existing candidates for the development of new antibacterial compounds due to their broad activity spectrum and difficulty for bacteria to develop resistance to them. The findings of Silva *et al.*,^[26], Sanaye *et al.*,^[27], Hung *et al.*,^[28], Mann *et al.* ,^[29] Mohan Raj *et al.*,^[30] and Selvi and Joslin^[31] and Kanthimathi and Joslin^[32] lended support to our results.

Silva *et al.*,^[26] reported that DPPH picks up one electron in the presence of a free radical scavenger, the absorption decreases and the resulting decolouration is stochiometrically related to the number of electrons gained. Sanaye *et al.*,^[27] estimated that among the genders, the activity levels were higher in females than in males. In cultured *H. kuda* Hung *et al.*,^[28] who found relatively higher DPPH scavenging activity in belly portions compared to other body portions. Mann *et al.* ,^[29] described the DPPH scavenging activity of different parts of skin

extracts of puffer fish demonstrated significant antioxidant activity with IC₅₀ values of 0.16 mg/ml and 0.15 mg/ml and 0.20 mg/ml and 0.01 mg/ml respectively.

Mohan Raj *et al.*, [30] described that most of the marine creatures have been found to exhibit antimicrobial activity against human bacterial pathogens as well as fungi, viruses and most of the antibacterial agents derived from marine sources. Selvi and Joslin [31] reported that the ovary extract showed maximum activity with zone of inhibition with 14.0 mm radius at 10mg/10µl in *Shigella flexneri* and the muscle extract showed minimum zone of inhibition with 6.0 mm radius at 10 mg/10µl in *Pseudomonas sp.* Kanthimathi and Joslin [32] reported that the liver extract has shown maximum zone against the *S.aureus*, *E.coli*, *B.subtilis* and *K.pneumonia* and the muscle extract has shown minimum against *E.coli*, *P.aeruginosa* and *B.subtilis*.

Table – 1 Antioxidant activity of methanolic extract of skin and muscle of *Arothron immaculatus*

Sample concentration	% of Scavenging Activity (SCV)	
	skin	muscle
50 µg	79%	69.1%
100 µg	86.7%	70.4%
150 µg	96%	73.5%
200 µg	99.4%	82 %

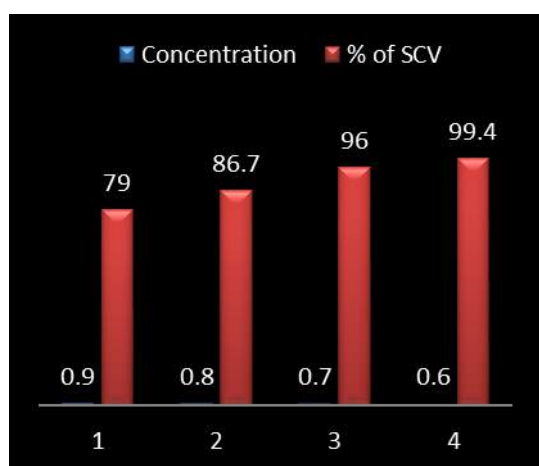


Fig:1 Antioxidant activity of methanolic extract of skin of *Arothron immaculatus*

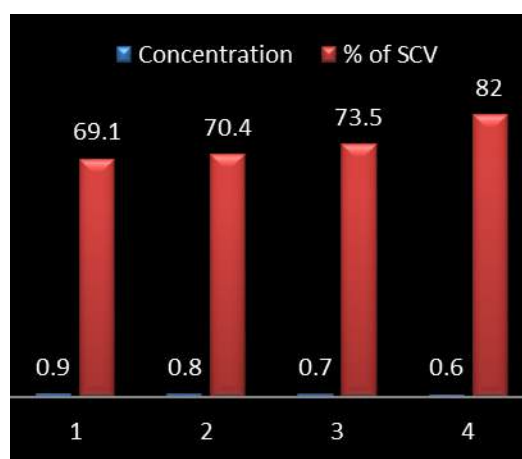


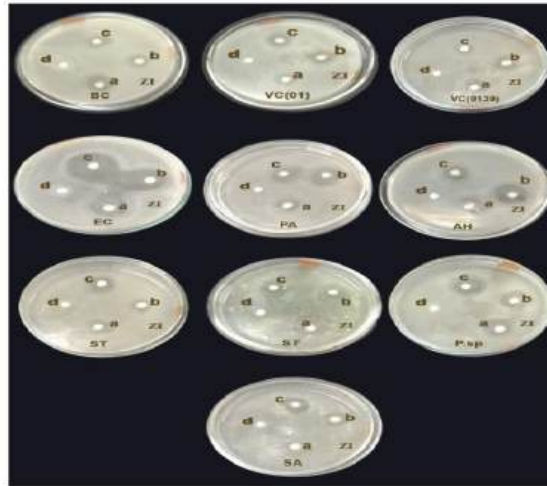
Fig: 2 Antioxidant activity of methanolic extract of muscle of *Arothron immaculatus*

Table – 2 Activity of acetic acid extracts of skin, liver, muscle, intestine and ovary of *Arothron immaculatus* against Bacterial Strain

Bacterial Strains	Control	10 mg/ 10ml.					1 mg/ 10ml.					0.1 mg/ 10ml.				
		Skin	Liver	Muscle	Intestine	Ovary	Skin	Liver	Muscle	Intestine	Ovary	Skin	Liver	Muscle	Intestine	Ovary
BC	-	++	+++	+++	+++	+++	++	+++	++	++	+	++	++	++	++	+
VC(01)	-	++	+++	++	+++	+++	++	++	++	++	+	++	++	+	+	++
VC(0139)	-	++	+++	+++	++	++	++	++	++	++	+	+	+	+	+	+
EC	-	++	+++	++	++	+++	++	+++	++	+++	+	+	++	+	++	+
PA	-	+++	+++	++	+++	++	++	++	++	++	+	++	++	++	++	+
AH	-	++	+++	++	+++	++	+	+++	++	++	+	+	++	+	+	+
ST	-	++	+++	+++	++	+++	++	+++	++	++	++	+	++	++	+	++
SF	-	++	+++	+++	+++	++	++	++	++	++	+	++	+	++	+	++
P.sp	-	++	++++	++	+++	++	++	+++	++	++	+	+	++	+	++	+
SA	-	+	+++	+++	++	+++	+	++	++	+	+	+	++	++	+	++

Plate-1

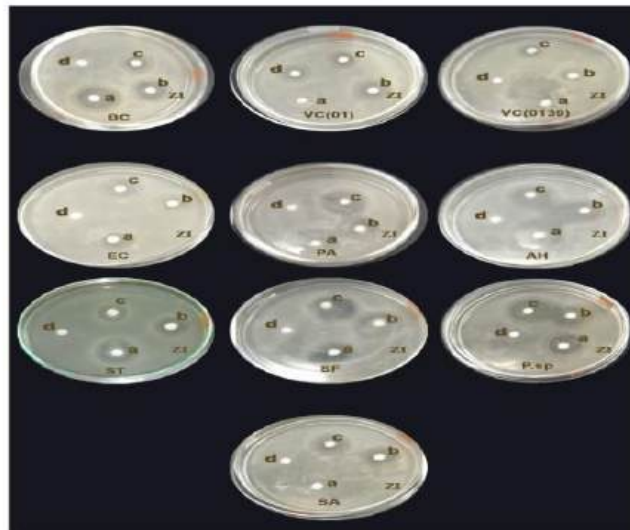
Antibiotic agar plate showing antibacterial activity of acetic acid extract of muscle of *Arothron immaculatus* against bacterial strains



ZI—zone of inhibition
a —10 mg/10µl
b —1mg/10µl
c —0.1mg/10µl
d — control

Plate-2

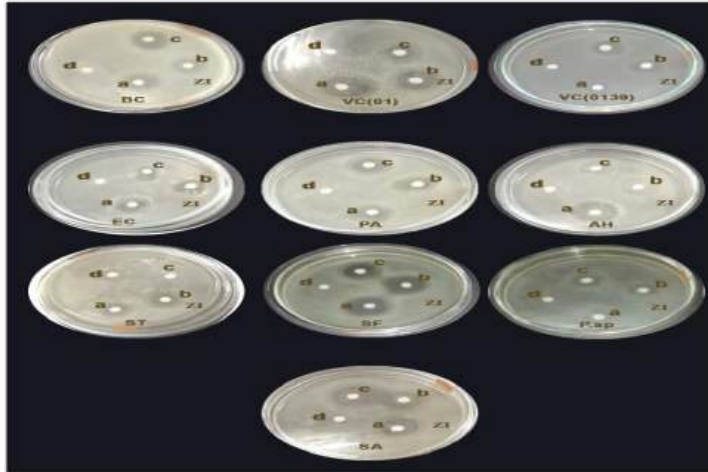
Antibiotic agar plate showing antibacterial activity of acetic acid extract of skin of *Arothron immaculatus* against bacterial strains



ZI—zone of inhibition
a —10 mg/10µl
b —1mg/10µl
c —0.1mg/10µl
d — control

Plate-3

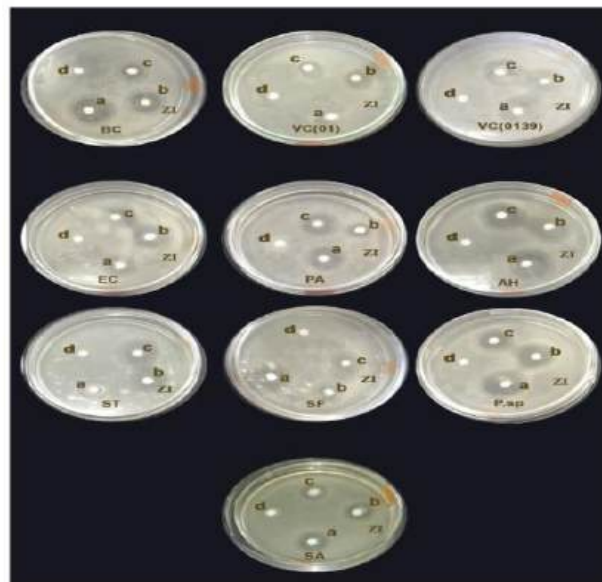
Antibiotic agar plate showing antibacterial activity of acetic acid extract of liver of *Arothron immaculatus* against bacterial strains



ZI—zone of inhibition
a —10 mg/10 μ l
b —1mg/10 μ l
c —0.1mg/10 μ l
d — control

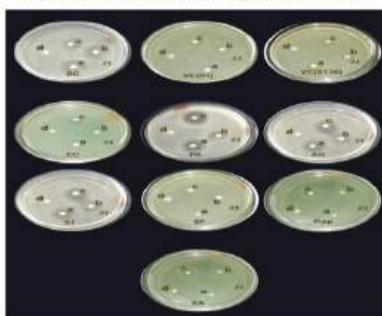
Plate-4

Antibiotic agar plate showing antibacterial activity of acetic acid extract of gonad of *Arothron immaculatus* against bacterial strains



ZI—zone of inhibition
a —10 mg/10 μ l
b —1mg/10 μ l
c —0.1mg/10 μ l
d — control

Plate-5
Antibiotic agar plate showing antibacterial activity of acetic acid extract of intestine of *Areithron immaculatus* against bacterial strains



ZI—zone of inhibition
a —10 mg/ 10µl
b —1mg/ 10µl
c —0.1mg/ 10µl
d — control

Conclusion

The extracts of skin and muscle tissues of which methanolic extract of skin showed potent scavenging activity on DPPH free radicals compared with the standard antioxidant ascorbic acid. Free radicals are known to play a definite role in variety of pathological manifestations including pain, inflammation, cancer, diabetes etc. Crude extract of various tissues showed prominent antibacterial activities against various pathogenic bacteria. From the results, it can be inferred that the acetic acid extract of ovary showed significant antibacterial activity against pathogenic bacteria.

References

1. Anand, TP, Rajaganapathi J & Edward, JKP 1997, 'Antimicrobial activity of marine molluscs from portonovo region', Int. J. Mar. Sci., vol. 26, pp. 206 - 208.
2. Johansson, MW & Soderhall, K 1985, 'Exocytosis of the prophenoloxidase activating system from cray fish haemocytes', J. comp. Phys., vol. 156, pp. 803 - 810.
3. Faulkner, DJ 2002, 'Marine Natural Products', J. Nat. Prod. Rep, vol. 19, no. 1, pp. 1-48.
4. FAO 2012, 'State of world Fisheries and Aquaculture', Food and Agricultural Organization of the United Nations, Rome.
5. Ren J, Zhao M, Shi J, Wang J, Jiang Y, Cui C, Kukuda Y, Xue JS 2008, 'Optimization of antioxidant Peptide production from grass carp sarcoplasmic protein using response surface methodology, Food and science technology; vol.41, pp.1624- 1632.
6. Mills, AR & Passmore, R 1988, 'Pelagic paralysis', Lancet, vol. 1, pp. 161- 164.
7. Oliveira, JS, Fernandes, SCR, Schwartz, CA, Bigues Pires, JC & de Freitas, O 2006, 'Toxicity and toxin identification in *Colomesus asellus*, an Amazonian (Brazil) fresh water puffer fish', Toxicon. vol. 48, pp. 55- 63.

8. Keiichi, Matura, Tyler, James, C, Paxton, J & Eschmyer, WN 1998, 'Encyclopedia of fishes San Diego', Academic press, 230-2312. ISBN0-12-547665-5.
9. Pickering, AD 1974, 'The distribution of mucous cells in the epidermis of the brown trout *Salmo trutta* (L) and the char *Salvelinus alpinus* (L)', J. Fish Bio., vol. 6, no. 2, pp. 103-223.
10. Bragadeeswaran, S, Therasa D, Prabhu, K & Kathiresan, K 2010, 'Biomedical and Pharmacological potential of tetrodotoxin – producing bacteria isolated from marine puffer fish *Arothron hispidus* (Muller,1841)', J. Venom. Anim. Toxins incl. Trop. Dis, vol.16, no. 3, pp. 421- 431.
11. Lynn M, Grattan, Kelsey A, Kilmon, Andrew F 2021, Sea food intoxication and food fabrication', Chapter-28, Science Direct, pp 455 – 478.
12. Shibamoto, T & Bjeldanes, L, 2009, 'Introduction to Food Toxicology 2nd Edition', Amsterdam ebook, Academic Press Food Science & Technology, Elsevier pages, 320, ISBN 9780123742865.
13. Lehman, EM, 2006, 'Egg Toxicity and Egg Predation in Rough Skinned Newts', *Taricha granulosa*, ph.D. Thesis, Department of Biology, Indiana University, Bloomington.
14. Alipala, JS 2012, 'BFAR renews warning vs eating puffer fish', Philippine Daily Inquirer. Retrieved 2012.09.07, vol. 11, pp. 7-13.
15. Yildirim, A, Mavi, A & Kara, AA 2001, 'Determination of Antioxidant and Antimicrobial Activities of *Rumex crispus* L. Extracts ', J. Agri. Food Chem., vol. 49, no. 8, pp. 4083 - 4089.
16. Wu, CH, Chen, HM & Shiau, CY 2003, 'Free amino acids and peptides as related to antioxidant properties in protein hydrolysates of mackerel (*Scomber austriasicus*)', Food Res. Int., vol. 36, no. 9-10, pp. 949-957.
17. Kumaravel, K, Ravichandran, S, Sharmila Joseph, Manikodi & Mauro Doimi, D 2011, 'Invitro Antimicrobial Activity of Tissue extracts of puffer fish *Arothron immaculatus* against clinical pathogens', Chinese J. Nat. Med. vol. 9, no. 6, pp. 446 - 449.
18. Jal S., K.MohanaPriya,N. Mandal, and S.S. Khora 2014, Bioactive potential of puffer fish *Arothron stellatus* collected from South east of India Int.J. Drug dev and Res. 6(3): pp 0975-9344.
19. Selvi, S & Joslin, PJ 2016, 'Antibacterial activity of marine puffer fish *Chelonodon patoca* from Thoothukudi coast', Int. J. Golden Res. Thoughts, vol. 5, no. 7, pp. 66 -76.
20. Blois, MS 1958, 'Antioxidant determinations by the use of a stable free radical', Nature, vol. 181, pp. 1199 - 1200.

21. Perez C, Paul, M & Bezerque, P 1990, 'An antibiotic assay by the agar well diffusion method', *Acta Biologiae et Medicine Experimentaalis*, vol. 15, pp. 113-115.
22. Greenwald P, Clifford, CK & Milner, JA 2001, 'Diet and cancer prevention', *Eur. J. Can.*, vol. 37, no. 8, pp. 948 - 965.
23. Kahl, R & Kappus, H 1993, 'Toxicology of the synthetic antioxidants BHA and BHT in comparison with the natural antioxidant vitamin E. Z', *Lebensm, Unters Forsch.*, vol. 196, no. 4, pp. 329 - 338.
24. Shephard KL 1994, 'Functions for Fish Mucus', *Reviews in Fish Biology and Fisheries*, vol. 4, pp. 401.
25. Hancock, RE & Scott, MG 2000, 'The role of antimicrobial peptides in animal defences', *Proc. Natl. Acad. Sci. USA*, vol. 97, no. 16, pp. 8856-8861.
26. Silva, SP, Sabino, MA, Fernandes, EM, Correlo, VM, Bosel, LF & Reis, RL 2005, 'Cork: properties, capabilities and applications', *Int. Mater. Rev.* vol. 50, no. 6, pp. 345 - 365.
27. Sanaye, SV, Pise, NM, Pawar, AP, Parab, PP, Sreepada, RA, Pawar, HB & Revankar, AD 2014, 'Evaluation of antioxidant activities in captive bred cultured yellow seahorse, *Hippocampus kuda* (Bleeker, 1852)', *Aquaculture*, vol. 434, pp. 100-107.
28. Hung, Y, Hwang, PA, Gau, SY & Wu, CH 2008, 'Antioxidative and Immune activities of *Hippocampus kuda* extract', *J. Taiwan Fisheries Res.*, vol. 16, no. 2, pp. 97-105.
29. Mann A, Abdulkadir A, Fadipe LA, Ndamitso MM, Salihu AM, Ogbadoyi EO, Daniyan SY and Bake GG 2021, 'Biological and pharmacological evaluation of crude venom Extracted from *Tetraodon fahaka strigosus* and *Potamotrygon garouensis* obtained from River Niger', *Niger State, Nigeria Int. J. of Fisheries and Aquatic Studies*, Vol. 9, Issue 4, pp.60-70.
30. Mohanraj M, Bragadeeswaran S & Suguna A 2014, 'Studies on Haemolytic Properties of Puffer fishes from South East Coast of India'. *Int. Lett. of Nat. Sci*, vol. 30. pp. 11-18.
31. Selvi,S & Joslin, PJ 2018, 'Determination of Antibacterial Activity of Marine Puffer Fish *Arothron immaculatus* collected from Thoothukudi Coast', *Int. J of Research*, Vol.5, PP.1418 -1430.
32. Kanthimathi, P and Joslin, PJ 2021, 'Antimicrobial, Anticancer Properties from Various Tissues Extracts Of Puffer Fish *Arothron Stellatus* from Thoothukudi Coast' *Int. Res.J.of Engineering and Tec.(IRJET)* e-ISSN: 2395-0056 Vol. 08(03) pp. 3001- 3008.



ISOLATION AND CHARACTERIZATION OF ACTINOMYCETES FROM SALT SAMPLES

R. Raja Rajeswari and R. Sri Priya

PG and Research Department of Zoology, St. Mary's college (Autonomous)

Thoothukudi

Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Actinobacteria are a group of gram-positive bacteria which share the characteristics of both bacteria and fungi, and distributed in both terrestrial and aquatic ecosystems, mainly in soil. They are considered as an important group of bacteria because of the spectrum of antibiotics they produce, that are exploited as antibiotics. Majority of the clinically important antibiotics are secreted by actinomycetes. Actinobacteria are also important in the standpoint of ecological benefits. They play a major role in degrading plant residues and play a major role in plant growth promotion. They are also found to be present in extreme habitats, such as the hypersaline environments. The current study is focused on isolating actinobacteria from salterns of Thoothukudi District and characterize them. Of the nine actinobacterial strains that were isolated from saltpan soil all were found to be gram-positive bacteria with halotolerance. All the strains were found to be catalase positive and 3 strains produced the amylase enzyme. Two strains out of the nine strains characterized, solubilized phosphate.

Keywords: Actinomycetes, Extremophiles, Salterns, plant growth promotion

Introduction

The study of the community characterized by extreme environments such as hypersaline lakes and solar salterns and its microbial diversity is vital to analyse its biodiversity and to harness them for their potential applications. The hyper saline habitats are dominated by extremophilic organisms, generally the archebacteria and halophilic bacteria. The extremophilic bacteria are considered to be an important source of economically important products like antimicrobial peptides and antibiotics. These are also important sources of genes that confer resistance to salt and adaptation to the extreme salinity. This habitat is also rich in industrially important strains of microbes which include the strains that are useful in production of wine and beer, the production of yogurt and some cheese varieties and fermented meats, the production of antibiotics and strains that can be used for waste water treatment, etc. Hence salterns are important source of many economically important bacteria.

The hyper saline environment is a major source of extremophilic *Actinobacteria*. *Actinobacteria* are gram positive or gram variable microorganisms with high G+C content which have a rigid cell wall that contains muramic acid. Most of them are chemoorganotrophs and few are halophiles. Members of *Actinobacteria* were raised to the taxonomic rank of a phylum which is one of the major phyla in the domain bacteria, as inferred from its branching pattern in the 16s rRNA gene tree^{1,2}. The phylum actinobacteria includes phenotypically diverse microorganisms which show diverse morphological properties that range from cocci to highly differentiated mycelia³. The halophilic actinobacteria are widely distributed in saline, hypersaline, terrestrial and aquatic habitats. Isolation of them does not demand special enrichment techniques, supplementing the isolation media with salt would be enough⁴. The current study is focused on isolation and characterization of Actinomycete bacteria from the salterns.

Materials and methods

Collection of sample:

Samples for the experiments were collected from the Saltpans in Sathya Nagar, Thoothukudi District. Salt samples were collected from the salt Bundhs in the salt pans approximately 35 cm below the surface.

Characterization of culture:

Isolation of halophilic bacteria by serial dilution:

1 gram of salt sample was taken into a test tube and mixed with 10 ml of distilled water. The salt sample was serially diluted till 10^{-6} dilutions and 200 μ l of the sample from each dilution was spread plated to obtain single colony isolates.

Plating of culture:

The Actinomycete isolation agar was prepared and autoclaved at 121°C for 15 minutes. The medium was poured into petridish and allowed to solidify. The samples were plated on the medium by spread plating. 100 μ l of the samples from each dilution (10^{-1} to 10^{-6}) was plated using spread plate technique. Plates were incubated at 37°C till the growth of the colonies.

Selective Isolation of Actinomycete strains:

From the salt samples, microorganism were isolated by serial dilution followed by spreading and restreaking. Actinomycete isolates were obtained by adding 10 mg/L of Nalidixic acid to the medium to inhibit the growth of other bacterial strains. The plates were incubated at 37°C till visible colonies appeared.

Isolation of pure bacterial colonies:

Single colonies were picked and streaked to obtain single pure colonies. Pure colonies were incubated at 37°C for 24 hours and stored at 4°C for further studies.

Characterization of isolates:

Morphological characteristics of colonies such as shape, size, colour, pigmentation and gram staining were recorded.

Staining of isolates:

Gram staining:

Gram staining was performed for isolated colonies according to standard procedure. A smear of bacterial cells was prepared on a clean glass slide by gentle heat fixation. Heat fixed smear was filled with crystal violet solution for one minute. The smear was washed with distilled water and then gram iodine was added. Smears were washed with 95% ethanol and cleaned with water. Finally safranin was used as counter stains and allowed to stay 60-80 seconds and washed with water. Then the slides were observed under a microscope.

Biochemical characterization:

Catalase test:

Slants of bacterial culture in nutrient agar were made and the catalase test was performed. Two drops of hydrogen peroxide was added to the 24 hours bacterial culture. The immediate evolution of the gas bubbles indicates the production of catalase enzyme by the isolates and hence considered catalase positive⁵.

NaCl tolerance test:

For salt endurance experiments involving NaCl concentrations, nutrient agar was used as the basic medium and supplemented with the following NaCl concentrations: 3% ,5%, 7% and 8% . After plating of the isolated strains, the plates were incubated at 37°C for a day. Based on the growth of bacteria on each concentrations, they were considered as halotolerant or halophilic bacteria.

Phosphate solubilization:

Bacterial isolates were screened in vitro for their phosphate solubilizing activity using potato dextrose rose Bengal agar. The cultures were streaked on the agar. Plates are incubated at 37°C for 24 hours. The growth of the bacterial colony indicates a positive result for phosphate solubilization⁶

Screening for hydrolytic enzyme production:

Bacterial isolates were screened for their hydrolytic enzyme production like protease and amylase.

Protease production activity:

Bacterial isolates were screened for the ability to produce proteolytic enzymes in skim milk agar (SM medium). The medium was poured into a sterilized petridish and the isolated bacterial strain was streaked on the surface of the medium. Formation of a clear zone around the colonies is indicative of protease production.

Starch hydrolysis activity:

About 20 ml of starch medium was poured into the sterilized petridish. The isolate was streaked and incubated for 24 hours. At the end of the incubation period, two or three drops of Iugol's iodine solution were added on the surface of the medium. A clear zone around the area of growth indicates starch hydrolysis activity of the isolates.

Results**Isolation of bacteria:**

Bacterial strains were isolated from the salt sample from saltpan in the study area mentioned. The bacterial cultures were isolated by serial dilution and single colonies were obtained. Nine bacterial isolates were obtained from the salt samples that were plated on Actinomycete isolation agar. Three colonies were taken for further studies and a patch of the colonies were maintained and the colonies were named as S1, S2 and S3. In order to obtain Actinomycetes from the salt sample Actinomycete isolation agar supplemented with Nalidixic acid was used to inhibit the growth of other bacterial strains. Six colonies grew after incubation at 37⁰C for 7 days. The colonies were named as N1, N2, N3, N4, N5 and N6. Pure culture of the bacterial isolates that were isolated from the salt sample using Actinomycete agar + Nalidixic acid were maintained as patches.

Colony morphology

The morphology of the bacterial colonies and their colours were observed and tabulated in Table 1. The colonies had varied morphology. The strains S1, S2, S3, N3, N6 were white N1, N2, N4 and N5 were dull white colonies. The strains S3, N1, N2, N3, N4, N5 and N6 were irregular and S1, S2 were circular. The margins of the colony were entire in S1, S2 and S3, N1, N2, N3, N4, N5 and N6 were undulate. The elevation of the colony were raised in S1, S2 and flat in S3, N1, N2, N3, N4, N5 and N6. The colonies were S1, S2, S3, N2, N3, N5, N6 were opaque and the colonies N1 and N4 were transparent. (Table 1).

Gram Staining

Gram staining was done on the all the isolates (Table 1). All the strains which were taken for analysis were Gram positive.

Table 1: Morphological characteristics of the isolates

Isolates	Colour	Shape	Margin	Elevation	Opacity	Gram Staining
S1	White	Circular	Entire	Raised	Opaque	Positive
S2	White	Circular	Entire	Raised	Opaque	Positive
S3	White	Irregular	Undulate	Flat	Opaque	Positive
N1	Dull white	Irregular	Undulate	Flat	Transparent	Positive
N2	Dull white	Irregular	Undulate	Flat	Opaque	Positive
N3	White	Irregular	Undulate	Flat	Opaque	Positive
N4	Dull white	Irregular	Undulate	Flat	Transparent	Positive
N5	Dull white	Irregular	Undulate	Flat	Opaque	Positive
N6	White	Irregular	Undulate	Flat	Opaque	Positive

Halotolerance test

To check if the bacteria were halotolerant the bacterial isolates S1, S2 and S3 were analysed. The colonies were patched on nutrient agar medium supplemented with 3% (Fig 1A), 5% (Fig 1B), 7% (Fig 1C) and 8% of NaCl (Fig 1D). The bacterial isolates grew well on the medium containing 7% of NaCl. They were not able to tolerate 8% of NaCl. Hence these isolates are probably moderately halotolerant actinobacterial strains (Table 2).

Table 2: Halotolerance test

Isolates	3% of NaCl	5% of NaCl	7% of NaCl	8% of NaCl
S1	+++	++	+	-
S2	+++	++	+	-
S3	+++	++	+	-

Catalase test

Catalase test was done to identify strains that produce catalase enzyme. The isolates S2, S3, N5 and N6 were used for catalase test. To the overnight grown bacterial slants few drops of hydrogen peroxide was added. A brisk effervescence was observed in all the test cultures, showing that all the strains produced catalase enzymes (Table 3).

Phosphate solubilization test

Phosphate solubilization ability of bacteria can be detected by culturing the isolates on potato dextrose rose Bengal agar plate method. Growth on this medium confirms their phosphate solubilization activity. The isolates N1, N2, N3 and N4 were checked for phosphate solubilization. The strains N1 and N2 grew well on the Dextrose Rose Bengal Agar medium, implicating that these colonies could solubilize phosphate (Table 3).

Hydrolytic enzyme production:

Protease production test:

To check the ability of the actinobacterial strains to produce protease enzyme, the colonies were patched on Skim milk (SM) agar medium. The colonies N1, N2, N3 and N4 were used for the analysis. None of the colonies grew on the SM agar medium (Table 3). This showed that the isolates did not produce the protease enzyme.

Starch hydrolysis test:

The starch hydrolysis test was performed to confirm the production of the enzyme amylase by the bacterial isolates. The isolates that produced amylase enzyme can hydrolyse the starch present in the Starch Agar and show a zone of clearance around their colony when iodine is added. The test was performed on 4 colonies S2, S3, N5 and N6 (Table 3). A zone of clearance was observed around the colonies S2, N5 and N6, indicating that these strains produce the amylase enzyme. The colony S3 was negative for starch hydrolysis test.

Table 3: Biochemical characterization of the isolates

Isolates	Catalase Test	Phosphate Solubilization	Protease Production	Starch Hydrolysis
S1	ND	ND	ND	ND
S2	++	ND	ND	+
S3	++	ND	ND	-
N1	ND	++	-	ND
N2	ND	++	-	ND
N3	ND	-	-	ND
N4	ND	-	-	ND
N5	+	ND	ND	+
N6	+	ND	ND	+

Note; ND = Not Done, + =Weakly positive , ++ =Strongly positive

Discussion

Actinomycetes, which occur in both terrestrial and aquatic habitats, are among the most common groups of gram-positive microorganisms in nature. Actinomycetes decompose organic matter and display antagonism against other bacteria and fungi, with which they compete for nutrients. Actinomycetes have incredible abilities to survive under extreme conditions in their natural environment and have long been the focus of scholarly attention and have been harnessed as valuable sources of natural compounds, such as antibiotics, enzymes, and vitamins. More than 90 percent of chemotherapeutic antibiotics have been isolated from actinomycetes^{7,8}.

The halophiles are named after the Greek word for ‘salt-loving’ are extremophiles that thrive in high salt concentrations. It can live, grow and reproduce in salty concentrations. In recent past, the use of halophilic forms in industrial applications has been increased. On this aspect, the present study was carried out to identify many halophilic forms and their activities from Sathya nagar salt pan environment.

Generally, most of the studies that focus on the screening of antibiotic producing actinomycetes are done in a neutral medium (pH 7). In those studies Actinomycetes that are halophilic were not selected and hence, these extremophiles could have been missed out⁹

The objective of the current study was to isolate halophilic actinobacterial strains. Hence salt samples from Salterns were used to isolate the organisms. Initially the colonies were isolated on Actinomycete selection Agar. As this did not inhibit growth of other bacterial colonies Nalidixic acid was used. On the Actinomycete selection medium, many halophilic bacterial strains were identified .For the analysis a few of the colonies which grew on

actinomycetes isolation Agar and a few colonies from the medium containing Actiomytes agar supplemented with Nalidixic acid was used. Morphological and biochemical characterization of the colonies were done. The bacterial colonies showed diverse morphological characteristics as indicated from variation in shape, colour, margin, elevation and opacity. On the basis of their gram reaction S2, S3 and N6 were gram positive. Some of the colonies also produced a wide range of bioactive compounds such as enzymes protease, amylase, catalase etc.,

Actinomycetes are an indispensable part of modern medical science. These are found in nearly all habitats. Actinomycete from marine environment was first discovered from the salt molds of St. Padenbur¹⁰. The need for antimicrobials is going up day by day due to emergence of new pathogens or due to drug resistance, so efforts are to be taken to discover

newer and potent antimicrobials to combat emerging diseases. Dhanasekaran, (2014)¹¹ isolated two potential actinomycetes from saltpan of Mumbai. It showed resistance to salt concentration upto 10-15%. It also showed potential anti infective activity against various drug resistant human bacterial and fungal pathogens. In this study, we have isolated actinomycete strains from the salt samples by selectively culturing the samples on Actinomycetes isolation agar supplemented with Nalidixic acid.

Roshan et al., (2013)¹² performed salt tolerance activity by using different concentrations of NaCl with suitable media. 4% NaCl was optimized for maximum growth for the isolates. Our results are in accordance with previous studies. In our study, 3-7% of NaCl was optimized for maximum growth of the bacterial strains. Roohi et al., (2012)¹³ evaluated the growth of halophilic bacteria at 5 to 40 % salt concentration. In this study, we have performed halotolerance test from isolated bacteria. Growth was observed in the plates supplemented with 7% NaCl and 8% NaCl completely inhibited the growth of the strains. Hence it can be concluded that the isolated strains are moderately halophilic bacteria.

Sanchez-Porro et al., (2002)¹⁴ showed that the culture collection strains tested for hydrolytic activities, most of them were negative for the production of the protease enzymes. Our results are in accordance with previous study. In our study, all isolates were negative for protease production. Chen et al., (2006)¹⁶ revealed that the microbes had the ability to solubilizing phosphate in the presence of high salt. They found treated seeds had showed significant increase in germination percentage in the presence of salt in the media depicting their ability of solubilize the phosphate even in the presence of salts and facilitating the seeds to germinate. In this study, the isolates N1 and N2 were able to solubilize phosphate at higher rates. Isolates N3 and N4 were negative for phosphate solubilization and hence could improve seed germination. In this present study, the isolated bacterial strains, solubilised phosphate, produced catalase and showed starch hydrolytic activity. These strains have to be further characterized by 16s rRNA to identify their genus and species. Analysis of more colonies has to be done to identify strains that could be used efficiently for bioprospecting. Antimicrobial activity of the characterized strains has to be performed.

References

- Garrity .G.M, Holt .J.G (2001). The road map to the manual. In: Boone C (ed) Bergey's manual of systematic bacteriology, vol 1, 2nd edn. Springer, New York, pp 119–155
- Ludwig .W., Klenk.H.P (2005). A phylogenetic backbone and taxonomic framework for prokaryotic systematics. In: Brenner DJ, Krieg NR, Staley JR, Garrity G (eds)

- Bergey's manual of systematic bacteriology, vol 2, 2nd edn, The proteobacteria, Part A, Introductory essays. Springer, New York, pp 49–65.
- Goodfellow M (2010) Selective isolation of actinobacteria. In: Bull AT, Davies JE (eds) Manual of industrial microbiology and biotechnology, 3rd edn, vol 1, section 1. Isolation and screening of secondary metabolites and enzymes (Baltz RH, Davies JE, Demain AL, eds). ASM Press, Washington, DC, pp 13–27.
- Kanekar. P.P, Kanekar. S.P., Kelkar .A.S., Dhakephalkar .P.K (2012) . Halophiles– Taxonomy, diversity, physiology and applications. In: Satyanarayana T, Johri BN, Prakash A (eds) Microorganisms in environmental management: microbes and environment. Springer, Dordrecht, pp 1–34.
- Hadioetomo, R. S (1990). Mikrobiologi Dasar Laboratorium: Teknik dan Prosedur Dasar Laboratorium. Gramedia. Jakarta Vol. 50pp 569-576.
- Martin, J. P (1950). Use of acid, rose bengal, and streptomycin in the plate method for estimating soil fungi. Soil science, 69(3), 215-232.
- Newman DJ, Cragg GM. Natural products as sources of new drugs over the last 25 years. Journal of natural products. 2007;70(3):461-477.
- Demain.A.L (1999). Pharmaceutically active secondary metabolites of microorganisms. Applied microbiology and biotechnology;52(4):455- 463.
- Trenozhnikova, L., & Azizan, A. (2018). Discovery of actinomycetes from extreme environments with potential to produce novel antibiotics. Central Asian Journal of Global Health, 7(1).
- Nadson.G.A(1903). Microorganisms as geological agents (Russian). From the Works of the investigation of the Slavian Mineral Waters. St.Petersburg .Vol.16:466–471.
- Dhanasekaran.P (2014). "Anti-infective potential of halophilic actinomycetes isolated from saltpan." Malaya Journal of Biosciences 1 :37-40.
- Roshan, K., Tarafdar, A., Saurav, K., Ali, S., Lone, S.A., Pattnaik, S., Tyagi, A., Biswas, K. and Mir, Z.A., (2013). Isolation and screening of bioactive compound from actinomycetes isolated from salt pan of Marakanam district of the state Tamil Nadu, India. Elixir International Journal, 61, pp.16826-16831.
- Roohi. A., Ahmed.I. Iqbal. M., Jamil. M. (2012). "Preliminary isolation and characterization of halotolerant and halophilic bacteria from salt mines of Karak, Pakistan." Pak J Bot 44(SI 1), 365-370.
- Sanchez-Porro C, Martin S, Mellado E, and Ventosa A, (2002). "Diversity of moderately



halophilic bacteria producing extracellular hydrolytic enzymes”, *Journal of Applied Microbiology*, 94, pp. 295–300.

Chen Y.P., Rekha P.D, Arun A.B., Shen F.T., Lai W.-A, Young C.C., (2006) “Phosphate solubilizing bacteria from subtropical soil and their tricalcium phosphate solubilizing abilities,” *Applied Soil Ecology*,34, pp33-41.

ANTIMITOTIC, ANTIPROLIFERATIVE AND ANTIBACTERIAL ACTIVITY OF *PHALLUSIA NIGRA* SAVIGNY, 1816

S. Sherine and M. Paripooranaselvi

Department of Zoology, St. Mary's College (Autonomous), Thoothukudi

Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Cancer remains one of the most life-threatening diseases and an economic burden worldwide. Cancer treatments can cause several side effects. Therefore, developing a target-specific drug without any side effects on normal cells is an ongoing effort in cancer drug discovery. Many marine sedentary organisms produce components for their chemical defence. In the present study, an attempt has been made to assess the antimitotic, antiproliferative and antibacterial activity of *Phallusia nigra*. The results showed significant antimitotic activity in terms of decrease in mitotic index in a dose dependent manner. The cell viability of the extracts of *Phallusia nigra* was 73.58 % at 1.5 mg/ml concentration. Maximum zone of inhibition exhibited was 12, 11, 10, 9 and 8 mm for *Salmonella typhi*, *Shigella flexneri*, *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Vibrio cholerae* at 2 mg/ml of ethanolic extract of *Phallusia nigra*.

Keywords: *Phallusia nigra*, antimitotic, antiproliferative, antibacterial

Introduction

Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body. Cell differentiation and proliferation are highly manipulated and regularized by the cell division mechanism in humans. In healthy organisms, during cell division, when cells come in contact with other cells, the process of cell replication ceases. Uncontrolled cell division occurs when a process called contact inhibition fails. Hence, contact inhibition becomes a powerful anti-cancer mechanism, but it is lost in cancer cells. Cancer remains one of the most life-threatening diseases and an economic burden worldwide^[1]. One of the treatments used currently is chemotherapy which kills cancer cells along with healthy ones. Moreover, cancer treatments can cause several side effects. Therefore, developing a target-specific drug without any side effects on normal cells is an ongoing effort in cancer drug discovery. In this context, natural products from marine organisms especially ascidians rank second as the most promising source of drugs for cancer^[2]. They are an interesting group of marine sedentary organisms commonly called 'sea squirts' found to occur on the Tuticorin coast. Antimitotic, antiproliferative antiviral and

antibacterial activities of biofouling marine ascidian extracts have been evaluated [3-7]. Marine ascidian is becoming one of the main sources of an antitumor drug that has shown high bioactivity and extensive application in cancer treatment [8]. The present study was focused on the antimutagenic, antiproliferative and antibacterial activity of crude ethanol extract of simple ascidian *Phallusia nigra* using *Allium cepa*, *Saccharomyces cerevisiae* and human pathogens such as *Vibrio cholerae*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Shigella flexneri* and *Staphylococcus aureus* to study the potential of *Phallusia nigra*.

Materials and methods

Collection of Animal Material

Phallusia nigra was collected from Tuticorin harbor by SCUBA diving. Epibionts and the fragments of shell attached to the specimens were removed and washed several times with sterile seawater. Identification up to the species level was carried out based on the key to the identification of Indian ascidians [9].

Systematic Position

Phallusia nigra belongs to Phylum: Chordata; Subphylum: Urochordata; Class: Ascidiacea; Order: Enterogona; Family: Ascidiidae; Genus: *Phallusia*; Species: *nigra*.

Preparation of powder and extract

The specimens were dried under shade. The dried animals were homogenized to get a coarse powder. The dried powder of the tunicates *Phallusia nigra* was used.

Antimitotic activity

Antimitotic activity was determined using *Allium cepa* root tip model by the method of Sehgal *et al.*, 2006 [10]. For each root tip, hundred cells were counted in 5–8 fields under a high power (40 X) microscope. The following formula was used to determine mitotic index:

Mitotic index (MI) = $P+M+A+T$ /Total number of cells

where P - Prophase; M – Metaphase; A - Anaphase; T - Telophase

Antiproliferative Assay

The antiproliferative activity was determined by using yeast cell model following the method of Saboo *et al.*, 2007 [11].

The number of living cells that did not take stain, appeared transparent and dead cells that got stained and appeared blue were counted. The samples were treated with three species of ascidian extracts. The number of cells/mL and cell viability (%) was determined by using the formula:

Viable cells/mL = average no of viable cells in one square \times dilution factor $\times 10^4$

Percentage of cell viability = Total viable cells/Total number of cells $\times 100$

Antimicrobial Activity

The dried powders of the tunicate *Phallusia nigra* was soaked in ethanol overnight and filtered. The separation of the extract from the solvent is made by natural evaporation method.

Antibacterial activity of ethanolic extract of *Phallusia nigra* was determined against five different bacterial pathogens - *Vibrio cholerae*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Shigella flexneri* and *Staphylococcus aureus*.

3.8g of Mueller Hinton Agar medium powder is suspended per 100 ml of distilled water. It is heated with frequent agitation and boil for one minute to completely dissolve the medium. It is autoclaved and poured into sterile petridishes on a level, horizontal surface to give uniform depth. It is allowed to cool to room temperature [12].

The antimicrobial activity was measured by Disc Diffusion method. The sterile discs were impregnated with the different concentrations of the ethanolic extract of *Phallusia nigra* at 10 μ l, 15 μ l, 20 μ l and standard drug at 25 μ l. The discs were then placed on the previously inoculated petridishes containing the inoculum of test microbes [13]. The bacterial pathogens were maintained on MHA plates and incubated at 37°C for about 24 hrs. Zones of inhibition were measured in millimeter using a meter scale [14].

Results and discussion

Antimitotic activity of the aqueous extracts of *Phallusia nigra*, was tested for antimitotic activity using *Allium cepa* root tips. The results were compared on the basis of mitotic index and are presented in Fig. 1. Roots of *A. cepa* yielded evident results reflecting the effect of various concentrations of extracts on mitotic activity. The results were compared with control and the mitotic index was 79, 67, 53 at 0.25, 0.50 and 0.75 mg/ml concentration of aqueous extract of *Phallusia nigra* respectively. The extracts showed significant antimitotic activity in terms of decrease in mitotic index in a dose dependent manner. The promising antimitotic properties of *L. bistratum* could be exploited against cancer cells [4]. Antimitotic compounds can interrupt the process of mitosis anywhere in the cell cycle by inhibiting spindle formation in M-phase or by damaging DNA in S-phase of the cell cycle. This decrease in mitotic index indicates significant antimitotic activity of the extracts and this may be due to the interactions of the specific plant phytochemicals with the mitotic apparatus of the cells that causes delay in interphase resulting in increased number of cells at interphase stage, blocking transition from interphase to mitotic phase and decreasing mitotic index [15]. The results from the study showed that the ascidian extracts have excellent antimitotic properties.

Figure 2 depicts the antiproliferative activity of the extract of *Phallusia nigra* against yeast cells. The cell viability of the extracts of *Phallusia nigra* was 73.58% at 1.5 mg/ml concentration. Alterations of both growth factor-receptor signaling, and transmembrane protein interactions could be the principal cause of the antiproliferative effect [16]. The cytotoxic activity of *Polyclinum madrasensis* and *P. nigra* extracts have been tested at various concentrations and showed highest cytotoxicity in the assay conducted, which indicates the presence of cytotoxic compounds in these ascidians [17].

Yeast cells have a high degree of similarity in sequence and functions to human cells and are commonly used to study biological pathways, both in yeast and in man. This includes pathways responsible for cell cycle control and DNA damage repair. In our study significant antiproliferative activity was exhibited by *Phallusia nigra* that had also exhibited highest antimitotic activity.

In the present investigation, antibacterial activity of ethanolic extract of *Phallusia nigra* is showed in figure 3. Maximum zone of inhibition exhibited was 12, 11, 10, 9 and 8 mm for *Salmonella typhi*, *Shigella flexneri*, *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Vibrio cholerae* at 2 mg/ml of ethanolic extract of *Phallusia nigra*. Organic substances isolated from the marine plants and animals have been shown to affect bacterial behaviour as reported by Bell and Mitchell [18]. GC-MS study of the methanol extract of *Phallusia nigra* revealed the presence of alcoholic compounds such as dl-3,4 dimethyl-3,4-hexanediol, dl-6-methyl-5-hepten-2-ol and 2-methyl-3-decanol showing antimicrobial activity [19]. Hence it may be concluded that these alcoholic compounds may be responsible for the potent antimicrobial activities of *Phallusia nigra*.

Figure 1: Antimitotic activity of aqueous extract of *Phallusia nigra*

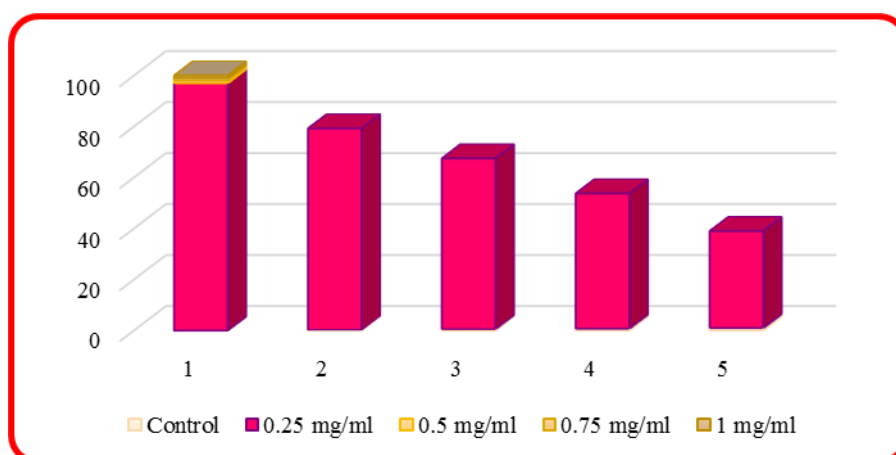


Figure 2: Antiproliferative activity of ethanolic extract of *Phallusia nigra*

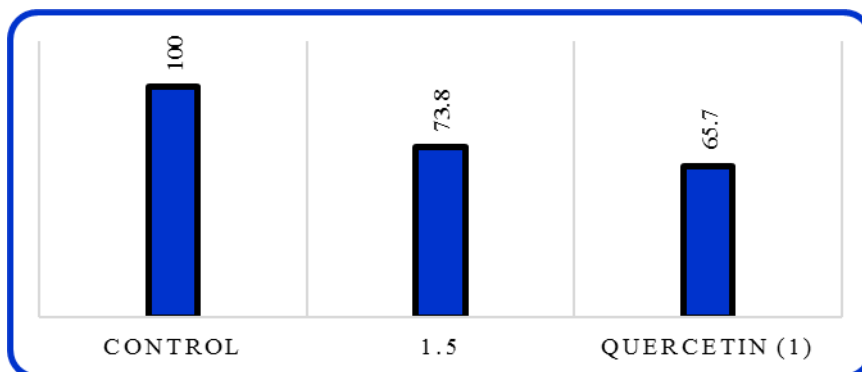
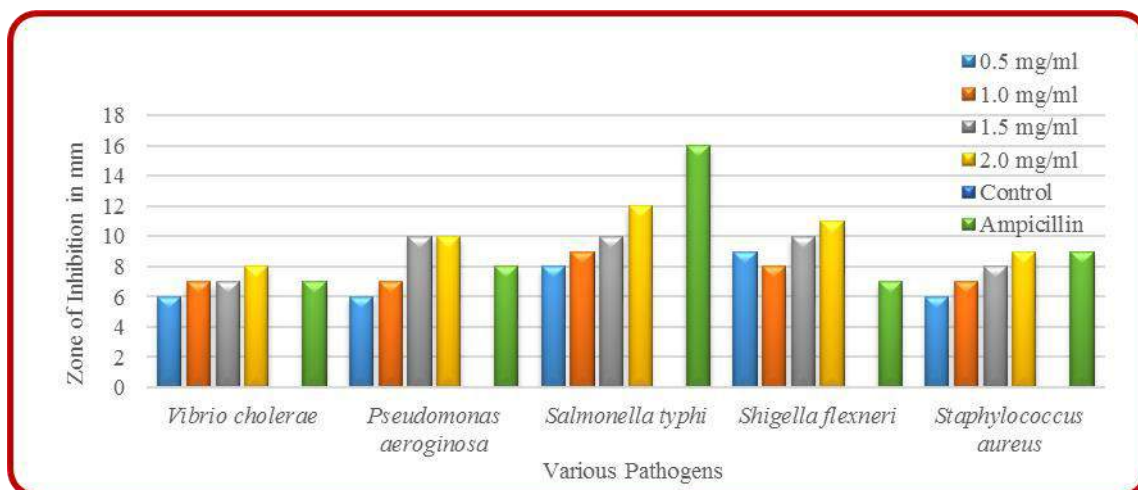


Figure 3: Antibacterial activity of ethanolic extract of *Phallusia nigra* against *Vibrio cholerae*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Shigella flexneri* and *Staphylococcus aureus*



Conclusion

It has been reported that thousands of natural products are isolated from ascidians such as alkaloids, cyclic peptides and polyketides etc. Most of these secondary metabolites possess diverse bioactivities, such as antibacterial, antifungal and antitumor activities. Compounds found in the extract showed significant antibacterial activity for the discovery of novel marine drug. The animals which are considered as the nuisance and affect the economy by corrosion were used for this study. Such natural products are good for health and devoid of side effects. The result from the study showed that the extract of tunicates had excellent anti-mitotic, antiproliferative and antibacterial activity. A further study on isolation, purification, structure determination and subsequent recognition of a novel mechanism of action of the clinically effective agent is suggested.

Reference

1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. 2018. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 68(6):394-424.
2. Padavala, A.B., Suma, S.P., Satyavaru, L.A., Metta, R.V., Chinta, N.K., and Prasanna, T. 2008. A data base of natural products and chemical entities from marine habitat. *Bioinformation.* 3(3): 142-143.
3. Amutha B, Meenakshi, V.K., Senthamarai, S. 2010 Evaluation of antibacterial activity and Antimitotic activities of biofouling marine ascidian extracts of Tuticorin coast *International Journal of Pharmaceutical Sciences* 2,(3);750-758.
4. Karthi K.N.S, Arshan K, Abdul H, Ali J, 2019. In-Vitro Study of Antimitotic Potential of Ascidians Using *Allium Cepa* L. Root Meristamatic Cells. Project: Medical microbiology
5. Cui H , Bashar M.A.E, Rady I , El-Naggar H.A , El-Maoula L.M.A , Mehany A.B.M(2020) Antiproliferative Activity, Proapoptotic Effect, and Cell Cycle Arrest in Human Cancer Cells of Some Marine Natural Product Extract *Oxidative Medicine and Cellular Longevity* 2020, 12 pages.
6. Puch D. P., Berastegui-Cabrera J , Pérez-Povedano M , Villegas-Hernández H , Guillén-Hernández S , Cautain B, Reyes F , PachónJ , Gómez P, Rodríguez J, Jiménez C and Sánchez-Céspedes J (2020). Antiviral and Antiproliferative Potential of Marine Organisms From the Yucatan Peninsula, Mexico *Front. Mar. Sci.*, 20 August 2020
7. Meenakshi, V.K., Paripooranaselvi, M., Gomathy, S., and Chamundeswari, K.P. 2012a. Antiproliferative activity of *Phallusia nigra* Savigny, 1816 against Dalton's Lymphoma Ascites. *International Journal of Chemical and Pharmaceutical Sciences.* 3(2): 70-75.
8. Zhu Y, Han S, Li J, Gao H, and Dong B, (2022). Aqueous Extract of Sea Squirt (*Halocynthia roretzi*) with Potent Activity against Human Cancer Cells Acts Synergistically with Doxorubicin . *Mar. Drugs* 2022, 20, 284.
9. Meenakshi, V.K. 1997. Biology of few chosen ascidians. Ph.D., Thesis, Manonmaniam Sundaranar University, Tirunelveli, India.
10. Sehgal, R., Roy, S., and Kumar, V.L. 2006. Evaluation of cytotoxic potential of latex of *Calotropis procera* and Podophyllotoxin in *Allium cepa* root model. *Biocell.* 30(1): 9-13.

11. Saboo, S.S, Tapadiya, G.G, Lamale, J.J and Khadabadi, S.S. 2014. Phytochemical screening and antioxidant, antimitotic, and antiproliferative activities of *Trichodesma indicum* shoot. *Anc Sci Life*. 34(2): 113–118.
12. Aryal, S. 2018. Muller Hinton Agar (MHA) Composition, Principle, Uses and Preparation. <https://microbiologyinfo.com>.
13. Berghe, D.A.V., Vlietinck, A.J. 1991. Screening methods for antibacterial and antiviral agents from higher plants. In methods in plant Biochemistry-Assay for Bioactivity, Academic: London., 6: 47-69.
14. Divya T., Dharan and Prasad, G. 2013. Potential Antibacterial Activity of Marine Ascidian *Aplidium multiplicatum* from Vizhinjam Coast of India. *International Journal of Scientific & Engineering Research*, 4(7):
15. Raheel, R., Saddiqe, Z., Iram, M., Afzal, S. 2017. In vitro antimitotic, antiproliferative and antioxidant activity of stem bark extracts of *Ficus benghalensis* L. *South African Journal of Botany* 111: 248-257.
16. Garcia J.M, Mazza M, Alliot C, Sinquin C., Jouault S.C, Heymann D and Markai S.H 2021. Antiproliferative Properties of Scandium Exopolysaccharide Complexes on Several Cancer Cell Lines 19(3), 174.
17. Bragadeeswaran, S., Ganesan, K., and Kumaran, N.S., 2011. Hemolytic activities from ascidian *Polyclinum madrasensis* Sebastian, 1952 and *Phallusia nigra* Savigny, 1816 from Tuticorin coast of India. *Asian Journal of Applied Sciences*. 4: 630-639.
18. Bell W, Mitchell R. Chemotactic and growth responses of marine bacterial to algal extracellular products. *Biol. Bull.*, 1972; 143: 265-277.
19. Gopalakrishnan S, Meenakshi VK, Shanmugapriya D. Chemical investigation of the simple ascidian *Phallusia nigra* Savigny, 1816 of Tuticorin coast by GC-MS. *International Journal of Pharma and Biosciences.*, 2011; 2(4): 385-386.

Fig 1: Anti-bacterial activity of *Carica papaya*- leaf extracts against different bacterial strains

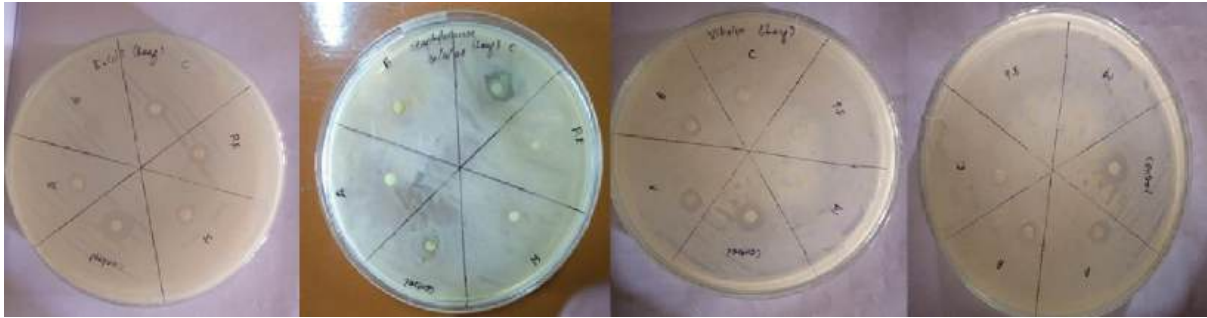
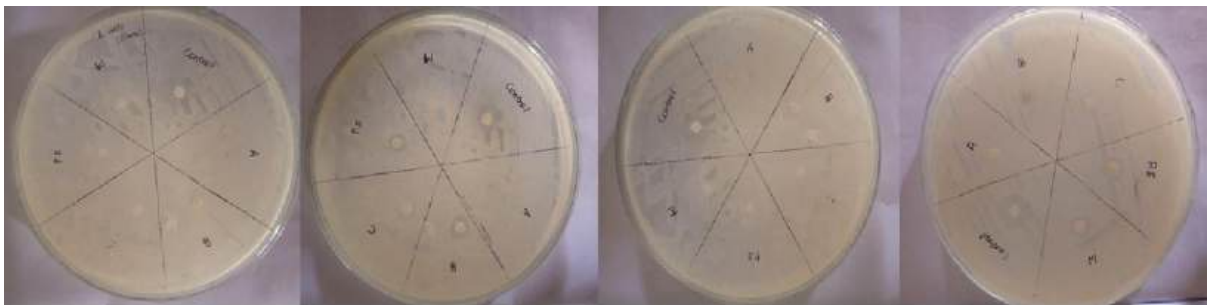


Fig 2: Anti-bacterial activity of *Carica papaya*- stem extracts against different bacterial strains



ISOLATION OF ANTIBIOTIC PRODUCING MICROORGANISMS FROM SOIL

N.R.Sutha and A. Maria Heartina Adlin Vaz

Department of Microbiology, St. Mary's College (Autonomous), Thoothukudi

Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

Abstract

Antibiotic resistance is growing all around the world which kills humans in increasing volume. Against life of microorganisms 'antibiotic' inhibits the growth by intercepting the metabolic pathways. Microorganisms like Bacteria, fungi, actinomycetes produce antibiotic in an antagonistic environment for survival of the fittest. Soil is the major source of microorganisms as it has the nutrients for the existing. The identification of antibiotic producing microorganisms should increase as there is an increasing need for novel antibiotics. This study involves in the isolation of antibiotic producing microorganisms that is *Bacillus* species which is showing 5.5 mm and 4.5 mm zone of inhibition towards *Staphylococcus* species and *Escherichia coli* respectively for antimicrobial activity and fungi does not show any zone of inhibition. The Minimum Inhibition Concentration (MIC) was 6ml and 7ml for *Staphylococcus* species and *Escherichia coli* respectively which showed that this Isolate 2 can further be experimented for elucidation of the structure of antibiotic, mass cultivation of the isolate for industrial use, etc.

Keywords: Antibiotic, Antibiotic Resistance, *Bacillus* species, *Staphylococcus* Species, *Escherichia coli*, Antimicrobial activity, Minimum Inhibition Concentration.

Introduction

Resistance towards antibiotics has become one of the most important issues to be addressed in this century as in recent times, more than 700,000 patients die all over the world because of antimicrobial resistance (AMR). This estimation is going to increase to 10 million by 2050, which will decrease GDP at least by 2.5. The risk of extensive spread of antimicrobial resistance can reduce positive changes in the modernization of the healthcare organizations. Therefore, not only a novel approach, but also new and effective antibiotics are essential. In a modern technological world, different discoveries and health techniques can be used to decrease antimicrobial resistance. New research to speed up the development of new drugs and diagnostic tools is one such approach, as well as better monitoring of antibiotic resistance and ways to advance the use of existing antibiotics. There is also a need for a framework to regulate the use of potential new antibiotics to prevent them from being wasted.

Lastly, the ongoing pandemic blowout of resistant bacteria demonstrates that the problem can only be talked through international cooperation and thus that any new strategy to manage antibiotic resistance must take into considering the issues of worldwide entry and cost effectiveness.

(Konai et al., 2015).

Antibiotic means ‘against life’ as the name suggest, it is important commercial secondary metabolites produced by a wide range of microorganisms like bacteria, fungi and *Streptomyces*, against other microorganisms in an environment to thrive for nutrients. (Sethi et al., 2013).

Pathogenic bacteria are acquiring resistance to existing antibiotics, most of which are expensive and have been associated with side effects like nephrotoxicity, etc. Bacteria have evolved numerous strategies for resisting the action of antibiotics and antibacterial agents. This is particularly true of those bacteria that are antibiotic producers. Bacteria that produce antibiotics do so to gain a selective advantage over other competing microbes in their natural environment.

Bacterial resistance is the ability of bacterial cells prevents the bacteriostatic or bactericidal effect of antibiotics. Excessive and unintended use of antibiotics contributes to the development of bacterial resistance. For extensive recording and development of microorganisms that are resistant to time and problems as a result, resistant microorganisms emerged. (Hasan et al., 2020).

Soil is the main reservoir of antibiotic-producing microorganisms. Given the high density of microorganisms in the soil, many types of bacteria and fungi have evolved over the years to find ways to prevent the growth of their neighbors and benefit them. No wonder, antibiotics made by one microbe can inhibit many other soil microbes. The genus *Bacillus* and *Streptomyces* of the genus Bacteria, and the genera *Penicillium* and *Cephalosporium* of the genus Fungi are commonly found in soil. The genus *Streptomyces* is the most prolific producer of antibiotics, a bacterium, but a unique subgroup of bacteria called actinomycetes. Soil has historically been used to find new antibiotic producers, but now many of the "old" antibiotics are laboratory based and chemically modified to produce new versions of old antibiotics.

The use of antibiotic-producing microorganisms to prevent illness dates back thousands of years, and traditional moldy bread compresses to treat wounds opened in Serbia, China, Greece and Egypt over 2000 years ago. Ebers Papyrus from 1550 BC is the oldest surviving medical document and the list of treatments include mold bread and healing lands.

Given the novelty of the various omics technologies, we are yet to extract their full potential and it seems feasible that these technologies will mature to fulfill this gap. Alternatively, innovative technologies favoring high-throughput may be developed, even by sacrificing molecular sensitivity to some extent. In any case, the increasing need for antibiotics drives the relentless and continuous research on the foreground of antibiotic discovery. (Emmerich et al, 1899).

Materials and methods

Collection of Samples

The soil samples were collected from different areas of the garden of St. Mary's College (Autonomous), Tuticorin, Tamil Nadu, India.

Soil sample was collected in such a way to get the soil of crust and depth of at least 10 cm with the help of sterile spatula and placed in sterile petri plate for transportation to laboratory.

The soil sample was sieved to extract fine soil particles which measured about 10 g.

Preparation of Soil Sample

One gram of soil was weighed and mixed in 10 ml of sterile distilled water in a conical flask. The conical flask was mixed thoroughly by vigorous shaking for few minutes and allow the sediment to settle. This mixture gives 1:10 dilution and therefore this solution is stock solution. One ml of this solution was taken and transferred to the test tube containing 9 ml of sterile distilled water to give 1:100 that is 10^{-2} . Then this process was repeated till 1:10000 dilution.

Isolation of Microorganisms

The media was prepared for isolation of bacteria and appropriate media is nutrient agar. An amount of 100 ml of distilled water was added to the conical flask and 2.8 g of nutrient agar powder was dissolved in it. The conical flask was sterilized using autoclave method at 121°C for 15 min and allowed to cool down for little while. Then aseptically the media was poured into the sterile petri plates and allowed to solidify.

Inoculation of Sample

0.1 ml of soil inoculum from each dilution above prepared was inoculated separately onto labelled petri plates in duplicate for bacterial species isolation and the plates with inoculum were spread evenly with the help of sterile glass rod. This procedure is also called crowded plate technique. The petri plates were inverted and placed at 37°C for 24 h in the incubator.

Sub-Culturing of Microorganisms

Bacterial colonies with clear margin or zone of clearance were picked and sub-cultured on fresh NA or NB using sterile inoculation loop, streak the petri plates or the test tube slants can be used in laminar air flow to purify the isolates and incubate at 37°C for 24 h.

Preservation of Isolates

Total of four isolates were isolated which were preserved in the slants of nutrient agar by keeping them into the refrigerator at 4°C and maintained for longer period of time by serial sub-culturing.

Biochemical Characterization

Biochemical tests are the tests used for the identification of bacteria species based on the differences in the biochemical activities of different bacteria. These differences in carbohydrate metabolism, protein metabolism, fat metabolism, production of certain enzymes, ability to utilize a particular compound etc. help them to be identified by the biochemical tests.

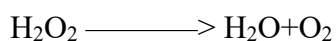
(a) IMVIC Test

The IMViC tests are a group of individual tests used in microbiology lab testing to identify an organism in the coliform group.

- (i) Indole test
- (ii) Methyl red test
- (iii) Vogas- proskauer test
- (iv) Citrate test

(b) Catalase Test

Catalase test used to detect the presence of catalase which converts hydrogen peroxide to water and oxygen. This test was carried out by putting a drop of hydrogen peroxide on a clean slide.



(c) Urease Test

Urea medium, whether a broth or agar, contains urea and the phenol red as a pH indicator. Many organisms, especially those that cause urinary tract infections, produce the urease enzyme, which catalyzes the splitting of urea in the presence of water to release two molecules of ammonia and carbon dioxide. The ammonia combines with the carbon dioxide and water to form ammonium carbonate, which turns the medium alkaline, turning the indicator from its original orange-yellow color to bright pink. This test is performed as part of the identification of several genera and species of the *Enterobacteriaceae* family.

Isolation of Test Strains

Three bacterial strains, namely *Staphylococcus* species, *Escherichia coli*, and *Klebsiella* species used in this study were isolated on selective media from skin, dirty water and wound sample collected from student, sewage and wounded patient respectively. Biochemical tests were performed to confirm the identity of these strains. Two fungi were isolated, namely *Aspergillus* and *Mucor* both from bread which was allowed to spoil on purpose and identified through microscopic analysis of spores and fungal hyphae. The purpose for selecting the above bacteria and fungi was because all of them are potential opportunistic pathogens commonly associated with bacterial and fungal infections.

Antimicrobial Activity by Agar Diffusion Method-Secondary Screening

Agar well diffusion method is widely used to evaluate the antimicrobial activity of plants or microbial extract that to check the culture for the production of antimicrobial metabolites. Similarly, to the agar plate surface is inoculated by spreading a volume of the microbial inoculum over the entire agar surface. For antibiotic production, Muller Hinton Agar (MHA) was prepared by adding 3.8 g of MHA media in 100 ml of distilled water and autoclaved at 121°C for 20 min. After sterilization, the media was cooled and poured into sterile petri plates and kept in the incubator at 37°C for 24 h to check its sterility. 24 h fresh cultures in NB of the test organisms that are bacterial species, *Staphylococcus* species, *E. coli*, *Klebsiella*, fungal species *Aspergillus* and *Mucor* were centrifuged and the supernatant was used. After incubation, sterilized cotton buds were dipped in the Eppendorf tube with the supernatant and swabbed on the MHA plates. Wells were made on MHA plates using sterile borer. The Isolates 1, 2, 3 and 4 were also centrifuged and the supernatant were poured into specific labelled MHA plates with positive control which is Amoxicillin for bacterial positive control and Fluconazole for fungal positive control. The petri plates were incubated at 37°C for 24 h for observing zone of inhibition.

Minimum Inhibitory Concentration

The minimum inhibitory concentration (MIC) is the lowest concentration of a chemical, usually a drug, which prevents visible growth of a bacterium or bacteria. MIC depends on the microorganism, the affected human being (in vivo only), and the antibiotic itself. It is often expressed in micrograms per milliliter ($\mu\text{g/mL}$) or milligrams per liter (mg/L). There are three main reagents necessary to run this assay: the media, an antimicrobial agent, and the microbe being tested. MIC test was performed when the cultures entered stationary phase as evidenced by growth curve. The culture broth that is MHA broth was centrifuged at high speed for 15 min. The supernatant was filtered and used for the MIC test. In a series of test

tube having test strains (*E. coli* and *S. sps*), the centrifuged broth was added with different concentrations and incubated at 37° C for 24 h. The test tubes were then observed for turbidity. The lowest concentration at which turbidity is not seen is taken as MIC.

Results and discussion

In this study, the isolate producing antibiotic is isolated using serial dilution method.



Colony Characterization

Isolates codes	Size	Type or Shape	Colour	Edge	Elevation
Isolate 1	Small	Circular	White to brown	Entire	Convex
Isolate 2	Medium	Round	Whitish	Entire	Slightly convex
Isolate 3	Small	Circular and irregular	White to creamy	Undulate	Flat
Isolate 4	Medium	Round and irregular	Creamy	Entire to undulate	Flat

Then isolated test microorganisms they are bacterial species, *Staphylococcus* species, *E. coli*, *Klebsiella*, fungal species *Aspergillus* and *Mucor*.

Biochemical test results of all Isolates

Tests	Isolate 1	Isolate 2	Isolate 3	Isolate 4
Indole test	-ve	-ve	-ve	-ve
Methyl red test	+ve	+ve	+ve	+ve
Vogas-proskauer test	-ve	+ve	-ve	-ve
Citrate test	+ve	+ve	+ve	-ve
Catalase test	-ve	+ve	+ve	+ve
Urease test	-ve	-ve	-ve	+ve

Soil sample was collected, four bacterial colonies having zone of inhibition were picked and streaked on nutrient agar plates to get pure cultures. Out of the four isolates only one bacterial isolate according to the table which concludes from the biochemical tests performed that, Isolate 2 could be of genus *Bacillus*. The major aim of current research was to identify and characterize bacterial strains isolated from soil that has the ability of producing natural antibiotic.

Isolate 2 was subjected to agar well diffusion assay, using *Escherichia coli*, *Staphylococcus* species, *Klebsiella* species, *Aspergillus* species and *Mucor* species as test organisms. Antimicrobial activity was measured in terms of zone of inhibition. The incubated samples were evaluated and optimum antimicrobial activity of inoculum of Isolate 2 that is *Bacillus* species was ensured at 48 h with control Amoxicillin. Amoxicillin was added for only bacterial plates and for fungi plates Fluconazole was added to provide positive result that is zone of inhibition.

Amoxicillin is a penicillin antibiotic. It is used to treat bacterial infections, such as chest infections (including pneumonia) and dental abscesses. Fluconazole is an antifungal medication used for a number of fungal infections. This includes candidiasis, blastomycosis, coccidioidomycosis, cryptococcosis, histoplasmosis, dermatophytosis, and pityriasis versicolor.

Antibacterial activity of the Isolate 2

Test Organism	Zone of inhibition for Positive Control (in mm)	Zone of inhibition for Isolate 2 (in mm)
<i>Escherichia coli</i>	4 mm	4.5 mm
<i>Staphylococcus species</i>	4 mm	5.5 mm
<i>Klebsiella species</i>	4 mm	3.5 mm
<i>Aspergillus species</i>	3 mm	No Zone of Inhibition
<i>Mucor species</i>	3 mm	No Zone of Inhibition



Plate:5.53 Isolate 2 against *Escherichia coli*



Plate:5.54 Isolate 2 against *Staphylococcus species*



Plate:5.55 Isolate 2 against *Klebsiella species*

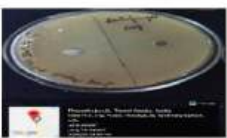


Plate:5.56 Isolate 2 against *Aspergillus species*



Plate:5.57 Isolate 2 against *Mucor species*

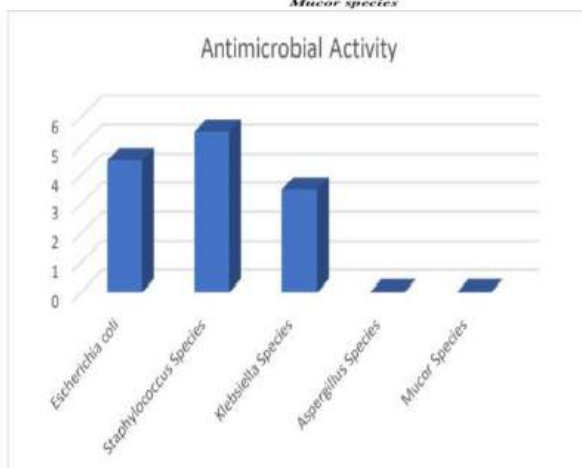


Figure:5.1 Graph for Antimicrobial Activity

Bacillus subtilis has the potential to produce antibiotics and has been recognized for past 50 years. *Bacillus subtilis* is an endospore forming rhizobacterium. Sonenshein et al., 2002 collected several wild type *Bacillus subtilis*, having the potential to produce more than two dozen of antibiotics. *Bacillus subtilis* C126 strain from sugar cane fermentation have the

potential to produce polypeptide antibiotic, Bacitracin. Production of Bacitracin by *Bacillus subtilis* is a pH dependent which yielded a maximum production at pH of 7.8 - 8. Strains of *Bacillus cereus* from a soil sample have the ability to produce Bacteriocin and was active against most gram positive but not against gram negative bacteria. M15 strain of *Bacillus cereus* possesses inhibitory effect against both gram positive and gram-negative bacteria. Bacilli are predominant soil bacteria widely used in industrial applications, particularly antibiotics production has medically, agriculturally and veterinary importance. *Bacillus* species preferred hosts for the production of many improved and new products used in genomic and proteomic applications. To enhance the yield of Bacitracin it is possible to clone and amplify the gene coding for some key enzymes in the biosynthetic pathways of Bacitracin.

Bacillus lentus and *Bacillus alvei* also show antibacterial activity against *Staphylococcus aureus*. *Bacillus pumillus* only show slight zone of inhibition on *Proteus sp* while it is inactive against others was reported by Sethi et al., 2013.

The minimum inhibitory concentration test (MIC) was performed against test organisms *Escherichia coli* and *Staphylococcus species* only.



MIC for Isolate 2 against *Escherichia coli*



MIC for Isolate 2 against *Staphylococcus species*

The MIC of dialysed concentrate for gram-negative bacteria *Escherichia coli* was found to be 7 ml and for gram-positive bacteria *Staphylococcus species* was found to be 6 ml. MIC against *Klebsiella species* was not considered because the zone of inhibition was lesser than the positive control.

In search of new antibiotics, relatively simple and rapid methods have been developed for screening microorganisms for antibiotic producing ability. Soil samples are commonly employed in the isolation of antibiotic producing organisms. The misuse of antibiotics has led to the evolution of pathogens with resistance to major available antibiotics.

The detection of these antagonistic substances revealed interesting properties that justify its importance and its study on potential application. The biochemical nature and the best conditions to produce the substances studied in this work are being investigated to further purification experiments. Many microorganisms have been evaluated for the production of antimicrobial substance. However, the high cost and low yields have been the main problem for its industrial production.

Hence it can be concluded from this study that the antibiotics produced by Isolate 2 *Bacillus* sp observed to be broad spectrum, this could be further explored to know their efficacy compared with currently available antibiotics. This study may contribute in providing information on the antibiotic producing microorganisms in soil. Further characterization, purification, and structural elucidation are recommended to know the novelty, quality and commercial value of these antibiotics.

References

- [1] M.M. Konai, Structure–activity relationship of amino acid tunable lipidated norspermidine conjugates: disrupting biofilms with potent activity against bacterial persisters, *Bioconjug. Chem.*2015.
- [2] Sonia Sethi, Ravi Kumar, Saksham Gupta, Antibiotic producer by microbes isolated from soil, *International Journal of Pharmaceutical Sciences and research.*2013;4(3):2967-2973.
- [3] Thualfakar Hayder Hasan, Raad A. Al-Harmoosh, Mechanisms of Antibiotics Resistance in Bacteria, *Sys Rev Pharm.*2020;11(6): 817-823.
- [4] R. Emmerich, O. Löw, Bakteriolytische Enzyme als Ursache der erworbenen Immunität und die Heilung von Infektionskrankheiten durch dieselben, *Zeitschrift für Hygiene und Infektionskrankheiten.*1899;31:1-65.



AN ANALYSIS ON THE USAGE OF OTT PLATFORMS IN THOOTHUKUDI

Fernando Alexandria and K. Anushiya

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

Digitization has revolutionized the way we access and consume content. Information is just a click away and always at our fingertips. The spread of Internet led to shrinking of the globe. Content with focus on entertainment mingled with information (infotainment), as opposed to a purely new one, tends to gather better audience attention. With the rise of OTT platforms, this trend has seen a new dawn. Content from all across the world is available without much ads. It will not be wrong to say that OTT platforms such as Netflix, Voot, Amazon Prime Video etc. have given a catalytic impetus to the shrinking of globe into a village. These platforms can be launched for bringing the world together and closer and an enhanced sense of cultural understanding among the masses.

INTRODUCTION

Digital media is a type of media which covers content & promotions delivered through digital platforms including electronic media, mobile phones, computers, podcasts, applications etc. Companies and people use digital media for various purposes including information source, entertainment, games, business etc. The OTT(Over-The-Top) media platform is a digital media service delivered directly to audiences over the Internet.

OTT stands for “over-the-top” and refers to the productized practice of streaming content to customers directly over the web. It represents the future of entertainment - one that is already unfolding. It is also commonly applied to video-on-demand platforms, but also refers to audio streaming, messaging services, or internet-based voice calling solutions. OTT services are typically monetized via paid subscriptions, but there are exceptions.

Review of literature

Baccarne, B., Evens, T. & Schuurman, D. (2013) in their paper “**The television struggle: an assessment of over -the-top television evolutions in a cable dominant market**” mentioned about the loss of monopoly of traditional television due to introduction of digitalization and addition of more number of screens in our life. In his research he identified various factors like price, video quality, ease of use, personalized channel offerings, interactivity, flexibility, etc. contributing to success of OTT TV.

ICFAI (2019) report on “Transition of Consumer towards Video Streaming Industry: A comparative analysis of Netflix and Amazon Prime.” mentioned that Content is said to be the king when it comes to on-demand video streaming channels and Netflix has slight edge over others in terms of content. Hotstar seems to be considerable choice because of the content it offers at affordable prices.

Menon (2020) stated that limitations forced in the wake of Covid-19 pandemic significantly changed the consumption pattern for media and entertainment too. As lockdowns kept individuals from wandering out, either for recreation or work, public activity progressively moved to online stages. Web-based social networking furnished the chance to remain associated with families, companions, partners, neighbours and others. With external channels of entertainment (Out of Home-based entertainment) shut by government request, the homebased entertainment modes showed consistent growth and development.

Statement of the problem

The usage of OTT platforms has increased over the years tremendously due to the advancement in the promotional activities of media. There are many OTT platforms in the industry which are highly adored as a social prestige by the current generation. The OTT market is growing day by day, and there is still huge potential to grow as this is an evolved and advanced version of traditional T.V, media platform. This study “An analysis on the usage of OTT platforms in Thoothukudi” is done to explore the various OTT platforms and the factors affecting customer’s preference towards choosing it, along with the impact of advertisement towards its rapid growth.

Objectives of the study

- ❖ To measure the pattern of use of OTT platforms among the people.

- ❖ To determine the factors influencing the use of OTT platforms.
- ❖ To analyse the awareness of OTT platforms and the different kinds of applications used in it.
- ❖ To recognise popular OTT platforms & content preference of people in OTT platforms.
- ❖ To analyse the customer’s frequency level of using OTT platforms.

Materials and methods

Primary data: The primary data consisting of various questions relating to the usage of OTT consumers. The primary data have been collected from some consumers after discussing and 90 samples are taken for the research.

Secondary data: The secondary data is collected from the books, articles, magazines, popular websites and other sources of social media.

Sampling design: The data collected are original in nature. Convenience sampling method was adopted and 90 respondents who were using OTT application from various parts of Thoothukudi city were selected. The questionnaire was distributed to collect the primary data.

Area of study: The study area is limited to Thoothukudi City, Tamil Nadu. It is identified as one of the fast-developing cities in India. It is a port city and an industrial hub of the Indian State of Tamil Nadu. The city lies in the Coromandel Coast of Bay of Bengal. Thoothukudi is known as “PEARL CITY” due to the pearl fishing carried out in the city.

Period of the study: The research study was done from February 2022 to May 2022. The questionnaire was circulated from April 2022.

Results and discussion

Table 1
Mode of usage of OTT

Mode of usage	No. of Respondents	Percentage (%)
Smart TV	24	27
Smart phone	47	52
Laptop	15	17
Personal computer	4	4
Total	90	100

Source: Primary Data

Inference:

It is inferred that out of the total respondents taken for study, 27 percent of the respondents use their smart TV to watch OTT platforms, 52 percent of the respondents use their smart phone to watch OTT, 17 percent of the respondents use their laptop to watch OTT and 4 percent of the respondents use their personal computer to watch OTT.

Thus, a major proportion i.e., 52% of the respondents uses their smart phones to watch OTT platforms.

Table 2

Emotions that triggered a customer to watch OTT programs

Emotions	No. of Respondents	Percentage (%)
Excitement	18	20
Happiness	37	42
Fulfillment / Satisfaction	21	23
Anxiety	4	4
Curiosity	10	11
Total	90	100

Source: Primary Data

Inference:

It is inferred that out of the total respondents taken for study, 20 percent of the respondents have stated that it was excitement emotion which triggered them to watch the OTT programs, 42 percent said that it was out of happiness that they choose to watch OTT programs, 23 percent say it is for their fulfillment/satisfaction, 11 percent watch to satisfy their curiosity while the remaining 4 percent of the respondents watch OTT programs when they are anxious.

Thus, a major proportion i.e., 42% of the respondents has indicated that they watch OTT programs to be happy.

Table 3 Awareness about OTT services

Mediator	No. of Respondents	Percentage (%)
Friends	22	24
Relatives	14	16
Newspaper	12	13
Social media	34	38
Peers/colleagues	8	9
Total	90	100

Source: Primary Data

Inference:

It is inferred that out of the total respondents taken for study, 24 percent of the respondents have indicated that they were aware of OTT services through their friends, 16 percent have said that is through relatives, 13 percent say it is through newspaper, 38 percent say it is social media which influenced them to use OTT services, while remaining 9 percent have stated that through peers/colleagues, they have come to know about the OTT services.

Hence, a major proportion i.e., 38% of the respondents has come to know about the OTT services through social media.

Table 4
Most preferred content on OTT channels

Most preferred content	No. of Respondents	Percentage (%)
Movies	27	30
TV series	32	35
Exclusive contents	22	27
International shows	7	8
Total	90	100

Source: Primary Data

Inference:

It is inferred that out of the total respondents taken for study, 30 percent of the respondents use OTT platforms to watch movies, 35 percent of the respondents use OTT to watch TV series, 27 percent of the respondents use OTT to watch exclusive contents and 8 percent of the respondents use OTT to watch international shows.

Thus, a major proportion i.e., 35% of the respondents uses OTT platforms to watch TV series.

Table 5
Frequency of OTT usage

Usage	No. of Respondents	Percentage (%)
Daily	32	36
Twice a week	28	31
Once in a week	20	22
Rarely	10	11
Total	90	100

Source: Primary Data**Inference:**

It is inferred that out of the total respondents taken for study, 36 percent of the respondents have responded that they use OTT daily, 31 percent have stated that they use OTT twice a week, 22 percent use OTT on a weekly basis, while the remaining 11 percent say that they rarely use OTT.

Thus, a major proportion of the respondents have stated that the usage of OTT is on a daily basis.

Findings

- ✓ A major proportion of the respondents use their smart phones to watch OTT platforms.
- ✓ A major proportion of the respondents have indicated that they watch OTT programs to be happy.
- ✓ A major proportion of the respondents have come to know about the OTT services through social media.
- ✓ A major proportion of the respondents have stated that the usage of OTT is on a daily basis.
- ✓ A major proportion of the respondents use OTT platforms to watch TV series.

Suggestions

- Better and effective subscription plans are to be introduced to cope up with the need for a majority of users who are occasionally consuming OTT platforms.
- The relationship between the streaming platform and the consumers are to be strengthened through collection of critical user feedback which would help to maintain service excellence and retain the subscribers.
- More attractive offers and promotions are to be made on the referral policy of the OTT platforms which would help in more new user acquisition.
- Usage of a number of devices with one subscription at the same time is to be increased.
- Customer care service should be improved for OTT services.
- Contents need to be classified based on the age group so that it satisfies all types of age groups.

Conclusion

This study was a novel attempt to analyse the acceptance of the new emerging digital super power media among the masses of Thoothukudi. This new media platform is

growing rapidly as the day passes. The people are attracted towards the OTT platform services due to foreign content and video on demand. The new generation has moved on from the traditional broadcasting system to the mobile gadgets. The survey was conducted among the masses of Thoothukudi and the data gathered was segregated, refined and then classified and tabulated for analysis. Movies and web series are the most watched on OTT among the youth, which are preferred due to the availability of the original content, which are free from censorship. The OTT will further go through many changes and advancements to get the right model.

References

Journals

- International Journal of Advanced Science and Technology (2020) - Factors influencing the shift from traditional TV to OTT platforms in India (by Rohit Jacob)
- ResearchGate Journals (2020) - Emergence & future of OTT video services in India (by E. Sundaravel&Elongovan .N)

Books

- Kothari, C.R, *Research Methodology, Methods and Techniques*, New Age International (p) Ltd., publishers, New Delhi, 2013

Website

- www.brandequity.economictimes.indiatimes.com

A STUDY ON CONSUMER PREFERENCE TOWARDS ONLINE PURCHASE OF MYNTRA PRODUCTS IN THOOTHUKUDI DISTRICT

Fernando Alexandria and B.Athiba

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

The importance of this study is to examine the customer preference toward Myntra.com users in Thoothukudi city and to find out various attributes of Myntra users of Thoothukudi city towards online shopping. For this study survey was conducted. The data was collected from respondents through scheduled containing questions. The study result concluded that the future of e-tailers in India especially in cities looks very bright. Myntra.com offers the best price, good products, and a completely easy shopping experience for our customers.

Keywords: Customer preference, e-tailers

Introduction

Online shopping is a form of electronic commerce that allows consumers to directly buy goods or services from a seller over the internet using a web browser. Consumers find a product of interest by visiting the website of the retailer directly or by searching among the best alternative vendors, which display the same product availability and pricing at different e-retailers.

Myntra is an Indian e-commerce company of fashion and casual lifestyle products headquartered in Bangalore, Karnataka, India. The company was founded in 2007 by the Indian Institute of Technology graduates with a focus on the personalization of gift items. By 2010 Myntra shifted its focus to the online retailing of branded apparel.

Review of literature

Crawford, (1997) in his paper said that traditional consumer behavior shopping has its own model, which the buying process starts from the problem recognition, information search, Evaluation of alternatives, then purchase, and at last post purchase behavior.

Bellman et al (1999) examined various predictors for whether an individual will purchase Online and they concluded that demographic variables such as education, age and income, Have a modest impact on the decision of whether to buy online, where as the most

important determinant of online shopping was previous behaviour, such as earlier purchases.

Therefore demographic factors are not much influenced on the purchases.

According to **Modahl 2000, Kotler and Armstrong (2000)** stated that persons buying behaviour is influenced by four key psychological factors. i.e. motivation, perception, learning and belief oriented attitude.

Statement of the problem

A few years back online shopping was known to very few, however over the past couple of years, or probably the last decade saw a tremendous increase in the number of people who buy products online. Today everything we need for daily life is bought online. This is because of a variety of reasons including the availability of stock which may vary in a physical store.

This report consists of a detailed study of Myntra along with the analysis of consumer behaviour and perception about using online products. The likes and dislikes, level of satisfaction, and suggestions for Myntra is analysed in this report.. Competition being the inevitable stand is unavoidable factor for any brand, this study shows where Myntra stands amongst its competitors.

Objectives of the study

- ❖ To reveal the satisfaction level of the customers
- ❖ To analyze the customers perception regarding the price of the products □
To find out the mode by which the customers became aware of Myntra.com.
- ❖ To improve the services provided by the company for motivating the customers.

Methodology

Primary data: The primary data consisting of various questions relating to the usage of Myntra consumers. The primary data have been collected from some consumers after discussing and 90 samples are taken for the research.

Secondary data: The secondary data is collected from the books, articles, magazines, popular websites and other sources of social media.

sampling design: The data collected are original in nature. A sample of some respondents residing in various part of Thoothukudi was selected on a random basis. The question was used for collecting a great source of information.

Area of the study: The sample was taken from customer in and around Thoothukudi city. The researcher selected conveniently 90 respondents and the data was collected by distributing questionnaire.

Period of the study: The research study was done from February to May 2022. The questionnaire was circulated from April 2022.

Analysis and interpretation

Table.1 ITEM FREQUENTLY PURCHASED

ITEMS PURCHASED	NO OF RESPONDENTS	PERCENTAGE (%)
Cloth item	38	42
Sports item	16	18
Bags	14	15
Accessories	22	25
TOTAL	90	100

Source: Primary data

Inference

The above table infers that 42 percent of the respondents frequently purchased Cloth items, 25 percent Accessories, 18 percent Sports item and 15 percent Bags. Most of the respondents i.e., 42 % frequently purchase bags.

Table .2

RANKING THE QUALITY OF MYNTRA APP SERVICE

PARTICULARS	TOTAL SCORE	MEAN	RANK
PROPER PACKAING	5670	63	I
ON TIME DELIVERY	5097	57	II
MORE DISCOUNT & OFFERS	4439	49	III
INTERNET BASED SERVICES	4114	46	IV

Source: Primary data

Inference:

The above table reveals that the majority of the respondents has given top priority to Proper packaging and is ranked as first, On time delivery is ranked as second, Discount & offers attractive is ranked as third, Internet based service is ranked as last

Table.3**PREFERENTIAL FACTORS FOR CHOOSING THIS APP**

PARTICULARS	SCORE	PERCENTAGE	RANK
Price	292	19	III
Convenience	335	21	II
Time saving	399	25	I
Order processing	287	18	IV
Quality of item	274	17	V
TOTAL	1587	100	

Source: Primary data

Inference:

The above five point scaling table 3.30 exhibits the purpose of using MYNTRA. From the table, it is inherent that majority of the respondents are using MYNTRA as it is “Time saving” and hence 1st rank was given with the highest average score of 25 percent.

Moreover, the respondents have given 2nd rank for “Convenience”, 3rd rank for “Price”, 4th rank “Order processing”, and they have given strongly disagree “Quality of item ” with the lowest score of 17 %.

Hence it is inferred from the ranking that majority of the respondents use MYNTRA for the purpose “Time saving ” and it was given 1st rank with the highest average score of 25 percent, and they have given least importance “for Quality of item” with the lowest score 17 percent

Chi- square test:

Chi square test was applied to find out whether there is a way significant difference between age and satisfaction usage in the following factors.

Hypoyhesis: H₀

There is no significant relationship between age and satisfaction about usage.

Hypothesis: H₁

There is a significant relationship between age and satisfaction about the usage

Table.4
AGE OF THE RESPONDENTS AND THEIR SATISFACTION OF USAGE USING
CHI SQUARE

AGE	SATISFACTION OF USAGE				TOTAL
	VERY MUCH SATISFIED	SATISFIED	NETURAL	DIS SATISFIED	
18 to 24	23	26	15	8	72
25 to 34	4	7	1	0	12
35 to 44	0	4	0	0	4
Above 44	2	0	0	0	2
Total	29	37	16	8	90

SOURCE: Primary data

Degrees of freedom = (r-1) (c- 1)

$$= (4-1) (4-1) = 3 \times 3 = 9$$

The above table indicates degree of freedom is 16.9. The calculated value is 10.51 which is greater than the calculated value thus the result is independent. Hence it is calculated that there is a significant difference between the age and satisfaction about using online shopping. Therefore hypothesis is accepted

Findings

The findings are inferred from the tables drawn, the suggestions are inferred from the annexure

- Most of the respondents i.e., 42 % frequently purchased cloth item
- Most of the respondents i.e., 38 % are impressed with the price
- Thus majority i.e., 50% would probably use online shopping □Most of the respondents i.e., 62 % rate the website design as good

Suggestions

- ✓ As there are no proper laws for online purchases, they have to be implemented to prevent the anonymous intruders. This will help to maintain security and private information properly concerning the respondents. So the website developers and service providers should take necessary steps to overcome this problem.

- ✓ Web based technologies upgrades creative conceptualization that would improve the response from technology survey consumers. So the firms have to invest in such new technologies.
- ✓ Internet environment has to be improved in the areas of art, dynamic and interactive techniques. This improvement will give more visual appeal.
- ✓ The vendors and service providers should avoid hidden charges. This will help to avoid increase in price of product.

Conclusion

In this research, the study of consumer preference towards online purchase of myntra products with reference to Thoothukudi city revealed that the respondents were useful in adopting the online marketing techniques. In this study, the consumers were highly accepted that purchase decisions were made based on the website ads and their performance it would seem an obvious strategy in a company by using multimedia technology and it is evident that myntra was adopted among the respondents.

References

- www.wikipedia.com
- www.startuptalky.com
- www.mbaskool.com
- www.studiosguy.com
- www.myntra.com

Kotler Philip, Keller and Kevin lane (14th edition) – Person Education, Inc Seth Jagadeesh N and Atul Parvatiyar – Saga publications, Inc

A STUDY ON PASSENGER'S SATISFACTION TOWARDS RAILWAY E-TICKET RESERVATION IN TIRUNELVELI

P. Banumathi and A. Augustina Jeniba

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

The Indian government is using IT to facilitate governance. The last couple of years have seen e-Governance drop roots in India. The effective use of IT services in government administration has greatly enhanced existing efficiencies, driven down communication costs, and increased transparency in the functioning of various departments. The Indian Railways is Asia's largest and the world's second largest rail network that has adopted E-Governance in right earnest to reap the benefit of IT explosion.

Introduction

Passengers who wish to travel in Indian Railway trains must reserve their seat in advance for all classes of travel except for General/Unreserved coaches. The railway reservation facility allows you to travel in the train and travel class of our choice with a berth/seat allotted against our name. The seats in Indian Railway trains are allotted under different reservation quotas, some of which are open to the general public without restrictions while others are reserved for specific groups of passengers. For instance, anyone can book tickets under the General Quota while only senior citizens/pregnant women/women who are 45+ years can reserve tickets under the Lower Berth Quota.

Statement of the problem

This study has been conducted in order to understand the level of people's satisfaction on E-ticket reservation of various service offered by the Indian Railway Department in Tirunelveli region. This study aims at to ascertain the people's choice of railway e- ticket reservation method, to know about various facility available in Indian railway e-ticket reservation service, to ascertain the people habit in e-ticket reservation in booking agent regarding their convenience.

The project titled "**A Study on passenger satisfaction towards Railway E-Ticket Reservation in Tirunelveli**" has been considered as important study in these respects.

Review of literature

A.Kalaiselvi, D.Sandhya, C.G Athira (2017) in their article studied about the passenger satisfaction towards railway services in Coimbatore junction. they concluded that the

availability of power, responsiveness of railway staffs, safety and security , digital display and individualized attention were revealed to be the most significant factors of satisfaction among the passengers

Mahima Johnson (2019) In their study, the southern railway headquarters at Chennai, Tamil Nadu is one of the earliest zones of Indian railways. The objective of their study is to explore the problem faced by the daily railway passengers. Convenience sampling is used in their study and the research is based on the survey method.

In a report of Committee on Indian Railways Say (2021) The Committee felt that IR should review the criteria for granting all types of concessions given its precarious finances in general and dismal earnings particularly in the passenger segment. IR extends concessions to over 50 categories of passengers such as Divvying passengers, 11 types of patients, senior citizens, freedom fighters, Press correspondents, war widows, sports persons etc. in varying percentages (from 10 % to 10 That the Home Ministry had reimbursed over Rs 33.68 crore for 10,435 such passes issued during the FY16 to FY18 period, the committee urged that IR needed to have genuine proof for identification of the intended users with a view to preventing the misuse of the scheme besides arranging the issuance of smart cards to bonfire pass holders.

Finally, the committee felt that IR should widely publish its give up the scheme for senior citizens to forego the concession and pay full fare as it found those who could forego were availing the concession. The committee concluded that the move will ensure that only deserving senior citizens could avail of the benefit while asking for information on action taken in this regard.

Objectives of the study

- To study the attitudes of passengers towards railway e- ticket reservation.
- To find the frequency of passengers travelling by train through e-ticket reservation.
- To identify the problem faced by passenger about e-ticket.
- To know the factors influencing for preferring railways' E-ticket reservation.

Methodology

Primary data:

Primary data were collected by framing a questionnaire. A set of questionnaires was prepared through Google forms and was sent to the public to analyze the preference of consumers toward green products.

Secondary data

The secondary data were collected from websites, magazines, books, journals, etc.

Size of the sample:

120 respondents are chosen as a sample size for the study.

Analysis and interpretation

Table - 1
BOOKING THROUGH E-TICKET

Satisfaction	No of Respondents	Percentage (%)
E-Ticket on computer	35	29
E-Ticket application on phone	48	40
Travel agency	12	10
Book through railway station	25	21
Total	120	100

Source: Primary data

Inference:

The above table shows that, 40 percent of the respondents are booking E-Ticket through application on phone, 29 percent of them on computer, 10 percent of them agency, 21 percent of them Booking through railway station.

Thus, majority 40 percent of the respondents are booking e-ticket through phone.

Table - 2
DIFFICULTIES IN BOOKING E-TICKETS

Factor	Total score	Mean	Rank
Service charges	7882	66	I
Automatic cancellation	7675	64	III
Change in name and boarding station	7569	63	V
Connectivity problem	7552	63	V
Website error	7627	64	III
Double time payment	7807	65	II
Refund error	7442	62	VII

Inference:

The above table represents the difficulties in booking e-tickets. It is evident from the ranking table that ‘Service charges’ is the major difficulty faced by the respondents ranked as first with the highest mean score of 66. ‘Double time payment’ has been ranked as II, both Automatic cancellation of waitlisted tickets’ and ‘Website error’ ranked as III, both Change in name and Boarding station’ and Connectivity problem’ which have been ranked as V and ‘Refund error’ which has been ranked as VII with the least mean score of 62.

It is inferred that ‘Service charges’ is the major difficulty faced by the respondents.

Table - 3
FREQUENCY OF BOOKING E-TICKET

Frequency	No. of respondents	Percentage (%)
All the time	66	55
Occasionally	31	26
Frequently	23	19.3
Total	120	100

Source: primary data

Inference:

The above table shows that, 19 percent of the respondents have reserved E-Ticket frequently, 55 percent of the respondents all the time to reserve their journey through E-Ticket, 26 percent of the respondents occasionally reserve E-Ticket.

Hence, the researcher observes that majority 55 percent of respondents have reserved all the time.

Table - 4
REASON FOR PREFERING TRAIN JOURNEY

Reason preferring train journey	No. of respondents	Percentage (%)
Comfort	38	32
Time saving	28	23
Others	21	18
Convenience	12	10
Good sleep at night	21	18
Total	120	100

Source: primary data

Inference:

Table 4 shows that, 32 percent of the respondents have preferred train journey due to comfort, 23 percent of them time saving, 18 percent of them preferred both good sleep at night and others and 10 percent of them preferred at convenience.

Thus, majority 32 percent of them preferred train journey due to Comfort.

Findings

- ❖ The study discloses that majority (44%) of the respondents enjoying with journey with family members.
- ❖ Most of the respondents (44%) have used net banking in payment of E-ticket.
- ❖ It is observed that majority (60%) of the respondents using Aadhaar card in booking E-ticket.
- ❖ It is found that majority (32%) of the respondents preferred train journey due to comfort.
- ❖ It is inferred that majority (85%) of the respondents are satisfied with E-ticket reservation.
- ❖ This study reveals that majority (40%) of the respondents are booking e-tickets through phone.
- ❖ Majority (75%) of the respondents are booking E-tickets during festival season.
- ❖ The study shows that majority (55%) of the respondents are easily transacting money for booking e-tickets.
- ❖ It is found that majority (73%) of the respondents able to get the refund after cancellation of e-tickets.

Suggestions

- ✓ IRCTC website should be upgraded to the latest technology.
- ✓ People should be able to select seats graphically like in airlines.
- ✓ The refund process should be made quicker.
- ✓ Number of seats in the tatkal quota should be increased.
- ✓ There should be a refund system for tatkal ticket also.
- ✓ Ticketing agent system should be abolished
- ✓ Agents should not be allowed to book tatkal tickets.

Conclusion

Indian railways are facing scale problems almost unique to it. While there are improvements required at every stage, there can't be a significant improvement in ticket booking experience without making core changes. All these performance improvements

can reduce passenger frustration by completing the booking experience faster without many failures, but still will not do anything to the number of people who end up not getting a reservation. The new way of developing train ticket reservation is based on the technology improvements. In rural areas there is network problem while booking tickets need to update the technologies.

Indian railway is gaining importance day by day. With the increase of passengers Indian railways has focused to extend its attentions to satisfy the need of its travelers and made initiative to enhance the quality of services to enrich the satisfaction of travelers.

It provides the most important mode of public transport in India. Railways have played a significant role in development and growth of India. This is the most commonly used and cost effective long distance transport system of the country.

Reference

- 1. International journal of research and development
- 2. International journal of management volume –II Issue 1
- 3. International journal of commerce
- www.irctc.co.in
- www.indianrail.gov.in
- www.indianrailways.gov.in
- www.erail.in
- www.trainenquiry.com
- www.indianrailinfo.com
- www.cris.org.in
- www.wikipedia.org
- www.google.com
- Kothari, C.R, Research Methodology, Methods and Techniques, New Age International (p) Ltd, publishers, New Delhi, 2013.

ANALYSIS ABOUT SMALL SCALE GARMENTS MANUFACTURING BUSINESS IN PUTHIAMPUTHUR

B. Rathi Meena and A. Saleth Mary Vetriselvi

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

Textile sector is the most important and one of the largest manufacturing sectors in the country and also it plays a major role in exporting the products. But now the economic conditions of our country, the textile industries were highly affected due to pandemic. Now a day's large scale industries are take vital role in our country. But small scale industries are in developing stage. The government has to provide loans and other facilities to small scale industries so that they develop their industries in smooth manner.

Introduction

Ready-made garments are mass-produced finished textile products of the clothing industry. They are made from many different fabrics and yarns. Their characteristics depend on the fibers used in their manufacture. The garments are very simple to manufacture and easily marketable both in urban and rural areas. The demand of ready-made garments is increasing day by day due to urbanization of the cities.

Ready-made garments are a part of our daily life. Clothes are an epitome of a culture. People in different parts of the world have their own styles of dressing which symbolize their culture and status. The Ready-made garments industry is increasing day by day due to changes of fashion in day to day life. The textile industry including ready-made garments occupies a unique position in the Indian economy.

Review of literature

Palmer in (2013)This review is following the previous one produced by Palmer. It catalogues relevant literature about research and development in the field of forensic examination of fibres and textiles between June 2013 and the end of June 2016. In addition it mentions research and other activities reported by the proceedings of the meetings of the European Textile and Hair Group (ETHG) of the European Network of Forensic Science Institutes (ENFSI) during the same period. It also contains references from other sources.

Stoppa, M., &Chiolerio, A. (2014)is the highly cited paper with total 463 citations, published in 2014. Total 9064 authors keywords are discovered from 2474 publications. The keywords which have more than 100 frequencies are trade, performance, model,

management, apparel, and china. In conclusion, we believe that this study provides a comprehensive overview of the textile and fashion marketing research. Further, we shall focus on the specific research directions related to the fashion marketing.

Statement of the problem

Textile sector is the most important and one of the largest manufacturing sectors in the country and also it plays a major role in exporting the products. But now the economic conditions of our country, the textile industries were highly affected due to pandemic. Nowadays large scale industries are playing vital role in our country. But small scale industries are in developing stage. The government has to provide loans and other facilities to small scale industries so that they develop their industries in smooth manner. In this study an attempt is made by the researcher to evaluate the role of employer in small scale ready-made garments and how they can develop their business. Thus the researcher thinks it is ideal to undertake a research on the small scale ready-made garments in Puthiamputhur. The researcher has planned to analyse about the present situation about the garment manufacturing business. This project enlightens the garments manufacturing in Puthiyamputhur.

Objectives of the study

- To study about the origin and development of small scale garments industries.
- To study ready-made garments manufacturing process in small scale industries.
- To study the problems faced by various small scale garments textile unit in Puthiamputhur.
- To study how small scale garments satisfy the consumer needs.
- To find the various measures adopted by them.

Methodology

The study has been conducted in Puthiamputhur. Both descriptive and analytical methods have been used to explore critically the linkages between the business and the employers of small scale business in ready-made garments. This study is based on primary data and secondary data.

Primary data

Primary data has been collected from various proprietors whose capital is limited to 10 lakhs and less than 1 crore doing business in Puthiamputhur. Samples of 85 respondents have been selected for the study by using the Stratified random sampling method.

Secondary data

The secondary data were collected from the books, newspapers, magazine and website.

Sampling Design

The primary data were collected with the help of structured questionnaire. It was a great source of information. By adopting stratified random sampling method a sample of 85 tailors and employers were selected as the respondents from Puthiamputhur.

Area of the study

The study area, the research conducted in Puthiamputhur. Puthiamputhur is a small town. It is located at Ottapidaramtaluk in Tuticorin district. It is 17 km from Tuticorin towards west, 5 km from Ottapidaram towards south and 15 km from Puthukkottai towards north. The Puthiamputhur is called as Kutty Japan, ThennagathinTirupur and ready-made City. Around 5000 families are living in this area.

Data analysis and interpretation

1. GENDER WISE CLASSIFICATION OF WORKERS

Majority of working	No. of Respondents	Percentage (%)
Male	34	40
Female	51	60
Total	85	100

Source: Primary data

2. CAPITAL INVESTMENT OF THE RESPONDENTS

Capital investment	No. of Respondents	Percentage (%)
Below Rs.50000	21	25
Rs.50001-75000	27	32
Rs.75001-100000	20	23
Upto 100000	17	20
Total	85	100

Source: Primary data

3. REASONS FOR LOSS

Reasons for Loss	No. of Respondents	Percentage (%)
Transport	53	62
Theft	2	3
Materials return	30	35
Total	85	100

Source: Primary data

3. MONTHLY PROFIT OF THE RESPONDENTS

Monthly profit earned	No. of Respondents	Percentage (%)
Below Rs.100000	30	35
Rs.50001-75000	40	47
Rs.75001-100000	12	14
Up to Rs.100000	5	4
Total	85	100

Source: Primary data

5. MODE OF GARMENT MANUFACTURING BUSINESS

Mode	No. of Respondents	Percentage (%)
Retailer	43	51
Wholesaler	42	49
Total	85	100

Source: Primary data

Null hypothesis: H_0

There is no significant relationships between capitals invest and reasons for loss.

Alternative hypothesis: H_A or H_1

There is a significant relationship between capital invest and reason for loss.

Losses Due to Capital invested	Transport	Theft	Material return	Total
Below Rs.50000	11	0	6	17
Rs.50001-75000	10	4	14	28
75001-100000	16	0	4	20
Up to 100000	11	4	5	20
Total	48	8	29	85

Degree of freedom = $(r-1) \times (c-1)$

$$= (4-1) \times (3-1) = 3 \times 2 = 6$$

The above table indicates 6 degree of freedom at 5% level of significance is 12.59. It found that the calculated value i.e., 16.063 is more than the table value. Thus the result is dependent. Hence it is concluded that there is no significant relationship between the respondent's capital invested and reasons for losses. Null hypothesis H_0 is rejected. Therefore alternative hypothesis H_a or H_1 is accepted.

Findings

- ❖ In small scale industries male workers are more employed.
- ❖ From this project, understood that most of them have the capital invested from Rs.50001-75000.
- ❖ Transportation is the major reason for loss and problem for the garment industries.
- ❖ From this project it is analyzed that monthly profit of the respondents are between 50001-75000
- ❖ It is found that more retailers are involved in the business when compared with the whole sellers.
- ❖ The way to satisfy the customers is by Quality and Design.
- ❖ Garments industries get more profit from Female costumes like Midi, Gown, Chudithar, night dress etc.,

Suggestions

1. If they increase the capital invested they can scope up with the large ready-made garments.
2. They can increase the amount for advertisement in local channel.
3. The amount per unit should be stable.

4. Electricity and power cut are the major constraint of textile industry either small level or medium. Therefore, government should consider and rectify frequent power cut in Puthiamputhur.
5. Employer can give allowance and perquisites to the employees like D.A and P.F etc.,
6. The government subsidiaries are given for agriculture etc., likewise the subsidiary should given.
7. Working area should be enlarged so that employees can work without any inconvenience.
8. Motor should be fixed in a particular sewing machine so that employees can work easily to achieve target.
9. The employer should satisfy the basic needs of employees so that the company will run in a smooth manner.

Conclusion

The Indian textile industry is currently(2022) one of the largest and most important sector in the economy in terms of output foreign exchange earnings and employment in India.

In 2022, the influence of customers in buying apparel has definitely increased. The customers today (2022) are aware of the fashion and its latest trends. Social media in India has definitely played an important role in acting as a major source of information about fashion. The role of movies and friends is also important in education customer about fashion.

Due to the fashion trend the ready-made garments businesses in growing at a considerable rate. Thus in this dynamic global world the business of ready-made garments has rapidly increased with considerable turnover. Thus among the small scale business ready-made garments business will fetch a specific height in future.

Reference

- ❖ www.wikipedia.com
- ❖ www.brainkart.com
- ❖ Wort, F. (1991): Japan's Smart Secret Weapon. Fortune, Vol.124, No.4Pg 80-120, August 12, 1991.
- ❖ Highlights of the National Textile Policy 2000, India Economic News (2000) Vol. XI, Pg-238-345 November 2000.

A STUDY ON CONSUMER BEHAVIOUR TOWARDS BOTTLED DRINKING WATER IN THOOTHUKUDI

Fernando Alexandria and B. Jannathul Firthouse

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

Bottled drinking water means water derived from any source of portable water, which is, subjected to treatments namely decantation filtration, combination of filtration, accretions, filtration with membrane filter, depth filter, cartridge filter activated carbon filtration, demineralization, re-mineralization reverse osmosis packed. In marketing, consumers and their behaviour are viewed more carefully because of their importance. The individual consumer can change the entire market with his/her buying activities. Hence this study focuses the consumer behaviour towards bottled drinking water, to explain it the researchers have collected primary data through questionnaire and finally recommendations are provided in this study. The study concludes that quality is the most important factor influencing the consumers to go for a particular brand of bottled water. They believe that compared to the tap water, consuming Bottled Drinking water is a hygienic one. Therefore it is suggested to the manufacturers to give due consideration for the hygienic aspect while manufacturing Bottled Drinking water.

Introduction

All living things need water. Water is the most essential element, next to air, to our survival. Water is important to complete daily life and to maintain our body health. Thirty years ago” bottled drinking water“ barely existed. Nowadays the product forms an essential business by its stable and still growing market – locally and globally. Bottled drinking water can be described as any product, including natural spring or well water, taken from municipal or private utility systems or other water, distilled water or any of the foregoing to which chemicals may be added and which are put into sealed bottles, packages or other containers, to be sold for domestic consumption or culinary use.

Review of literature

- ❖ **Richard (2011)** in his article examined the sales increase of bottled water from 2007-2010, the study revealed that the bottled drinking water continued to perform well in all the three years. It was also observed that the sales increase may be due to change

in the attitudes of customers towards maintaining their health. The research was able to address by means of analyzing both the customers and the retailers

- ❖ **Salazer (2012):** states that the current trends in the market of bottled mineral drinking water involve development of new product, huge marketing and efforts on packaging. All these trends are positive for bottled water industry and new industries are emerging in order to tap the bottled water market. There is development of an array of products for bottled water, such as, purified water, bottled mineral water, hyper-caffeinated water, vitamin infused water, flavored water, such as mint and fruits, fluoridated water, etc.
- ❖ **Dr. S.Vanitha (2015):** “Consumer's awareness and attitude towards package water Thoothukudi District.” The Objective of the study to know the attitude of consumers towards packaged drinking water. The finding are to Majority of the respondents stated that the extraction of certain minerals from the water is good for health. One third of the respondents' health has been affected due to the frequent use of packaged drinking water. Most of the respondents have the awareness about contaminated water and waterborne diseases Suppliers and also to ensure customer satisfaction.

Statement of the problem

Bottled drinking water is getting familiar as the aspect of convenience and quality has been guaranteed. The consumer are having numerous brands in selecting the bottled drinking water, and the variety of bottled drinking water is also like mushroom with various style viz., packaged, bubble top, can, and so on. But when the aspect of brand influences the purchase there come the threat on domestic brand. Hence a research has been carried over to analyze the attitude, perception and behaviour of consumers consuming bottled drinking water in Thoothukudi.

Objective of the study

- To know the consumers brand preference.
- To study the opinion of the consumers about the quality of water from health point of view.
- To know the factors that influences the Consumers to purchase bottled drinking water.
- To study the modifications or suggestions that the consumers suggest for the improvement of the product.

Methodology

- **Primary data:** The primary data consists of various questions relating to the consumer behaviour towards bottled drinking water. The primary data have been

collected from some consumers after discussions and 90 samples are taken for the research

- **Secondary data:** The secondary data was collected from various books, journals, magazines, websites etc.,
- **Sample design:** The questionnaire collected was great source of information. By adopting convenient sampling method a sample of 90 respondents were selected from Thoothukudi.
- **Area of the study:** This study was conducted within Thoothukudi. The researcher selected conveniently 90 respondents and the data were collected by distributing questionnaire.
- **Period of the study:** The research study was done from February to May 2022. The questionnaire was circulated from April 2022.

Analysis and interpretation

Table: I
Brand preference

Brand	No of respondents	Percentage (%)
Aquafina	29	32
SDR	22	24
Bisleri	28	31
Kinley	9	10
Others	2	3
Total	90	100

Source: Primary Data

Inferences: The above table represents the preferences about brand of the respondents. It is revealed that 32 percent of the respondents prefer Aquafina, 24 percent of the respondents prefer SDR, 31 percent of the respondents prefer Bisleri, 10 percent of the respondents prefer Kinley and remaining 3 percent of the respondents prefer other brands.

It is inferred that most of the respondents i.e., 32% prefer Aquafina.

Table: II
Quantity purchased

Quantity	No of respondents	Percentage (%)
250ml	37	26
500ml - 1 litre	23	41
2 litre – 5 litre	18	20
Above 5 litre	12	13
Total	90	100

Source: Primary Data

Inferences: The above table represents the quantity of purchasing of the respondents. 26 percent of the respondents purchase 250ml, 41 percent of the respondents purchase 500ml - 1litre, 20 percent of the respondents purchase 2litre -5litre and remaining 13 percent of the respondents purchase above 5litre.

It is inferred that most of the respondents i.e., 41% purchase 500ml-1litre of bottled drinking water.

Table: III
Reason for preference of bottled drinking water

Particulars	Preferences of respondents					Total	Total Score	Average	Rank
	Ranking								
	1	2	3	4	5				
Vitamins	20	15	21	13	21	90	270	2.788	IV
	100	60	63	26	21				
Taste	14	31	23	18	4	90	303	3.367	II
	70	124	69	36	4				
Pure and fresh	29	25	26	8	2	90	341	3.788	I
	145	100	78	16	2				
Reasonable price	15	19	20	27	9	90	274	3.044	III
	75	76	60	54	9				
Attractive packages	17	16	15	15	27	90	251	3	V
	85	64	45	30	27				

Source: Primary Data

Inferences: The above ranking table evidently shows that the majority of respondents have given first priority in the preference level to pure and fresh and so it has been ranked I with the highest average score of 3.788. Taste is their second priority and it has been ranked II followed by Reasonable price which has been ranked III, vitamins which has been ranked IV, Attractive packages which has been ranked last with the least mean score of 2.78.

Table: IV

Opinion towards quality of bottled drinking water over normal water

Particulars	No of respondents	Percentage (%)
Strongly agree	15	17
Agree	38	42
Neutral	28	31
Disagree	5	6
Strongly disagree	4	4
Total	90	100

Source: Primary Data

The above table represents the opinion of respondents about the quality of bottled drinking water over the normal water. It is revealed that 17 percent of the respondents strongly agree the bottled drinking water is better than normal water, 42 percent of the respondents agree, 31 percent of the respondents are neutral, 6 percent of the respondents disagree that bottled drinking water is better than normal water, and remaining 4 percent of the respondents are strongly disagree.

It is inferred that most of the respondents i.e., 59% agree and strongly agree that bottled drinking water is better than normal water.

Findings

- Most of the respondents i.e., 32% prefer Aquafina.
- It was found that most of the respondents i.e., 41% prefer 500ml bottled drinking water than others.
- Most of the respondents have given first priority to purity and freshness and it has been ranked as I.
- It is found that most of the respondents i.e., 59% agree and strongly agree to the fact that bottled drinking water is better than normal water.

Suggestions

The following suggestions are offered to eradicate the consumer dissatisfaction as enumerated from the research findings:

- As the drinking water is very essential, the manufactures should concentrate on the factors of quality, so that the proposition of buying Bottled drinking water will get increase. Majority of respondents prefer to buy due to hygienic condition of bottled drinking water.
- The water is sourced by the manufactures by the nearby rivers and wells. Hence proper water treatment has to be made.
- The aspect of price has been always the influencing factor on purchase for common different slabs of price has been fixed on account of different packed liters of bottles.
- The package of water bottles can be made more attractive.
- Attractive advertisement should be made.
- Time should be allotted to receive and rectify the complaints.
- Proper care should be taken that supply is made regularly to the shops.
- The package of water bottles should be more convenient to handle.
- The Bottled drinking water promotion should be based on consumer needs and preferences.

Conclusion

Bottled Drinking water is a product, which people buy not only when they undertake travelling or stay out of their own place but also during the stay in their own places. The reason is that people are becoming health conscious in the present day environment. However the cost aspect of Bottled Drinking water cannot be overlooked in this process because for some people, it is difficult for them to make up their mind to pay for water in small quantity. But it has become the order of the day if not for all, at least for people who are living in the city to use Bottled Drinking water due to larger pollution problems. The consumption of Bottled Drinking water is also based on the reliability that the consumers will have in terms of quality and hygienic aspect because Bottled Drinking water is a product on which these aspects are expected. Hence it becomes evident that that brand that shows importance to these aspects will sell more in the market and capture more number of consumers.

References

- ❖ https://en.wikipedia.org/wiki/Bottled_water
- ❖ <https://www.cdc.gov/healthywater/drinking/bottled/index.html>



- ❖ Kothari, C.R, Research Methodology, Method and Techniques, New age international (p) Ltd., publishers, New Delhi, 2013.
- ❖ Gupta, S.P., “Statistical methods”, S. Chand & sons, New Delhi
- ❖ International Journal of Current Research and Modern Education (2017). A Study on Consumer Behaviour towards Bottled Drinking Water. (by Sangeetha, M. and Dr. K. Brindha)
- ❖ International Journal of Environmental Research and Public Health(2011).Bottled Water (by Robert L Mahler)

A STUDY ON PROBLEMS AND CHALLENGES FACED BY WOMEN WORKERS IN THOOTHUKUDI

D. Daisy Bai and Jesu A Ithaya

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

Women are the backbone of the society. They play a vital role in the economic development of the country and her contribution is as equal as their male counterparts. Without active participation of women in various national, social, economic and political activities, the progress of the country will be stagnant. Traditionally, Indian women had been home makers but in 21st Century, due to higher education, better awareness and increasing financial demands of family, women also go out and choose careers. Although Indian women have started working outside their homes, but still there are several issues and challenges that working women face today. This study enables the readers to have a clear information about the problems and challenges faced by women workers. The data analysis is conducted with the help of the suitable statistical tools. The conclusion of the study is inferred from the findings and suggestions. The introduction explains the main aim of the study.

1. INTRODUCTION

A woman's role can be appropriately described as 'multi-dimensional'. A woman has to be a daughter, a wife, a mother, and a professional at the same time. Today, women's importance is gaining speed in the world of work. But, the inappropriate notion about women which says that 'women are ruled by heart, not head,' restricts the women to be credited for their contribution towards the economic success. Women workers are found both in the organized and unorganized sectors. Some estimates suggest that 94 percent of women are employed in the unorganized sector. In the organized sectors, they are generally employed in factories, mines, and plantations. Women in India, who were mostly known as homemakers, are forced to go for jobs and take the challenges that were considered only suitable for men such as working in night shifts in call centers or BPOs. Today women are giving their best and active contribution in all the male-dominated fields such as sports, medical, law, military, academics, politics, bank, top level corporate positions etc.

Review of literature

P. Hemavathi 2021 Gender discrimination is fundamentally one of the main reasons for the low income of female workers in India. Equal employment and equal pay do not exist here.

Women work hard. But they are not getting the income they deserve. Women are more involved in informal work such as agriculture, construction and domestic work. They do such hard work to earn a living, doing all the work the family needs, including cooking and caring for children. But equal pay for equal work is nowhere to be found. This is the greatest injustice, the blatant exploitation of labour. That is why the income of female workers in India has been low.

Meenakshi Ganguly, 2020 MeToo movement helped to shine a light on violence and harassment at work, but the experiences of millions of women in India’s informal sector remain invisible.” “India has progressive laws to protect women from sexual abuse by bosses, colleagues, and clients, but has failed to take basic steps to enforce these laws.”

Statement of the problems

Women in workplace suffer from physical discomfort, psychological problems and mental tension. The physical problems were mostly in the form of digestive disorders, eye, voice and hearing problems. In spite of this, there are certain other consequences of sedentary lifestyle such as anxiety, depression, faulty eating habits, mental tension, sleep disturbance, nightmare, late working hours, long working hours at the desk, job-related pressure, deadlines, and the problem of balancing work at home and office are some of the mental tensions that resist women employees to stay in the job. Hence the present study is confined to women employees faced problems and challenges in workplaces for Thoothukudi City.

Objectives of the study

- ❖ To analyze the problems and challenges faced by working women in the workplace.
- ❖ To study women workers life balance between work and family.
- ❖ To offer possible suggestions that could help them to overcome their problems.

Area of the study

This study was conducted within Thoothukudi city.

Methodology

Primary data: The primary data consisting of various questions relating to the attitude of consumers. The primary data have been collected from some consumers after discussing and 85 samples are taken for the research.

Secondary data: The secondary data is collected from the books, articles, magazines, popular websites and other sources of social media.

Sample design: The questionnaire collected was great source of information. By adopting convenient sampling method, a sample of 85 respondents were selected from Thoothukudi.

Analysis and interpretation Problems and challenges faced by working women in the workplace

Problems							Rank	
Job security							I	
Working Adjustments							II	
No safety while traveling							III	
Unequal Pay							IV	
Problems/Challenges	SA	A	N	DA	SDA	Total	Mean Score	Rank
	5	4	3	2	1			
Unable to attend the Family functions	155	100	78	6	1	340	4	I
Always search person to take care of Children	60	156	75	14	3	308	3.62	III
Can't help in children's studies	50	80	123	22	4	279	3.2	VII
Unable to enjoy Festivals	50	120	96	18	6	290	3.41	V
Children miss mother's Presence at home	60	100	99	26	4	289	3.4	VI
Unable to do household work perfectly	50	132	108	14	1	305	3.5	IV
Unable to perform the role of a mother	110	84	96	16	3	309	3.63	II
Mental Harassment							V	
Leadership							VI	
Discrimination at workplace							VII	
Other Reasons							VII	
Lack of family support							VIII	
Insufficient maternity leaves							VIII	
Sexual Harassment							IX	
Gender Bias							X	

Inference

The above ranking table exhibits that the major problems faced by women workers. From the table it is seen that the majority of the respondents have agreed with the problems of, lack of

job security is ranked as first, lack of flexible working hours, suitable work hours adjustments

Stress	No of Respondents	Percentage
Went out framework	27	32
Taking leave	29	34
Listening Music	18	21
Meditation	11	13
Total	85	100

ranked as second, lack of transportation/lack of safe transportation ranked as third.

1. Women workers life balance between work and family

Inference

From the above table it is seen that the majority of the respondents have agreed with the statement of unable to attend the family functions ranked as first, unable to enjoy festivals ranked as second, always search person to take care of children ranked as third, unable to do household work perfectly ranked as fourth, unable to perform their role as a mother ranked as fifth, children miss their mother's presence at home ranked as sixth, and unable to help their children's studies ranked as seventh.

2. Suggestions that could help them to overcome their problems

Inference:

The above table shows that 32% of the respondents have went out from work to manage the stress, 34% of the respondents are taking leave, 21% of the respondents are listening music, 13% of the respondents are doing meditation. Therefore, the majority of the respondents are taking leave in order to manage the stress.

Findings

- It is observed that a lack of job security and lack of flexible working hours, suitable work hours adjustments are the major problems faced by women workers.
- It is observed that unable to attend the family functions and unable to perform the role as a mother are the major problems faced by them because of going for work.
- Majority (34%) of the respondents are taking leave and went out framework in order to manage their stress.

Suggestions

- Women should be educated, as education widens their horizons and broadens their outlook making them aware of their constitutional and legal rights, both at the workplace and in the social sphere.
- Vocational and Entrepreneurship Development programs should be organized to make women self-employed by increasing their efficiency and capabilities in decision making.
- A keen interest and sincere attention of governments are highly essential to improve the health and nutrition of this vulnerable section of society. Protection should be given against sexual harassment. Women must not be discriminated.
- Employees emotional problems should also be considered by the employers. In order to tackle them, sessions on stress management programs should be organised by the employer. The employees can be given short orientation programs, so that they can they can get mind calmness, peacefulness and physical health so that they can control their emotional feelings.

Conclusion

In today's scenario, the challenges of women workers are improved and promoted in their workplace and technological work. Trade Union should try to improve the conditions for woman's workers in many parts for example maternity leave is easily given to women and help the woman achieve higher posts women's nature is a promotion to gain high quality in every field but if the condition is not ready then the reduction of promotion and optimization in work will occur, etc... Traditionally people think that men should only work and gain money and women should work in the household, but the financial demands on Indian families are increasing that's why women also should work to earn income for families. Therefore, a fundamental change is required in the attitudes of employees, family members, and the public. There is still a long way to go but we can go when we take a step together.

Reference

- www.workingwomensforum.org
- www.rajmr.com
- www.labour.gov.in
- blog.vantagecircle.com
- blog.ipleaders.in



- Azadeh barati, rooh ollah arab, seyed saadat masoumi, challenges and problems faced by women workers in india, chronicle of the neville wadia institute of management studies & research ,76-81
- P. Hemavathi, chennai high court advocate and field activist gender discrimination, vekadan, 2021
- Meenakshi Ganguly, South Asia director at Human Rights, violence and harassment at work, Human Rights, 2020

A STUDY ON ATTITUDE OF COLLEGE STUDENTS TOWARDS E-LEARNING DURING COVID-19 PANDEMIC PERIOD

D. Daisy Bai and D. Mahalakshmi

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

The study enables the readers to have clear information about the attitude of college students towards e-learning during COVID-19 Pandemic period. The data analysis is conducted with the help of the suitable statistical tools. The conclusion of the study is inferred from the findings and suggestions. The introduction explains the main aim of the study.

Introduction

Education plays a vital role in the all-around and inclusive development of students as well as nations. Education provides the individual with knowledge and skill and enables the individual to know the duties and rights. It expands vision and outlook to see the whole world. It enables us to fight against corruption, injustice and many other evils in the society. So, learning of all the learners of all ages and stages must be safeguarded.

The Indian education system is generally based on regular and traditional classroom method with limited scope for online mode of teaching. Due to lockdown caused by COVID-19 pandemic, the government and education authorities suggested the online mode of teaching. Currently various methods for conducting online classes are available such as video conferencing, video recording and sharing, audio notes, PPT, etc., with the help of various software and smart phone applications, namely Google Meet, Zoom, Google Classroom, Microsoft Teams, etc.

Statement of the problem

Due to the closure of education institutions, instant transition from face-to-face classes to distance learning sessions took place. Educators, teachers and lectures were compelled to conduct classes in front of their computers, just as they would in real classrooms. Many educators had never conducted sessions in an online setting before, necessitating the acquisition of a diverse range of skills in a short amount of time. They also had to adjust the content and structure of their services and choose the best strategies for engaging their students in an online learning. As the educators scrambled into the shift towards distance learning, they experienced constraints such as connection problems,

pedagogy and evaluation methodologies, in addition to the need to adapt and transfer their teaching content to suit the distance learning mode.

Objectives of the study

- To know the socioeconomic status of students.
- To study the measures taken by Government of India to support online learning process during the lockdown period.
- To know the problems faced by the students during lockdown.
- To offer some suggestions and recommendations for the success of online mode of learning during a crisis like situation.

Review of literature

Nachimuthu (2020) studied student's attitude towards online learning during the COVID19 pandemic period. Objectives of the study were found out the attitude of the students towards e-learning and to compare the attitude of student's based on gender, type of institution and group of study. The results of the study revealed that student had positive attitude towards electronic learning. There was no significant difference between male or female student's attitudes towards E-learning in COVID-19 pandemic period. There was significant difference between private and government institutions student's attitude towards E-learning in COVID-19 pandemic. Attitude of student's belonged to arts stream differed from the attitude of student belonged to science stream in COVID-19 pandemic.

Dr. Pravat Kumar Jena (2021) the impact of pandemic COVID-19 is observed in every sector around the world. The education sectors of India as well as world are badly affected by this. It has enforced the worldwide lockdown creating very bad effect on the student's life. Around 32 crore learners stopped to move schools/colleges and all educational activities halted in India. The outbreak of COVID-19 us that change is inevitable. It has worked as a catalyst for the educational institutions to grow a for platforms with technologies, which have not been used before. The education sector has been fighting to survive the crises with a different approach and digitizing the challenges to wash away the threat of the pandemic. This paper highlights some measures taken by Government of India to provide seamless education in the country. Both the positive and negative impacts of COVID-19 are discussed and some fruitful suggestions are also pointed to carry out educational activities during the pandemic situation.

Methodology

Primary data:

Primary data were collected by framing a questionnaire. A set of questionnaires was prepared through google forms and was send to the students to analyze the preference of the students towards E-learning.

Secondary data:

The secondary data were collected from books, journals, newspaper, magazines and through various websites.

Period of the study:

The survey was conducted among college students regarding their attitude towards E-learning during COVID-19 pandemic, for a period of 4 months from February 2022 to May 2022.

Area of the study:

The study area is limited to Thoothukudi city. It is identified as one of the fastest developing City in India. It is a port city and an individual city of the Indian State of Tamil Nadu. It is known as Pearl City due to the pearl fishing carried out in the town.

Sampling design:

The data collected was original in nature. A random sample of 85 respondents residing in various parts of Thoothukudi was selected. The questionnaire was used for collecting a great source of information.

Data analysis and interpretation

i) AGE WISE CLASSIFICATION OF RESPONDENTS

AGE	NO.OF. RESPONDENTS	PERCENTAGE (%)
Below 20	45	53
20-25	38	45
25-30	2	2
Total	85	100

Source: Primary Data

ii) ONLINE LEARNING AS COMPARED TO CLASSROOM LEARNING

ONLINE LEARNING	NO.OF. RESPONDENTS	PERCENTAGE (%)
More effective	9	11
Tired	23	27
Less costly	9	11
Lack of face-to-face communication	44	51
Total	85	100

Source: Primary Data

iii) ISSUES FACED DURING E-LEARNING

ISSUES	NO.OF. RESPONDENTS	PERCENTAGE (%)
Data consuming	26	31
Low battery	24	29
Network	35	40
Total	85	100

Source: Primary Data

iv) TIME SPEND ON ONLINE CLASSES

TIME	NO.OF. RESPONDENTS	PERCENTAGE (%)
1-3 hours	31	37
3-5 hours	24	28
5-7 hours	25	29
7-10 hours	5	6
Total	85	100

Source: Primary Data

Chi-square test:

Chi-Square test is applied to find out whether there is any significant relationship between online learning and classroom learning.

The χ^2 test is used to understand the accuracy of the variables used and to find out whether they are independent or dependent. It is applied to validate the result of the study.

Hypothesis: H₀

There is no significant relationship between online learning and classroom learning among the students.

Hypothesis: H₁

There is a significant relationship between online learning and classroom learning among the students.

STUDENTS PERCEPTION ON ONLINE LEARNING OVER CLASSROOM LEARNING

Opinion Online Learning	Agree	Neutral	Disagree	Total
Most effective	7	5	6	18
Wastage of time	5	5	7	17
Tired	9	5	9	23
Less costly	4	6	3	13
Face to face Communication	6	3	5	14
TOTAL	31	24	30	85

$$\begin{aligned}\text{Degree of freedom} &= (\mathbf{r-1}) \times (\mathbf{c-1}) \\ &= (5-1) \times (3-1) \\ &= 4 \times 2 \\ &= 8\end{aligned}$$

The table value of X^2 at 5% level of significance for 8 degrees of freedom is 15.5. The calculated value is 14.32. Thus, null hypothesis is accepted, and concluded that there is no significant relationship between online learning and classroom learning.

Findings

- ❖ Majority 53% of the respondents are belonging to the age group of below 20 years.
- ❖ Majority 51% of the respondents feel that lack of face-to-face communication as the major issue in online learning.
- ❖ Majority 40% of the respondents faced the Network issues.
- ❖ Majority 37% of the respondents have spent 1-3 hours in this online mode of education.

Suggestions

- ❖ India should develop creative strategies to ensure that all children must have sustainable access to learning during pandemic COVID-19.
- ❖ The other important thing is they should avoid group meeting to prevent the spread of this pandemic corona virus. The use of proper online systems such as Zoom meeting, Google Meet, Microsoft Teams etc, can prevent the spread off this virus.
- ❖ Online learning and teaching could be a greatest opportunity as a result of this crisis. Students are young and energetic to learn through these online resources. Faculty also should motivate the students and make them participated in the online classes in this difficult situation.
- ❖ Government and educational institutes should plan to continue the educational activities maintaining social distancing 30%-40% students may attend colleges in two shifts per day to carry on educational activities by obeying guidelines for COVID-19.

Conclusion

The study scrutinized the attitude of college students in online learning. The study showed that online education is less effective than online classes. The students during online learning faced several challenges due to the struggle to complete adaptation to online classes and the lack of interaction between students and their tutors. E-learning seems to be the forthcoming trend. It has been extending widespread. The sudden shift to digital learning was challenging for the students to adapt, but it appears that they adapted quickly to the new

situation. E-learning platforms motivate student – centered learning, and they are easily adjustable during abrupt crises, such as COVID-19. Moreover, the government should advice tele communication companies to improve the student’s services at an affordable price.

Reference

Websites:

- <http://www.talentlms.com/elearning/history-of-elearning>.
- <http://www.indiatvnews.com/technology/apps-virtual-platforms-acing-the-events-markets-in-2021-694863>.

Journals:

- Thakkar, S. & Joshi, H. (2017). Students’ attitude towards e-learning. International Journal of Advance Engineering and Research Development, 4(11), 209-213.
- Zabadi, A.M. & Alwai, A.H. (2016). University students’ attitude towards E-learning. International Journal of Business and Management, 11(6), 286-295.

A STUDY ON IMPACT OF LOCKDOWN IN THE BUSINESS OF STREET VENDORS IN THOOTHUKUDI DISTRICT

G. Stella Beatrice Nirmala and T. Maria Antony Shamili

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

The global Covid-19 pandemic posed unprecedented economic challenges to everyone across the world. The pandemic has disproportionately impacted the world's poor population in terms of livelihood and survival. The street vendors were among the hardest hit, suffering in the most unexpected ways as their livelihood was shattered. This study explores how street vendors survived in the pandemic, as well as what obstacles and problems they faced.

Introduction

The COVID-19 pandemic is an unprecedented global crisis, affecting human health and economic welfare across the globe. It is first and foremost a health crisis, around the world the government taking measures to prevent the spread of the virus. The pandemic has also resulted in a planet-wide economic slowdown, affecting trade, investment, growth and employment. The pandemic has affected every corner of the world, the economic earthquake unleashed by COVID-19 did not affect everyone in the same way. Fewer resources to ride out the storm the micro enterprises and small businesses especially the business of the street vendors has been particularly vulnerable to the repercussions of the crisis, because they have fewer resources with which they adapt to a changing context. The street vendors deserve special attention from the central and the state government, as they belong to the underprivileged and lower-income group of the society with no financial help or support and are also vulnerable due to lack of knowledge.

Review of literature

Sonu Maher (2020) in their study, "Impact of Covid 19 on the street food vendors" contends that Lockdown affected street vendors multi-dimensionally. Many street vendors stopped working and many had to change their profession to selling fruits and vegetables within a limited time zone which

had its repercussions. Some participants have shared experiences of being helped in the form of free rations by the government. Along with bearing monetary loss, street vendors also had to undergo mental stress due to restrictions imposed by the local authorities. Participants expressed their expectations of receiving aid in the form of direct financial aid and protective equipment to practice their work safely.

An article “Covid-19: A shockwave for street vendors in India” by **Shah and Khadiya, (2020)** states that the government’s relief package acknowledges the grave impact of lockdown on income but it failed to consider the fact that the majority of vendors does not possess identification cards because of lack of awareness, inappropriate number of TVCs and active bank accounts. With the lockdown lasting for such a long time, there has been significant depletion in savings, as a result of which vendors have lost the confidence to borrow. The credit loans provided by the government do not improve their situation, they rather lead to a new spiral of debt. The scheme can thus not be considered as a relief in its true sense.

Statement of the problem

By witnessing the characteristics of the vending workforce in unorganized sector their living conditions are poor and they spend their life in open air under a hot sun and rain. The highest Indian Constitutional Document provides equality to all human beings with dignity, but it is not seen in the case of these workforce. This is very painful to those who are loving the humanity and its values. Apart from their hard working they are harassed by police, local rowdies and politicians and they pay them from their low income. They face a threat from the

giant Indian and Multinational Companies in the name of globalization. Many retail outlets are coming to compete with this poor helpless workforce. So studying socio economic status and suggesting measures to improve their status is so significant and the researcher sees this as the most significant researchable problem.

Objectives

- . To study the street vendors income, expenditure and savings in lockdown.
- To study the impact of lockdown among street vendors.
- To estimate the vending activity during lockdown.
- To analyze the issues and challenges faced by the street vendors during the period of lockdown.

Source of data

This study about the street vendors in Thoothukudi was carried out through primary and secondary data.

Sample size

The researcher constructed a questionnaire, and it was pretested and necessary changes were incorporated in the revised questionnaire. 120 copies of questionnaire were taken and distributed.

Area of the study

A study on “**IMPACT OF LOCKDOWN IN THE BUSINESS OF STREET VENDORS IN THOOTHUKUDI**” was conducted in Thoothukudi. It is a port city and an industrial city.

STREET VENDORS DAILY INVESTMENT

Investment	No. of Respondents	Percentage (%)
Rs.500- Rs.1000	22	18
Rs.1001- Rs.2500	35	29
Rs.2501- Rs.3000	21	18
Above Rs.3000	42	35
TOTAL	120	100

Source: Primary data

35percent of the street vendors have invested above Rs.3000, 29percent of the respondents have invested from Rs.1001- Rs.2500, 18percent of them have invested Rs. 500- Rs.1000 and the remaining 18percent have investment ranging from Rs.2501- Rs.3000.

STREET VENDORS DAILY EXPENSES

Expenses	No. of Respondents	Percentage (%)
Below Rs.1000	39	32.5
Rs.1000-Rs.2000	27	22.5
Above Rs.2000	54	45
TOTAL	120	100

Source: Primary data

32.5percentof the vendors spent the expenses below Rs.1000, 22.5percent of the respondents are spending between Rs.1000 to Rs.2000 and remaining 45percent of them spent above of Rs.2000.

SAVINGS HABIT OF STREET VENDORS

Savings	Pre pandemic		Pandemic		Post pandemic	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Below 20%	37	31	58	48	67	56
21%to40%	25	21	14	12	42	35
Above 40%	54	45	0	0	9	8
No savings	4	3	48	40	2	1

Source: Primary data

Majority of the street vendors save above 40 percent of the earnings in pre pandemic, less than 20 percent of their earnings in pandemic and post pandemic period.

IMPACT OF LOCKDOWN IN THE LIVES OF STREET VENDORS

Impact of lockdown	Frequency	Rank
Fall in income	58	1
Lost previous place of vending and shifted	11	3
Lost previous customers	34	2
Returned to hometown/village	7	5
Not able to vend at all	10	4

Source: Primary data

Top rank in basic problem of lockdown is” fall in income” and least ranks is “returning to hometown or village”.

LIKERT’S FIVE POINT SCALE

CHALLENGES FACED BY STREET VENDORS

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total	Mean score	Rank
Fall in demand for products	75	28	12	6	1	122	1.02	1
Denied entry to residential areas	35	20	27	2	1	85	0.71	4
Increase in prices of raw materials	40	36	12	4	1	93	0.78	3
Loan repayment	25	16	15	2	0	58	0.48	5
Lack of capital to invest	50	28	15	8	2	103	0.86	2

Source: Primary data

The table conveys that challenges faced by vendors are as “fall in demand for product” has been ranked I, “lack of capital to invest” has been ranked II, “increase in prices of raw materials” has been ranked III Denied entry to residential areas” has been IV and “loan payment” has been ranked V.,

VENDING ACTIVITY

Particulars	Frequency	Percentage (%)
Opened	34	28
Closed	86	72
TOTAL	120	100

Source: Primary data

72 percent of the street vendors have closed their business and remaining 28 percent of the street vendors had their business running.

Findings

As per current study the street vendors had their daily investment above Rs.3000, here in their daily expenses is above.2000 only.

Street vendors even though their earnings are limited they save heavily in pre pandemic and post pandemic. But during pandemic since their survived is at critical level they couldn't save.

To list the problem they had fall n their income, they have lost their previous customers, and place of sale and as a result many of them have returned to their home town/ village.

Suggestions

- Street vendor should be issued ID card and licenses. They should be educated on the importance of possessing ID cards.
- Creating awareness about street vendors on social media
- Modifying the law on banned street vendors such that they have a place to work without hampering either traffic or people.
- Developing public space norms that support livelihood.
- Government can dramatically improve the vendors by improving infrastructure, and providing sufficient space for vending.

Conclusion

Individuals chose street vending as their employment activity out of interest and experience in the same line. They also entered the activity as it was easy to venture. Poverty

was the main compulsive factor that pushed them into street vending. They work for more hours in a day, but experienced peak selling only in the morning and evening. Majority of street vendors were not approved. Their quality of wares gets reduced because of heat, rain and dust. In midst of all these difficulties, most of the street vendors have emerged to be very successful in their activity.

Bibliography

Books:

1. Collin P H, “Dictionary of Economics”, Bloombury Publishing, India, 2004.
2. Hornby A S, “Oxford Advanced Learner’s Dictionary of Current English”, Oxford University Press, 6th Edition, 2015.
3. India, Publication Division of Ministry of Information and Broadcasting, Government of India, New Delhi, 2012
4. Nagendra Kr Singh, “Global Encyclopedia of the South India Dalit’s Ethnography”, Global Vision Publishing House, New Delhi, Volume 1, 2016.
5. Sharit K Bhomik and Debdulal Saha, “Financial Inclusion of the Marginalized: Street Vendors in the Urban Economy”, volume 24, 2003.
6. Sonu Maher, impact of Covid 19 on the street food vendors, International journal of Advanced Academic Studies, 2020.

Journals:

1. A.H.Subratty, P.Beeharry, M.ChanSun “A review on Hygiene practices among food vendors in rural areas in Mauritius”, India, 2012.
2. Bart Minten, working life of street vendors in Mumbai, the Indian journal of Labour economics, 54(2): 2020.
3. Debdulal Saha, working Life of Street Vendors in Mumbai, The Indian Journal of Labour Economics, 54(2): 2011.
4. Grace P. Perdigon Street vendors of Ready to Eat Food, Quality of Life Among Street Vendors in Thuchirappalli city, Tamil Nadu, India, International Research Journal of Social Science, 2(12),2020
5. Jaishankar.V, Sujatha.L “Problems faced by street vendors in Tiruchirappalli city”, Tamil Nadu, India, International Research Journal of Social Science, 2(12): 2016.
6. Karthikeyan. R and Mangaleswar.R, “The standard of life among the Street vendors, Trichy, Tamil Nadu”, India, 2013.
7. Mohan Raj J , Rebuilding The Indian Street Economy, Financial Express, International journal of Research in commerce, Economic and Management, 2020.

8. Shah and Khadiya, “Covid-19: A shockwave for street vendors in India”, 2020.

Websites:

- <http://em.wikipedia.org>
- <http://www.slideshare.net>
- <http://www.scribd.com>
- <http://shodhganga.imflibnet.ac>
- <http://www.hrln.org>
- <http://books.google.co.in>

A STUDY ON IMPACT OF COVID 19 VACCINATION IN THOOTHUKUDI DISTRICT

D. Daisy Bai and J. Maria Packia Jeya

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

The outbreak of coronavirus disease 2019 (COVID-19), caused by the virus severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has already created emergency situations in almost every country of the world. The disease spreads all over the world within a very short period of time after its first identification in Wuhan, China in December, 2019. The scientists are put their effort to find vaccine against corona virus and start distributed it. Half of the population took vaccines and get benefits from it. This study enables the readers to have clear information about the impact covid 19 vaccination in Thoothukudi district. The data analysis is conducted with the help of the suitable statistical tools. The conclusion of the study is inferred from the findings and suggestions. The introduction explains the main aim of the study.

Introduction

Severe Acute Respiratory Syndrome Corona virus is a novel severe acute respiratory syndrome corona virus. It was first identified in Wuhan. Symptoms may begin one to fourteen days after exposure to the virus. A mask is required to be worn for the patients and care providers while they are in contact or in the same room with patients, and must wash their hands frequently with soap water or use hand sanitizer each 15-20 minutes. A vaccine is a biological substance that provides active acquired immunity against a specific infections disease. The vaccines are effective at preventing severe illness from COVID 19.

Review of literature

Mark Jit & Raymond Hutubessy (2021) on his study “The broader economic impact of vaccination: reviewing and appraising the strength of evidence” One limitation is that we focused on the vaccine-specific literature only, and did not explore the wider literature on the relationship between health in general (or other interventions that improve health) and broader economic benefits. Since vaccines improve health, it may be reasonable to assume that the downstream relationship

between health and its economic benefits also apply to vaccines. Herein, we have taken a conservative approach by ignoring any evidence relating to pathways in which immunization programmes were not the ultimate cause.

Melisa Tien (2021) “Ocular Adverse Events after Covid 19 vaccination”
The Covid 19 pandemic has galvanized the development of new vaccines at an unprecedented pace. Since the widespread implementation of vaccination campaigns, reports of ocular adverse effects after COVID-19 vaccinations have emerged. This review summarizes ocular adverse effects possibly associated with COVID-19 vaccination, and discusses their clinical characteristics and management.

Statement of the problem

Two years back, a deadly virus was spread worldwide and collapsed the life of the people in the world. The outbreak of this new virus has affected public, economic, and medical health infrastructure in almost all countries worldwide. It destroyed the lives of many humans which resulted in death. Many people were hospitalized and were prone to sickness. In that scenario, scientists put their utmost effort to develop a vaccination to fight against the virus. After 1 year of hard-work, vaccination to fight against the virus was found and started to be distributed. Many people accepted the vaccination and took doses of it, but at the same time, there were few people who were against it and hesitated to take the vaccination doses. Those people spread various threats and rumors about covid vaccines and also made few other people to ponder over those thoughts.

In relation to the above points, this study is to enumerate the impacts of covid vaccination in Thoothukudi district. Also to identify the practices that would create awareness and motivate people to take vaccination doses. This study is also undertaken to enumerate the pros and cons relating to the health connected to vaccinations. It is also taken to create awareness among public and ensure that people are involved in the government practices to take the vaccination doses.

Objectives of the study

- ❖ To know the impact of covid 19 vaccination on the people.
- ❖ To know the extent of awareness held by the public about covid 19 vaccination.
- ❖ To identify the health benefits or health issues of vaccination.
- ❖ To study the various steps taken by the government to ensure vaccination.
- ❖ To study on the rumored threats caused by the public.

Methodology

Primary data: The primary data consisting of various questions relating to the impact of vaccination. The primary data have been collected from general public after discussing and 100 Samples are taken for the research.

Secondary data: The secondary data is collected from the articles, magazines, popular websites and other sources of social media.

Sample design: The questionnaire collected was great source of information. By adopting convenient sampling method, a sample of 100 respondents were selected from Thoothukudi.

Area of the study: The study area is limited to Thoothukudi city. Thoothukudi has been recognized as one of the highly industrialized areas among the districts of Tamil Nadu.

Statistical tools for analysis:

- Percentage analysis
- Likert five-point scale analysis
- Garrett ranking

Limitations of the study

- Some of the respondents were not serious in responding. Best efforts are taken to get maximum information.
- Time is one of the major constraints, which limits the effectiveness of data collection. Some of them were not interested to give their personal information.
- Some of the answers may not be accurate as the members are reluctant to share it.

Analysis and interpretation

1. AGE

AGE (in years)	NO.OF.RESPONDENTS	PERCENTAGE
Below -20	19	19
21-30	52	52
31-40	9	9
Above 40	20	20
TOTAL	100	100

The above table indicates that 19 percent of the respondents falls in the age group of less than 20 years, 52 percent of the respondents are between 21 to 30 years, 9 percent of

the respondents are between 31 to 40 years while 20 percent are above 40 years.

Inference:

Above 40

It is observed that more than half the majority of respondents fall in the age group of 21 to 30 years.

2. DOSES OF VACCINATION:

DOSES OF VACCINATION	NO.OF.RESPONDENTS	PERCENTAGE
1 st Dose	22	22
1 st and 2 nd Dose	62	62
Not vaccinated	16	16
TOTAL	100	100

The above table shows that 22 % of the respondents have taken 1st dose of the vaccination, 62% of the respondents have taken 1st and 2nd dose of vaccination, and 16% of the respondents were not vaccinated yet.

Inference:

The majority of the respondents have taken both doses of vaccination.

3. MOTIVATION TO GET VACCINATED:

MOTIVATING FACTOR	NO.OF.RESPONDENTS	PERCENTAGE
Protect health	24	24
Protect people around themselves	28	28
To resume travel	22	22
To get back to work/school/college	14	14
Encouragement by others	12	12
TOTAL	100	100

The above table shows that 24 % of the respondents were motivated to take vaccine in order to protect their health, 28 % of the respondents got vaccinated to protect people around them, 22% of them have taken vaccine to resume travel, 14% of the respondents to get back to work/school/college, 12 % of the respondents were motivated to take vaccine because of encouragement from others.

Inference:

It is observed that major proportions of respondents were motivated to take vaccine to protect their health as well as those around them.

4. STEPS TAKEN BY THE GOVERNMENT TO ENSURE VACCINATION:

GOVERNMENT MEASURES	NO.OF.RESPONDENTS	PERCENTAGE
Creation of awareness	25	25
Provide an advertisement	31	31
Rewards	15	15
Others	29	29
TOTAL	100	100

The above table reveals the steps taken by the government to ensure vaccination of people. It is found that 25% of the respondents say that government created an awareness among public about vaccination, 31% say it was done through advertisement, 15 % say that the government motivated vaccination by announcing rewards, 29 % of the respondents say it was through other means.

Inference:

Thus, major proportion of respondents say that the major steps taken by the government to ensure vaccination was through advertisement and awareness

5. RUMORS SPREAD BY ABOUT VACCINATION:

RUMOUR	NO.OF.RESPONDENTS	PERCENTAGE
Vaccination may result in severe side effects or death	26	26
The vaccine is unsafe for pregnant women	24	24
Covid vaccine will alter DNA	16	16
Covid vaccine will make people infertile	8	8
Others	24	24
TOTAL	100	100

The above table, depicts the rumors spread about vaccination. It is found that 26 % of the respondents are of the opinion that vaccine may result in severe side effects, 24 % say that the rumors spread in that the vaccine is unsafe for pregnant women, 16 % say it alters the DNA, 8 % of the respondents say that the vaccine will make them infertile, while 24 % of the respondents say there are other reasons for avoiding vaccination.

Inference:

Thus, major proportion (26 %) of the respondents believe in the rumor that vaccine results in severe side effects, and that is unsafe for pregnant women.

Chi-square test

RELATIONSHIP BETWEEN VACCINATED AND COVID 19 CASES:

H0 : There is no significant relationship between vaccinated and covid 19 cases.

ROWS// COLUMNS	O	E	O-E	(O-E) ²	(O-E) ² / E
R1C1	15	25	10	100	4
R2C1	45	25	20	400	16
R1C2	35	25	10	100	4
R2C2	5	25	20	400	16
	100				40

Degree of freedom

$$= (r-1) (c-1)$$

$$= (2-1) (2-1)$$

$$= 1 \times 1$$

$$= 1$$

The table value of 1 degree of freedom at 5% level of significant is 3.841 and the calculated chi square value is 40. Since the calculated value is greater than the table value, the null hypothesis is rejected. Hence it is concluded that there is no significant relationship between vaccinated and covid cases.

Findings

- ❖ Majority 52% of the respondents are age group of 21-30.
- ❖ Majority of respondents are affected by Covid19.
- ❖ Majority of the respondents had taken safety measures to protect themselves.
- ❖ Majority of the respondents have taken both the doses of vaccination.

- ❖ Majority of the respondents had COVISHEILD vaccination to protect themselves from covidinfection.

Suggestions

- Government may ensure the availability of safe and effective vaccines that provide strongprotection against serious illness, hospitalization and death from Covid 19.
- Awareness should be created among the public to take the necessary Covid 19 vaccine dosesrecommended by the health authority including booster dose when recommended.
- The causes of vaccine hesitancy, as reported in different studies, include religious reasons, personal beliefs, and safety concerns due to wide spread myths, including the association of vaccines and autism, brain damage, and other conditions. So measures could be taken up by thegovernment to provide adequate awareness for protection through vaccines.

Conclusion

Vaccines are a key weapon in the fight against COVID 19, and using the resources already available fosters clear public health and lifesaving benefits. One must not delay vaccination because of the reservations about new variants and so, one must continue vaccination even if the vaccinations are less successful against some COVID 19 virus variants. The government must ensure that the resources are utilized effectively to ensure a safe and healthy environment, because only if everybody is safe and secure, we can stop the pandemic.

Reference

Articles:

Research Article – BMC Medicine. Jit et.al BMC Medicine (2021) 13:209 DOI 10.1186/S12916-015-0446-9

Journal of Clinical and Medical Research ISSN: 2582-4333 Halim, Et.al, 2021- Jain Medes.

Websites:

<http://scholar.google.com/scholar?hl=ensas-sdt=o%25c5sq=covid>

19+vaccine+development

<http://scholar.google.com/citations>

<http://www.cdu.gov/coronavirus/2021-ncov/vaccines/effectiveness/index> Html?

CDC-AA-refwww.hhs.gov



history of vaccine.org types-of-vaccines scholar.google.com.

Pdf:

[http://www.researchgate.net/publication/352903714-A=study_on_covid_19_vaccination.](http://www.researchgate.net/publication/352903714-A=study_on_covid_19_vaccination)

<http://www.chop.edu/centers-programs/vaccine-education-center/making-vaccines/prevent-covid>



A STUDY ON STRESS MANAGEMENT OF BANK EMPLOYEES IN THOOTHUKUDI

M. Maria Sandra and A. Saleth Mary Vetriselvi

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

This study is made to find the stress management techniques used by the bank employees in their daily routine. Stress has become a part of day-to-day living of every individual. The study enables the readers to have a clear picture of how the stress management techniques are followed in banking sector. The data analysis is conducted with the help of suitable statistical tools. In addition, snowball sampling technique is used for analysis. Based on the analysis made, findings and suggestions are drawn. A suitable conclusion is given from findings and suggestions.

Introduction

Stress has become a part of day-to-day living of every individual. There is no such thing like stress-free job. Banking business which is the stamina of the country's financial system is not outstanding. The job nature of banking employees is very tedious as it involves the direct customer interaction of different types. Due to the paradigm shift in the work environment, the employees are experiencing a high level of stress. The job nature of banking employees is very tedious as it involves the direct customer interaction at all levels.

There are large numbers of bankers facing high level of stress because of their job and the reasons behind this stress include long working hours, heavy workload, and improper reward system, lack of job autonomy, organizational culture, and role conflict etc. The main reason being lack of management support to employees. Work stress has emerged as one of the significant and focal areas for investigation in present day organizations. It is considered as an important phenomenon affecting the organizational health and health of its employees.

Review of literature

Bashir, U., & Ramay, M. I. (2010) Bankers are under a great deal of stress and due to many antecedents of stress such as Overload, Role ambiguity, Role conflict, Responsibility for people, Participation, Lack of feedback, Keeping up with rapid technological change. Being in an innovative role, Career development, Organizational structure and climate, and Recent episodic events. One of the affected outcomes of stress is on job performance. This study examines the relationship between job stress and job performance on bank employees

of banking sector in Pakistan. The study tests the purpose model in relation of job stress and its impact on job performance by using (n=144) data of graduate, senior employees including managers and customers services officers of well reputed growing bank in Pakistan. The data obtained through questionnaires was analyzed by statistical test correlation and regression and reliabilities were also confirmed. The results are significant with negative correlation between job stress and job performances and shows that job stress significantly reduce the performance of an individual. The results suggest that organization should facilitate supportive culture within the working atmosphere of the organization.’

Griffin, M. A., & Clarke, S. (2011) American Psychological Association. “Stress is the single most common reason given for absence from work, and one in six Americans report they are “extremely” stressed. However, the general notion of stress at work can be contentious, and the possibility that work causes illness has been received with varying degrees of skepticism, indifference, and alarm across sectors of modern society. Regulators, employers, unions, insurers, and health professionals continue to struggle with the meaning and management of stress in the workplace. This chapter reviews the literature on stress and well-being at work. First, we review seven different approaches to the stress process, highlighting influential research and theory over the past 40 years. Second, we introduce an integrative framework as a basis for discussing similarities and differences across the major approaches. The integrated framework also provides a basis for reviewing the role of time in the stress process and considering implications for different methodological approaches and research paradigms. Third, we review organizational interventions to reduce stress, and fourth, we conclude with a summary and review some future directions for the study of the stress process.

Statement of the problem

Stress is a dynamic condition in which a person faces with constrains and strains. Stress is the discomfort of an individual. Stress is a pressure condition causing hardship. It is an internal phenomenon of mental attitude. Stress is generally believed to have deleterious effect on health and performance. But a minimum level of stress is necessary for effective functioning and peak performance. It is the individual’s reaction to stress which makes all the difference. Stress is a mental, emotional or physical reaction resulting from an individual’s response to environmental pressure. It refers to pressure people in life. Different persons respond to stressful situation in different ways. It is important to distinguish between pressure and stress. Pressure is motivating, stimulating and energizing. But when the pressure exceeds the ability to cope, stress is produced. Stress is an external force or pressure on the human

mind. One should try to transform stress into vitality, energy into power and knowledge into wisdom. Stress can have some serious consequences on both health and work performance.

Objectives of the study

1. To identify measures of stress management level of bank employees.
2. To find whether the age or designation has any impact on stress of employees.
3. To analyse the reasons for stress of bank employees.
4. To know the mechanisms to overcome stress of bank employees.

Methodology

Primary data

The primary data consisting of various questions related to the stress of bank employees have been collected from the employees and 100 samples are collected through google forms (online mode.)

Secondary data

The secondary data are collected from books, articles, magazines and other sources of social media.

Sample design

The data collected are original in nature. A sample of 100 respondents of bank employees both public and private sector banks were selected. The questionnaire was used for collecting a great source of primary information. To collect the primary data snowball sampling method was used.

Snowball sampling

Snowball sampling or chain-referral sampling is defined as a non-probability sampling technique in which the samples have traits that are rare to find. This is a sampling technique, in which existing subjects provide referrals to recruit samples required for a research study.

Area of study

The area covered under this study was in and around Thoothukudi District and study was based upon the banking employees in Thoothukudi District.

Analysis and interpretation

A) DESIGNATION OF EMPLOYEES

DESIGNATION	NO. OF RESPONDENTS	PERCENTAGE
Clerk	36	36
Probationary Officer	39	39
Assistant Manager	13	13
Manager	12	12
TOTAL	100	100

Source: Primary Data

Inference

The above table shows that 39% of the respondents are Managers, 36% are Assistant Managers, 13% are Probationary Officers and 12% are working as Clerks.

B) STRESS MANAGEMENT LEVEL OF EMPLOYEES

LEVEL OF STRESS	NO. OF RESPONDENTS	PERCENTAGE
Very high	19	19
High	30	30
Moderate	43	43
Less	5	5
Very Less	3	3
TOTAL	100	100

Source: Primary Data

Inference

From the above table, 19% of the respondents agreed that level of stress is Very High, 30% of the respondents' level of stress is High, 43% of the respondents level of stress is Moderate, (i.e Manageable), 5% of the respondents level of stress is Less, 3% of the respondents level of stress is Very Less.

C) WORK TIME IS FLEXIBLE

CLASSIFICATION	NO.OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	10	10
AGREE	6	6
NEUTRAL	22	22
DISAGREE	19	19
STRONGLY DISAGREE	43	43
TOTAL	100	100

Source: Primary Data

Inference

From the above table, 10% of the respondents Strongly Agree that work time is flexible, 6% of the respondents are Agreeing, 22% of the respondents are Neutral(i.e) it is

both flexible and rigid, 19% and 43% together 62% of the respondents say that the working hours are not flexible.

D)OVERLOAD AT WORK

CLASSIFICATION	NO.OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	25	25
AGREE	26	26
NEUTRAL	19	19
DISAGREE	18	18
STRONGLY DISAGREE	12	12
TOTAL	100	100

Source: Primary Data

Inference

From the above table, 25% and 26% of the respondents are Agreeing that the work is overloaded, 19% of the respondents are Neutral, 18% of the respondents are Disagreeing and 12% of the respondents are Strongly Disagreeing that the work is manageable.

E) TASK IS PRESSURIZED

OPINION	NO.OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	35	35
AGREE	20	20
NEUTRAL	18	18
DISAGREE	20	20
STRONGLY DISAGREE	7	7
TOTAL	100	100

Source: Primary Data

Inference

From the above table, 55% of the respondents are accepting that bank job task assigned is highly stressful, 18% of the respondents are Neutral, 27% of the respondents are Disagreeing that bank job is not stressful.

Chi-square test

Chi-square test was applied to find out whether there is any significant difference between the Age and New Technology Creating problems in Banks.

NULL HYPOTHESIS: H_0

There is no significant relationship between Age and New Technology Creating Problem in Banks.

Alternative hypothesis: H₁ or H_A

There is a significant relationship between Age and New Technology Creating Problem in Banks.

CHI-SQUARE TEST

OPINION \ AGE	STRONGLY AGREE	AGREE	NEUTRAL	DISASGREE	STRONGLY DISAGREE	TOTAL
20-30	5	1	3	4	1	14
30-40	4	0	4	3	8	19
40-50	11	2	7	5	0	25
Above 50	9	8	17	8	0	42
TOTAL	29	11	31	20	9	100

$$\begin{aligned}
 \text{Degree of freedom} &= (r-1) \times (c-1) \\
 &= (4-1) \times (5-1) \\
 &= 3 \times 4 \\
 &= 12
 \end{aligned}$$

The table value at 12 degrees of freedom at 5% level of significance is 21.02. The calculated chi-square value is 18.52. Since the calculated value is lesser than the table value, the null hypothesis (H₀) is accepted. Hence it is concluded that there is no significant relationship between Age and New technology creating problems in banks.

Findings

- Majority 59% of the respondents are between the age group of 20-30.
- Majority 56% of the respondents are Post Graduates.
- Majority 50% of the respondents are from Urban area.
- Most of the respondents (39%) are Managers.
- Majority 69% of the respondents have income above Rs.50000.
- Majority 59% of the respondents have below 5 years of experience.
- Most of the respondents (43%) have moderate level of stress management.
- Majority 49% of the respondents have high organization rewarding policy.
- Majority 56% of the respondents have regular counseling sessions.
- Majority 49% of the respondents get financial assistance from employers.

Suggestions

- ❖ Employee Assistance Programmes generally refer to the provision of employee counselling service by an organization.
- ❖ Stress Management training programmes designed to provide employees with better coping skills for example through meditation, bio-feedback, and muscle relaxation stress inoculation.
- ❖ Work redesign, job enrichment, employee welfare facilities, job relocation etc. are some of the measures included in this category.
- ❖ Most of the employees feel that stress at work banks should take positive steps to make their employees free from stress which helps to work with efficiency.
- ❖ Counselling is the best way to eradicate the evil effects of stress. Hence, the management should arrange counselling for the employees as a part of their welfare measures.

Conclusion

Stress in the workplace has become major issue in the current scenario much of stress work is caused not only by work overloaded, poor remuneration and poor work environment. Since stress in banking sector is mostly due to excess of work pressure and work life imbalance. The technological growth has revolutionized the way banking sector works and the competition is globalised now days because of the economy conditions. So to reduce the stress Employee Assistance Programmes should be conducted, Stress Management training programmes should be frequently conducted, Work redesign, job enrichment, employee welfare facilities, job relocation should be made, which helps in relieving the stress of bank employees.

References

<http://law.altius.dynamics.org/pdf/42.pdf>

<http://www.helpguide.org/articles/stress/stress-at-work.htm>

http://granthaalayah.com/Articles/Vol5Iss1/18_IJRG17_A01_17.

<https://shodhganga.inflibnet.ac.in/>

www.onlinelibrary.wiley.com



A STUDY ON THE USER BEHAVIOUR AND IMPACT OF YOUTUBE ON COLLEGE STUDENTS

R. Mary Rethuniya and O. Sony Fernando

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

This study shows that teenagers like YouTube because they can watch whatever they want at any given time. Many teenagers cannot imagine a life without You Tubers. This study enables the readers to have clear information about the usage and impact of YouTube. The data analysis is conducted with the help of the suitable statistical tools. The conclusion of the study is inferred from the findings and suggestions. The introduction explains the main aim of the study.

Keywords: User Behaviour, Impact, YouTube, College Students.

Introduction

YouTube: YouTube is a video sharing service that allows users to watch videos posted by other users and upload videos of their own, watch, share, comment on and view live video recordings for free. YouTube is the biggest video platform on the internet with 3.25 billion hours of video watched and has 2.6 billion users across the globe. With its ever-increasing user base, it is replacing conventional means in the fields of education, lifestyle, music, sports, cooking, entertainment and tourism. The extent of its impact and how students are getting influenced by the You Tubers.

Review of literature

Suwastika and Pandaram, Atishwar and Chand, Anand and Chand, Ashyineet (2017) Exploring the positive and negative impacts of using YouTube videos to enhance student's learning in an undergraduate and Master's programme. This research study investigates the positive and negative impacts of utilizing YouTube videos to enhance students learning in undergraduate and Master's programmes at the University of the South Pacific. The findings from this research study accentuate that there are both positive and negative effects of using the YouTube videos to boost student learning. Using YouTube videos to enhance students learning is one way information computer technology can be used to enhance students learning in the undergraduate and masters programmes.

Bushra Saadon and Mohammed Alnoori (2021) The Effect Of YouTube On Students Academic Achievement was published the study sought to analyze the effects of educational videos on university students' academic activities and performance. This research is useful for educators and video makers who utilize and/ or make free or commercial videos for educational purposes. The study revealed that watching educational videos affected the academic activities and performance of the respondents positively. The majority of the respondents used mobile phones and laptops to watch videos. The study further confirmed that most of the respondents preferred short length videos and animated educational videos.

Statement of the problem

The internet is now possible to be accessed throughout the world, science and technologies has improved in advanced manner. The YouTube users has been increasing at a high level. Students find YouTube to be more entertaining than any other source. Students are actively contributing in comments and creating their own channel. The usage and impact of YouTube videos on college going students play a positive and negative role. The study aims to examine the impacts of using YouTube and the relationship with academic performance.

Objective of the study

- To analyze the time spent on YouTube.
- To study the impact of YouTube among college students.
- To study whether there is a relationship with academic performance.

Methodology

1. Primary data: A structured questionnaire was prepared and was given to 120 students through google forms to analyse the impact of YouTube.

2. Secondary data: The secondary data is collected from the books, articles, magazines, popular websites and other sources of social media.

Sampling design: A sample of some respondents residing in various part of district was selected on a random basis. It is the first-hand information. For collection of data, respondents consisting of 35 Male and 85 Female. The data for the study was collected using questionnaire through google form.

Area of the study: This study is conducted for the college going students who are scattered in different areas of Tamil Nadu.

Limitations of study

1. The sample size is only 120 respondents which may not reveal the true picture of the population.
2. As the data were gathered through a google forms, hence it cannot be expected that it is hundred percent genuine.

Analysis and interpretation

NO. OF HOURS SPENT FOR A DAY:

This table shows the time spent on YouTube each day by the college students.

PARTICULARS	NO. OF RESPONDENTS	PERCENTAGE (%)
1 – 3 hours	27	22.5
4 – 6 hours	20	16.7
Depending on videos	73	60.8
TOTAL	120	100

INFERENCE:

From the above table, it is observed that among 120 respondents, 60.8 percent students watch YouTube depending on videos, 22.5 percent students spend 1 – 3 hours every day, 16.7 percent students spend 4 – 6 hours every day.

SUSTAINING WITHOUT YOUTUBE:

The table clearly depicts whether the student can sustain without YouTube right now.

SUSTAINING	NO. OF RESPONDENTS	PERCENTAGE (%)
Definitely would	27	22.5
Probably would	38	31.7
Probably would not	7	5.8
Definitely would not	48	40
TOTAL	120	100

INFERENCE:

From the above table, it is observed that among 120 respondents, 40 percent students definitely would not sustain without YouTube, 31.7 percent students probably would sustain without YouTube, 22.5 percent students definitely would sustain without YouTube, 5.8 percent students probably would not sustain without YouTube.

LIKERT’S SCALE ANALYSIS ON RELATIONSHIP WITH ACADEMIC PERFORMANCE:

This question was asked to analyse the relationship with academic performance.

STATEMENT	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	WEIGHT	AVG	RANK
1. Easy to understand certain topics	63	34	16	1	6	5	4.22	I
	(315)	(136)	(48)	(2)	(6)	0 7		
2. It helps me to remember topics with the use of examples	51	40	22	2	5	4	4.08	I
	(255)	(160)	(66)	(4)	(5)	9 0		I I
3. Able to get more videos on same topic	63	30	15	2	10	4	4.11	I
	(315)	(120)	(45)	(4)	(10)	9 4		I
4. It grasps my attention with videos	58	24	24	5	9	4	3.97	V
	(290)	(96)	(72)	(10)	(9)	7 7		
5. Videos helped to connect what we learnt in class	41	45	15	5	14	4	3.78	V
	(205)	(180)	(45)	(10)	(14)	5 4		I I
6. Helped to	41	48	22	2	7	4	3.95	V

give real life examples	(205)	(192)	(66)	(4)	(7)	7		I
7. I bunk class so that we can learn the	22	18	20	25	35	3	2.72	X
	(110)	(72)	(60)	(50)	(35)	2		
						7		

concept from YouTube								
8. It allowed further discussion with friends	30	26	21	19	24	3	3.15	I
	(150)	(104)	(63)	(38)	(24)	7		X
						9		
9. Problems are solved Easily	38	46	16	6	14	4	3.73	V
	(190)	(184)	(48)	(12)	(14)	4		I
						8		I
								I
10. Helpful forseminar	63	30	12	4	11	4	4.08	I
	(315)	(120)	(36)	(8)	(11)	9		I
						0		I

Inference

From the above table, it is inferred YouTube is “Easy to understand certain topics” and the respondents has given first rank with total score 507. Then second rank has been given to “Ableto get more videos on same topic” with total score of 494. The third rank is given for “It helpsme to remember topics with the use of examples” and “Helpful for seminar” with total score of 490. The fifth rank has been given to “It grasps my attention with videos” with total score of 477. The sixth rank has been given to “Helped to give real life examples” with the total scoreof 474. The seventh rank has been given to “Videos helped to connect what we learnt in class” with total score of 454. The eighth rank has been given to “Problems are solved easily” with total score of 448. The ninth rank has been given to “It allowed further discussion with friends”with total score of 379. The tenth rank has been given to “I bunk

class so that we can learn the concept from YouTube” with total score of 327.

Chi square test:

Chi-Square test was applied to find out whether there is any difference between age and hours spent in YouTube in the following factors.

➤ **Hypothesis: HO**

There is no significant relationship between age and hours spent in YouTube.

➤ **Hypothesis: H1**

There is a significant relationship between age and hours spent in YouTube.

Inference

The calculated value is 8.26, the above table indicates 6 degree of freedom is 12.59 which is greater than the calculated value thus the result is independent.

Hence it is concluded that there is no significant relationship between age and hours spent. Therefore, the null hypothesis is accepted.

Findings

- Majority of the respondents (60.8%) watch YouTube depending on videos and they watch it every day.
- The study reveals that (40%) students definitely would not sustain without these YouTube right now as most of the teenagers are used to it.
- It is inferred that respondents says that YouTube is “Easy to understand certain topics” and has given first rank with total score 507.

Suggestions

- ❖ It is suggested that awareness should be provided among students to use it only for minimum time period.
- ❖ College students should have their own personal responsibility to take out the good from the bad ones.
- ❖ Students who cannot sustain without YouTube and spent more time on YouTube is a sign of addiction, so proper preventive step should be taken by engaging themselves in reading and extracurricular activities.
- ❖ The study also recommends the students to continue using YouTube to update their skills and knowledge.
- ❖ The YouTube should be used in such a way that it never hampers education or social lives of students.

Conclusion



Technology is booming rapidly day to day and the younger generations are the one caught in this rapid change. The very common technology that rules the world is mobile phones, where the whole universe is in our hands in just a blink of an eye. Above all, it cannot be denied that YouTube is growing up considerably which contains every information in the video format that not only entertain and update us but also play a significant role in improving students learning abilities and help them to chase their academic goals more effectively. Although it concluded in this study that YouTube helps in developing skills and knowledge such as technological skills that are required. But we do agree that YouTube have downside like more time spent on screen. From this study, it is inferred that students spent more time on YouTube every day. To avoid these parents should limit the time and spent more time with their child. Remember, don't be addicted to YouTube videos if you know you cannot manage getting addiction to it. For those who have already addicted, manage your time and always know the signs of YouTube addiction.

Reference

WEbsite

<https://proceeding.conferenceworld.in>

Article

Bushra Saadoon and Mohammed Alnoori The Effect Of YouTube On Students academic Achievement - 2021

Journal

Suwastika and Pandaram, Atishwar and Chand, Anand and Chand, Ashyineet Exploring the positive and negative impacts of using YouTube videos to enhance student's learning in an undergraduate and Master's programme. International Journal of Instructional Technology and Distance Learning, 14 (8), DOI 2017, ISSN 1550- 6908.



A STUDY ON THE ATTITUDE OF GENERAL PUBLIC TOWARDS E-PAYMENT SYSTEMS IN THOOTHUKUDI CITY

Mary Judith Reese Fernando and E. Nandhini

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

Our country is fast emerging among one of the largest and strong economies. For sustained development and growth with robust economic development, certain integral factors like improved transparency, corporate governance etc, play a major role. All these developments could be feasible only when the population embraces the digital payments and digital transactions. This study “Attitude of general public towards E-payment systems” will help to know how people have embraced the e-payment systems and using it in their daily life in Thoothukudi city. This study provides information to those who interested in the banking industry activities and operations concerning electronic payments. It will, therefore, provide insight into the potential benefits of adopting electronic payments. It will aid all banks and financial institutions in undertaking electronic payments activities and procedures.

Introduction

The increasing development of information and communication technologies has brought many achievements for human society and greatly influenced people's lives and their behaviours and social events. Indian government is putting more efforts to change the face of the economy from cash to cashless transactions. With that aim, they have launched a flagship programme titled “Digital India” with a vision to transform the country into a completely cashless society and knowledge economy.

With the introduction of digital India and the growth progress as stated by Information Technology (IT) sector, Individuals are moving towards online payments, as the application based mobile apps and websites have achieved a drastic shift from the old and traditional way of transfer of funds to a new and more updated way of transfers. The development and modernization of the payment system has resulted in transparency and accountability, reduced transaction costs, and has decreased the size of the informal economy. Further, it has reduced overall corruption and boosted economic growth of the country.

Review of literature

DhaniShankerChaubey et al. (2017) in their study revealed that the online payment had given relief and force to learn digital transaction after demonetization. People adopted the technology slowly, but didn't want to pay extra for digital transaction. However, he found that people of India faced money problems during demonetization with non-availability of cash.

Shamsher Singh (2017) explained how growth in internet leads to the growth of online payments and transactions. He also pointed that India is on its way to a major digital revolution. Future economy is going to be a cashless one, for which digitalization of payment mechanism at different location such as smart phone, internet banking, card transaction etc are required.

Statement of problem

With the increase of online shopping portals and e-commerce solutions, there is a paradigm shift in the use of digital currency. People are now very familiar with the use of online payment channels. The aim of this study is to explore the awareness, attitude and acceptance of e-payment systems by the general public and also the benefits and challenges faced by them while making electronic payments. The study also focuses on the different modes of electronic payment system mostly preferred by the people as an easy payment mechanism.

Objectives of the study

- To examine the socio-economic profile of respondents under study.
- To study the awareness, attitude and acceptance of public with regard to E-payment systems.
- To identify the various modes of e-payment systems used by general public.
- To analyze the benefits and problems involved in using e-payment systems.

Methodology

Primary data: The primary method of data collection viz., questionnaire was used to collect the data in the mode of Google forms.

Secondary data: The secondary data were collected from books, journals, newspapers, magazines and various websites.

Sample design: Convenience Sampling was adopted and the data were collected from 120 sample respondents aged from 18 to above 45 years using questionnaire in Thoothukudi City.

Area of study: The study area is limited to Thoothukudi City which is traditionally known as “PEARL CITY” as it is well known for its pearl fishing in Tamil Nadu.

Period of study: The study covers a period of four months from February 2022 to May 2022.

Framework of Analysis:The collected data were analysed by using the following statistical tools which work as a base for drawing conclusion and getting result:

- Percentage Analysis method
- Garrett ranking techniques
- Likert scaling techniques
- Chi-square test

Analysis and interpretation of data

Table 1
Demographic Details of the Respondents

Variable	Parameter	Frequency	Percentage (%)
Age (in years)	Up to 25	62	51.7
	26-35	27	22.5
	36-45	21	17.5
	Above 45	10	8.3
Occupation	Student	42	35
	Professional	16	13.3
	Self-employed	8	6.7
	Private Employee	30	25
	Government Employee	12	10
	Home Maker	9	7.5
	Unemployed	3	2.5
Monthly Income (Self/Family) (In Rupees)	Upto 15000	48	40
	15001-30000	29	24.2
	30001-45000	16	13.3
	Above 45000	27	22.5

Source: Primary Data

It is observed from table 1 that around three-fourth majority of respondents are upto the age of 35 years, around one-third majority of the respondents are students and a major proportion of the respondents have a monthly income ranging up to Rs. 15000.

Table 2
Awareness about functionality of E-payments

Awareness level	No. of Respondents	Percentage (%)
Fully aware	61	50.8
Partially aware	57	47.5
Not aware	2	1.7
Total	120	100

Source: Primary Data

It is inferred that almost all respondents are aware of the functionality of the e-payment systems, that is half the majority of the respondents are fully aware and the other half proportion of the respondents are partially aware.

Table 3
Period of usage of E-payment systems

Period	No. of Respondents	Percentage (%)
Less than 1 year	23	19.1
1-2 years	47	39.2
3-5 years	29	24.2
Above 5 years	21	17.5
Total	120	100

Source: Primary Data

It is inferred that a major proportion of the respondents are using E-payment systems for around the last two years. It shows that people have started using E-payment systems during the period of covid pandemic which has definitely raised the popularity of electronic payments and also helped people to make transactions safely without exposing themselves to any danger of covid virus.

Table 4
Ranking of frequency of monthly usage of various e-payment systems

E-payment systems	Mean Score	Rank
UPI Platforms	3.00	I
Debit card	2.97	II
Mobile Banking	2.85	III
E-wallet	2.65	IV
Internet Banking	2.35	V
Credit card	2.13	VI
E-cheques	1.62	VII
AePS	1.47	VIII
USSD	1.3	IX

Source: Primary Data

It is observed that UPI has been ranked first and is used by the respondents frequently for their transactions in a month followed by Debit card, Mobile banking, E-wallet, Internet banking, Credit card, E-cheques, AePS and USSD.

Table 5
Garrett Mean score and Ranks of reasons on the basis of priority of respondents

Reasons	GarretTotal Score	Garrett Mean Score	Rank
Necessity	7720	64.33	I
Lower Service charges	6928	57.33	VI
Convenience	7475	63.41	II
Fast transaction	7408	62.29	III
Anywhere anytime money transfer	7069	61.73	IV
No need of carrying physical cash	7133	59.44	V
Easy to administrate	6863	57.19	VII
Security	6474	53.95	VIII
Gift cards/Coupons	5813	48.44	IX

Source: Primary Data

It is inferred that the respondents are using e-payment systems mainly for the reason of necessity followed by Lower service charges, Convenience, Fast transaction, Anywhere

anytime money transfer, No need of carrying physical cash, Easy to administrate, Security and Gift cards/Coupons.

Table 6

Ranking of response on the problems faced while using e-payment systems

Problems	Mean Score	Rank
Network problems	2.57	I
Technical issues	2.52	II
Fake messages & Spam	2.45	III
High service charges	2.24	IV
Risk of hacking	2.23	V
Password threats	2.00	VI
Online fraud	2.00	VI
Insufficient Knowledge	1.71	VIII

Source: Primary Data

It is inferred from the results that Network problems is the major problem faced by the public while using e-payment systems followed by Technical issues, Fake messages & Spam, High service charges, Risk of hacking, Password threats, Online fraud and Insufficient Knowledge.

Findings

- A major proportion of the respondents are self-motivated to use e-payment systems for their transactions rather than influence by some other person (40%).
- It is found that more than half the majority of the respondents do not need any help or guidance from others for operating e-payment systems (54.5%).
- It is discovered that two-fifth majority of the respondents use e-payment systems mainly for ‘Money transfer’ (41.7%).
- A high proportion of the respondents agree that electronic payment is better than traditional payment (63.3%).
- It is found that around three-fourth majority of the respondents agree that e-payment systems have the potential to expand in future (73.3%).

- It is observed from the chi-square test that there is a significant relationship between age of the respondents and awareness of respondents about the functionality of e-payments.

Suggestions

- ✓ The younger generation are using digital payment systems more than the older generation, so it is suggested that banks and financial institutions should take measures for developing confidence among the older generation.
- ✓ Cash payment and cash on delivery options should be limited in all places so it will drive people to pay electronically.
- ✓ As the users of credit cards are very low, it is suggested to banks and financial institutions to popularise the benefits of credit cards to the people and encourage them to get their own credit cards.
- ✓ Since “E-payment suits all types of people” has been ranked last in the opinion of respondents, measures should be carried out to remove that perception among them and make them believe that anyone who wants to make e-payments can do so, provided they have the knowledge and passion to learn the correct procedure.
- ✓ Customer awareness programs are necessary. Practical demonstrations on how to use their cards, mobile phones and authentications while transacting should all be part of the training.
- ✓ Financial institutions can increase the comfort level of the public by educating people on various e-payment services and thus can increase the usage of e-payment systems.

Conclusion

India has witnessed a significant growth in digital payments over the past decade with the introduction of numerous online payment systems. The main aim of the research is to study the awareness, attitude and acceptance of the public towards e-payment systems. It is revealed that people are well aware of digital payment systems either fully or partially. They have embraced it to the fullest and utilize it in their day-to-day life for all purposes, mainly for money transfer followed by retail or online shopping, bill payments etc. Majority of the people have started using e-payment systems in the last five years, especially in the last two years, so it is elucidated that many people have adapted to digital payments after demonetization and covid pandemic.

Most of the people opined that e-payment systems are secure, better than traditional payment and help them improve their transfer efficiency by saving their time and effort. They are satisfied with the functionality of various digital payment systems and agreed that these

systems make their payments easier. The major problems which people face are network problems and technical issues which can be overcome by providing high speed internet and developing software related to e-payment systems.

People have agreed that e-payment systems make them less concerned about their spending habits, which shows that they spend more while using electronic modes of payments. This results in business people to get more profit which in turn will raise the economic status of the country. Overall, it is concluded that despite having various issues people are adopting digital payments at a faster pace and there is extensive scope and potential for growth of e-payments in the future.

Reference

Books

- Kothari, C.R, *Research Methodology, Methods and Techniques*. New Delhi: NewAge International (p) Ltd., publishers.

Journals

- DhaniShankerChaubey& Piyush Kumar (2017) “Demonetization and Its Impact on Adoption of Digital Payment: Opportunities, Issues and Challenges” *Abhinav National Monthly Refereed Journal of Research in Commerce & Management*. Volume 6, Issue 6, Online ISSN 2277-1166.
- Shamsher Singh, (2017), “Study of Consumer Perception of Digital Payment Mode” *Journal of Internet Banking and Commerce*, 22(3), pp.1-14.

E-papers

- The Economic Times
- The Indian Express

Websites

- <https://www.npci.org.in>
- <https://www.rbi.org.in>
- <http://cashlessindia.gov.in>

AN ANALYSIS OF CRYPTO CURRENCY BITCOIN AND ITS FUTURE

A. Amora and B.Phebeyal

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

Crypto currency, an encrypted, peer-to-peer network for facilitating digital barter, is a technology developed eight years ago. Bitcoin, the first and most popular crypto currency, is paving the way as a disruptive technology to a long-standing and unchanged financial payment system that has been placed for many decades. While crypto currencies are not likely to replace traditional fiat currency, they could change the way internet-connected global markets interact with each other, clearing away barriers surrounding normative national currencies and exchange rates. Crypto currencies may revolutionize digital trade markets by creating a free-flowing trading system without fees. This study enables the readers to have clear information about an analysis of crypto currency bitcoin and its future. The data analysis is conducted with the help of suitable statistical tools. The conclusion of the study is inferred from the findings and suggestions. The introduction explains the main aim of the study.

Keywords: Crypto currency, Bitcoin, disruptive technology, traditional fiat currency, digital trade markets

Introduction

Crypto currency is electronic money created with technology controlling its creation and protecting transactions while hiding the identities of its users. Currency simply means “money currently in use”. Crypto currencies are digital cash designed to be quicker, cheaper, and more reliable than our regular government-issued money. Instead of trusting a government to create your money and banks to store, send and receive it users transact directly with each other and store their money themselves. Because people can send money directly without a middleman, the transaction is usually very affordable and fast.

To prevent fraud and manipulation, every user of a crypto currency can simultaneously record and verify their own transaction and the transactions of everyone else. The digital transaction recording is known as a “ledger” and this ledger is publicly available to anyone. With this public ledger, transactions become efficient, permanent, secure, and

transparent. This study is also about the investors and public response percentage levels of bitcoin investments in 2022.

Review of literature

According to Hudson & Urquhart, (2019):

That is digital and produced from cryptographic algorithms, exchanged across the Internet using protocols such as peer-to-peer networking.

According to Vaz & Brown (2020):

Estimate that a payment transaction on the bitcoin platform uses around fifty-eight times the energy of that for visa credit transactions. Visa relies on multiple banking and institutional systems that need enormous amounts of energy to function. The mining process of crypto currencies have received similar adverse publicity following reports that crypto currencies involves the vast consumption of energy and have a harmful impact on the environment.

Statement of the problem

Crypto currency payment system needs user acceptance, vendor acceptance and innovation to flourish. In the absence of any of these three elements, crypto currency may not become a truly legitimate mainstream payment system, block chain is a decentralized transaction and data management technology developed first for bitcoin crypto currency.

Objective of the study

- To study about the opportunities and threats of crypto currency
- To know the most preferred form of crypto currency
- To find out the reason for preferring investment in bitcoin
- To study the relationship of age and opinion about crypto users.

research methodology

Sampling design	Convenient sampling method
Period of the study	February 2022 to May 2022
Data used	Primary and Secondary data
Test for analysis	Percentage Analysis, Chi- Square Test, Garrett Ranking method

Results and discussion

1. Most preferred form of crypto currency

Form of crypto Currency	No. of respondents	Percentage (%)
Bitcoin	52	65
Ethereum	11	14
Lite coin	8	10
Others	9	11
Total	80	100

Source: Primary data

The above study clearly indicates that out of 80 respondents taken for the study, 65% of the respondent's mostly preferred form of Crypto Currency is Bit coin, 14% of the respondent's preferred form of crypto currency is Ethereum, 11% of the respondents prefer other form of crypto currency and 10% of the respondent's mostly preferred form of crypto currency is lite coin. Hence majority of the respondents' most preferred form of crypto currency is Bitcoin.

2.Reason for preferring investment in bitcoin

Options	No. of respondents	Percentage (%)
Convenience	26	33
Easy transaction	28	35
Current trend	13	16
Others	13	16
Total	80	100

Source: Primary data

The above study clearly indicates that out of 80 respondents taken for the study, 35% of the respondents prefer investment in crypto currency due to easy transaction, 33% of the respondents prefer investment in crypto currency due to convenience, 16% of the respondents prefer investment in crypto currency as it is current trend and 16% of the respondents refer investment in crypto currency due to other reasons. Hence majority of the respondents prefer investment in crypto currency as it is easy for transactions.

Garrett’s ranking

Garrett’s ranking technique was used to rank the preference indicated by the respondents on different factors. As per this method the respondents have been asked to assign the rank for all factors and the outcomes of such ranking have been converted into score value with the help of the following formula: $\text{Percent position} = 100 (R_{ij}-0.6) / N_j$

Factor	Total	Mean	Rank
Easy transaction	4829	60	I
Social pressure	3943	49	II
Safety transaction	3690	46	III
High return benefits	2378	30	IV

Source: Primary data

The above table reveals that the majority of the respondents has given top priority to easy transaction and is ranked as first, social pressure is ranked as second, safety transaction is ranked as third, high return benefits is ranked as last.

Chi- square test

Chi- square test was applied to find out whether there is any significant difference age and opinion about crypto users.

Hypothesis: Ho

There is no significant relationship between age and opinion about crypto users.

Hypothesis: H1

There is a significant relationship between age and opinion about the crypto users.

Opinion		Very much satisfied	Satisfied	Neutral	Dissatisfied	Total
Age						
20-30		13	26	15	8	62
31-40		4	7	1	0	12
41-50		0	4	0	0	4
Above 50		2	0	0	0	2
Total		19	37	16	8	80

Source: Primary data

$$\begin{aligned}
 \text{Degree of freedom} &= (r-1) * (c-1) \\
 &= (4-1) * (4-1) \\
 &= 3 * 3 \\
 &= 9
 \end{aligned}$$

The above table indicates 9 degrees of freedom is 16.9. The calculated value is 10.2 which is greater than the calculated value thus the result is independent. Hence it is concluded that there is a significant difference between the age and opinion about crypto users. Therefore the null hypothesis (h_0) is accepted.

Findings

- ❖ From the study it is analysed that the majority of the respondents preferred form of crypto currency is bitcoin
- ❖ Majority of the respondents presume easy transactions to be the reason for investing in crypto currency
- ❖ Majority of the respondents selected that crypto currency can be secure in a cryptographic math
- ❖ The study discloses that majority of the respondents said, profitability of mining depends the price of bitcoin
- ❖ The study reveals that majority of respondents said their years of investment experience about crypto currency 1 to 3 years

Suggestions

- ❖ Investors should take a wide decision regarding what type of crypto currency must be preferred
- ❖ Knowledge should be made among the investors and non- investors about the availability of bitcoin
- ❖ Investors should do their own research before investing in crypto currency
- ❖ Investors should have a deep analysis of the market capitalization before investing
- ❖ Investors should be more cautious regarding the safety of their investment and not to stock up crypto currency in an exchange

Conclusion

Crypto currencies such as bit coin still have numerous significant obstacles to overcome before they could totally replace currency systems. We got into bit coin because we believe in the power of its technology, and we think it's deeply connected to the rest of computer science. Bit coins can be helpful to a lot of people. Since it is an international currency, it can be used in any country without any conversion. The block chain is really secure and it lets us make sure that our money goes to/ comes from the right person. Some economic analysts predict a big change in crypto currency is forthcoming as institutional money enters the market.



Reference

- www.wikipedia.com
- www.investopedia.com
- www.cryptocoinnews.com
- Narayanan & Joseph Bonneau, Bitcoin and crypto currencies technologies – published by Arvind
- Siddharth Misra, Vishal Kashyap, Poonacha.K.B, Arjun Mukund, as on 07 March 2020 - Crypto currency- A Black and White Analysis , International journal of information systems and social change



A STUDY ON CUSTOMER SATISFACTION TOWARDS ZOMATO FOOD DELIVERY APP SERVICE IN THOOTHUKUDI

Fernando Alexandria and A.Piskila

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

Mobile application development is driven by advancements in technology which have drastically increased the usage of mobile phones and applications. The online food ordering market creates convenience and saves time by delivering food to the customer's doorstep. The online food portal gives choices and attractive offers which attract customers and also increase their profit by providing services. This study enables the readers to have clear information about the customers' satisfaction with the Zomato food delivery app service. Food delivery technology allows consumers to plan ahead or order on the go, adapting to the changing habits. The data analysis is conducted with the help of suitable statistical tools. The conclusion of the study is inferred from the findings and suggestions. The introduction explains the main aim of the study.

Keywords: Technology, Applications, Food portal, Zomato

Introduction

The introduction of new opportunities for enhancing their shopping experiences influenced customers' buying habits and expectations. Customers are becoming more demanding and less loyal to a company or brand because technological developments provide more detailed and timely information about products and services. Thus, it is imperative for retailers to keep track of the emerging needs and expectations of their customers. Although the customer base for mobile subscribers is ever increasing, the overall m-commerce activities remain to be low in developing countries. Zomato is One of the top food delivery app in India, which offers service to customers by delivering the food ordered by them at their doorstep. The on-demand food delivery app such as Zomato has grown a great deal in recent years. Zomato started under the name, Foodiebay initially is an Indian restaurant aggregator and food delivery start-up the foundation in July 2008. Later in November 2010, it was renamed Zomato. It was started by Deepinder Goyal and Pankaj Chaddah. It provides information, menus, and user reviews of restaurants, and also has food delivery options from partner restaurants in select cities. As of 2016, the service is available in 24 countries. And it shows that there are 80 million monthly active users. It also encourages gender equality, women

empowerment, environmental sustainability, and resource conservation. The company also contributes to the Prime Minister's National Relief Fund (PMNRF) to help the minority and backward classes. Zomato does not provide cutlery in order to eliminate the use of plastic. It collaborates with designers, engineers, and product managers to improve the design system.

Review of literature

According to Varsha Chavan, et al, (2015), the use of smart phone mobile interface for consumers to view order and follow has helped the restaurants in delivering orders from consumers immediately. The increase in uses of smart phones and computers are giving platform for service industry. Their Analysis concluded that this process is convenient, effective and easy to use, which is expected to better day by day in coming times.

According H.S Sethu & Bhavya Saini (2016), their idea was to analyze the customers perception, behavior and satisfaction of online food ordering and delivery applications. Their study shows that online food ordering apps secure their time due to easily availability. It is also found that visibility of their favourite food at any point of time and always access to internet, free data are the main reasons for using the apps.

According to Das, (2018), According to this research, Zomato has gained positive opinion of majority of the consumers in comparison to other service providers. It is mainly because of their better on time delivery and better discounts. Zomato has been in the first position in online food delivery service provider and if it includes the minor improvements, it will sustain its upper hand in forthcoming future. The factors that encourages consumers the most is Doorstep Delivery followed by Ease & Convenience. Consumers are mostly influenced when they receive any Rewards & Cashbacks followed by Location. Most preferred online food delivery service provider is Zomato followed by Swiggy, the factors that prevent consumers to use the online food delivery services are Bad Past Experience followed by Influence from friends/family.

Statement of problem

India has a rich tradition in the homemade food industry. But the change in work-life had welcomed the food online delivery app. Apps for food supply have now become a major sensation in India. Numerous food delivery apps in India can be downloaded at the ease of homes on smartphones to order food on the go. The popularity of Zomato food orders and service providers is constantly increasing because people choose to order food for their convenience instead of going out to the restaurant. Never mind, it is costlier than restaurant foods. But complaints regarding food quality, delivery time, food packaging, etc are there. Zomato was in the news earlier year when one of their delivery boys was filmed, opening and

consuming a part of the food package that he was supposed to deliver. So, along with convenience, there is something that attracts customers to these food apps, which leads to the boom of food ordering services. So the study helps to find out the need, preferences, usage, and purchase patterns of the respondents regarding Zomato food delivery app.

Objectives of the study

- ❖ To find customer satisfaction about Zomato food delivery app service.
- ❖ To know the type of food that are mostly bought through Zomato food ordering.
- ❖ To study the factors that influence the consumer to choose online food ordering.

Methodology

The collected data were analyzed by using the following statistical tools namely percentage analysis and graphical method like bar diagrams, pie charts and ranking method.

Primary data:

These data are those which are collected for the first time and therefore original in nature. Information obtained from the original source by the researcher is called Primary Data. The data was collected from the respondents through the questionnaire.

Secondary data:

Data, which have already been collected by someone else and hence passed through the statistical process. It means data that are already available i.e. it refers to the data which have already been collected and analyzed by someone else. The data was collected from the websites and journals.

Sampling design:

A sample of some respondents residing in various part of Thoothukudi was selected on a random basis. The question was used for collecting a great source of information.

Area of the study

The study on customer satisfaction towards Zomato food delivery app is done in Thoothukudi city. It is port city and industrial city of the Indian state of Tamil Nadu.

Period of the study

The study has been conducted during the period ranging from February 2022 to May 2022.

Analysis and interpretation

TABLE 1
MOST PREFERRED FOOD

Particulars	No of respondents	Percentage (%)
Biryani	40	45
Fast food	21	23
North Indian	18	20
South Indian	11	12
Total	90	100

Sources: Primary data

Inference

The above table infers that 45 percent of respondents prefer Biryani, 23 percent prefer fast foods, 20 percent prefer north Indian foods, 12 percent of respondent's south Indian foods.

Most of the respondents i.e., 45% prefer Biryani.

TABLE 2
HIGHLIGHT OF ZOMATO THAT ATTRACTS THE CUSTOMERS

particulars	No of respondents	Percentage (%)
Discount's offered	28	31
Advertisement	24	27
Variety of food	26	28
Fast delivery	12	13
Total	90	100

Source: Primary data

Inference

The above table reveals that 32 percent of the respondents are attracted by the discount offered, 28 percent are attracted by the variety of food, 27 percent are attracted by the advertisement, and 13 percent are attracted by fast delivery.

Thus most of the respondents i.e., 31% are attracted by the discount offered.

TABLE 3
RANKING THE REASON FOR USING ZOMATO APP

Particulars	Total score	Mean	Rank
Price	5422	60	II
Convenience	5056	56	III
Time saving	5830	65	I
Food quality	3935	44	V
Ordering process	4654	52	IV

Inference

The above table reveals that the majority of the respondents has given the 1st rank to Time saving, price is ranked second, convenience is ranked as third, ordering process is ranked as four and food quality is ranked as five.

TABLE 4
SHOWING PREFERENTIAL FACTORS FOR CHOOSING THIS APP

Particulars	Score	Percentage	Rank
Proper package	335	20	III
On time delivery	230	14	V
More choice of restaurant	361	22	II
More discount& offers	404	24	I
Overall satisfaction	334	20	III
Total	1664	100	

Inference

The above table reveals that the majority of the respondents has given top More discount& offers as ranked first, More choice of restaurant is ranked as second, Proper package and Overall satisfaction is ranked as third and On time delivery is ranked as five.

Findings

- ❖ Most of the respondents i.e., 70% are aware of the food application Zomato.
- ❖ Most of the respondents i.e., 45% prefer Biriyani.
- ❖ Thus most of the respondents i.e., 31% are attracted by the discount offered.
- ❖ Most of the respondents i.e., 82% find online food ordering easy and convenient.
- ❖ The study clearly states that majority of the respondents i.e., 90% are satisfied with

the Zomato food advertisement.

Suggestions

- ❖ Clear communication is the key to online food ordering. Many delivery orders are delayed because of the prolonged delivery time.
- ❖ Give a call to a customer or message him/her via the online food app before delivering the food.
- ❖ Create an online menu that is crisp, concise, and easy to read. It should convey all the necessary information having a clear CTA. The price, the quantity of the items should be clearly written so that it becomes easy for the customers to order.
- ❖ Tracking system for customer should be provided, so that it helps the customer and encourages to order online.
- ❖ Frequent Discount and cashbacks attract more of customers to order food through online and also it increase the business than that of normal one.

Conclusion

Apps for food delivery have now become a major hit in India. There are several food delivery apps in India that can be downloaded from the comfort of home on a smartphone to order food on the go. In a study on customer satisfaction toward Zomato food delivery application in Tuticorin, it can be concluded that the online food ordering system has its benefits and limitation. The chief reason for electronic ordering is convenience. Zomato food ordering system maintains the service provider to keep a database and enhance the customer experience. Through the survey conducted, it was found that the majority of users think that people opt for online food delivery applications as it requires only less human interaction and online food ordering has made an impact on the traditional way of dining together. The study discloses that youngsters are more inclined to online food delivery systems as compared to elder people.

Reference

- www.Zomato.com
- www.Slideshare.net
- www.wikipedia.com

Books

- Marketing
- R.S.N.Pillai&Bagavathi
- Digital marketing



- Swaminathan T. N

YOUNG CUSTOMERS PREFERENCE OF MOBILE WALLETS GATEWAY FOR CASHLESS PAYMENT

Mary Judith Reene Fernando and G. Ponmani

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

Today's world is absorbed with digital technology and developments, from daily bread to business, home to office implementation of electronic gadgets have become the part and parcel of the life. Mobile Wallet has changed the world's payments system by providing multiple digital services right from utility payment to e-tailing. In India, the growing adoption of the smart phones and mobile internet has given a boost to the mobile wallet industry in India. The present study is focused on preference of young customer's preference of mobile wallets gateway for cashless payment. The impact of demographic variables on the usage of Mobile wallets was analysed. A total of 105 respondents were selected from Sawyerpuram for the study. This study will help in developing appropriate strategies for mobile wallet companies to tap the potential customers.

Introduction

The smart phone has become an important part of everyday life in the current scenario. As it has become more affordable the number of smart phone users has increased dramatically. Wallet in the conventional sense of the term refers to a purse or case for safely holding money or personal information such as identity card. Digital folding or Electronic wallet refers to an electronic, internet based payment system which stores financial as well as personal identity related information. Such electronic payment system enable a customer to pay online for the goods and services, including transferring fund to other by using an integrated hardware and software system. Hardware can be a mobile or computer. Communication between the buyer and seller may happen over the internet or Bluetooth or on mobile network. Thus an e-wallet is nothing but an online money account which does not require the use of a physical card for undertaking transaction remittance.

Review of literature

1. P. SARIKA and S. VASANTHA (April 2019) have in their work on “Impact of Mobile Wallets on Cashless Transaction” published by Blue Eyes Intelligence Engineering & Sciences Publication stated that the advancement of technology and initiative by the government have added to the increase in development of mobile payment. The expansion of digital payment increased the usage of payment without physical cash transaction. After demonetization, e- payment system has gained a popular medium through which no physical presence of transactions is made, this contributes to the economic growth of the nation and cashless transaction.
2. SUJITHA.TS M.SUMANTH and ANISHA (2019) in their work on “Customer Perception Towards Mobile-Wallets Among Youth With Special Reference To Thrissur City” published by The International Journal Of Scientific Research And Engineering Volume have discussed that the growing adoption of the smart phone and mobile internet has given a boost to the mobile wallet industry in India, and the technology developments and advancements have become a part of one’s life. E-wallet has changed the global payment system by offering multiple digital services.

Statement of the problem

Mobile wallets are a type of payment service through which businesses and individuals can receive and send money via mobile devices. It is a form of e-commerce model that is designed to be used with mobile devices due to their conveniences and easy access. A mobile wallet is also known as mobile money or a mobile money transfer. The study entitled ‘Young customers preference of mobile wallets gateway for cashless payment in Sawyerpuram’ is made with a view to identify consumers preference towards usage of mobile wallets for cashless payment, consumers level of satisfaction in using mobile wallets and the problems faced by them in using mobile wallets.

Objectives of the study

1. To examine the demographic profile of respondents.
2. To identify the internal and external factors influencing mobile wallet adoption by the selected respondents.
3. To know consumer preference towards usage of mobile wallets for cashless payment.
4. To study the level of satisfaction in using mobile wallets.
5. To identify the problems faced by the customers in using mobile wallets.

Research methodology

The study is designed as a descriptive study conducted in Sawyerpuram based on both primary and secondary data.

Collection of data

Primary data are those data which are collected for the first time by the investigator, for his/her own use. It is original in character. Primary was data collected from young consumers in Sawyerpuram area.

Secondary data for this study was collected from published books, magazines, journals, websites, report, and periodicals etc...

Sample size

Data was collected from 105 young customers in Sawyerpuram area

Sampling method

Convenience sampling was adopted for eliciting information for the study. The questionnaire was used for collecting information.

Area of the study

The study was conducted in Sawyerpuram area of Thoothukudi District.

Analysis and interpretation of data

Table 1 Agewise Classification of Respondents

Age (in years)	No. of Respondents	Percentage
Less than 20	17	16.2
20-25	47	44.8
25-30	20	19
30-35	8	7.6
Above 35 years	13	12.4
Total	105	100

Source: Primary Data

It is observed that a major proportion of the respondents are aged between 20 – 25 years and thus, it is inferred that the young generation prefer the use of e- wallets.

Table 2 Medium through which customers came to know about E-Wallets

Medium	No. of Respondents	Percentage
Mass media	29	27.6
Colleagues	27	25.7
Friends	38	36.2
Family	11	10.5
Total	105	100

Source: Primary Data

It is observed in table 2 that a major proportion of the respondents (36.2%, 27.6% and 25.7%) of the respondents have come to know about e-wallet application through their friends, mass media and colleagues.

Table 3 Frequency of use of e-wallets

Usage	No. of Respondents	Percentage
Daily once	17	16.2
Daily several times	37	35.2
Weekly once	22	21
Weekly several times	13	12.4
Monthly several times	5	4.8
Monthly once	11	10.5
Total	105	100

Source: Primary Data

It is observed from table 3 that the young customers use e-wallets several times in a day.

Table 4 Ranking of reasons for usage of e-wallet (Likert Scale)

Factor	Mean score	Percentage	Rank
The availability of mobile wallet gateway service	492	17.4	I
Convenience of the mobile payment gateway of service	475	16.8	II
Satisfied with the security aspect	473	16.7	III
Good interest connectivity	467	16.5	IV
Saves time	464	16.4	V
Privacy protection	460	16.2	VI
Total	2831	100	

Source: Primary Data

It is inferred from Table 4 that the availability of mobile gateway service is ranked as the first and foremost reason for using e-wallet application.

Table 5 Main purpose of using mobile wallets (Garrett ranking)

Factors	Total	Mean score	Rank
Recharge (F1)	7611	72	I
Utility bill payment (F2)	7353	70	II
Transportation(F3)	7201	69	III
Movie (F4)	7180	68	IV
Transfer money (F5)	7149	68	IV
Shopping (F6)	7114	67	VI

Source: Primary Data

It is observed in table 5 that the customers use their e-wallets mainly for recharge of their mobiles, followed by utility bill payment, transportation, movies, money transfer and shopping.

Findings

- It is observed that a major proportion of the respondents are aged between 20-25 years, which indicates that the young generation prefers the use of e-wallets.
- It is observed that major proportions of respondents (36.2%,27.6%,25.7%) have come to know about e-wallet application from their friends, mass media and colleagues
- It is inferred that a major proportion of the respondents have started that the usage of e-wallets in for several times in a day.
- It is found that around 2/5th of the respondents have stated that they considered e-wallet application as a substitute against other method of payment.

- Half the majority has stated that their e-wallet is not as secure as their money purse while the other half says it is secure.
- Around half the majority has lost their money due to digital fraud.
- One-third majority have collected the information about usage of mobile wallets from their friends

Suggestions based on study

- ❖ Considering perceived usefulness and its effect on the intention to use e-wallet, it is recommended that the companies providing the services of e-wallet need to improve the application by making it more interesting. They may also try to highlight and provide the benefits of e-wallet.
- ❖ The e-wallet providers might try to cover small towns and villages to attract new customers.
- ❖ E-wallet payment acceptance among customers in the semi-urban area Sawyerpuram is very limited. Therefore, effective steps could be taken up to reach out to the rural area using all forms of media advertisement.
- ❖ Frauds are a matter of concern. It will be necessary to make the customer aware of risks inherent in the use of e-wallet over the internet. However, there are few basic things that can be done to reduce chances of being a victim of fraud.

Conclusion

Digitization of payments can be considered as a boon to the growth of a country's economy. With the advent of technology, smart phones, have grabbed the attention of a wide variety of customers. Usage of smart phone has become a convenient platform for user to transfer money in fraction of seconds. This study reveals that most of the people are aware of e-wallets and majority of respondents have adapted themselves to the technology of digital payment. Youngsters are more aware and responsible towards digital payments and contribute towards growth and success of making India digital. The study also shows that majority of the respondents using e-wallets are youngsters below the age of 25. In this study many have agreed that e-wallet is a useful mode of payment as it saves time and cash and has 24*7 access.

Bibliography

Books:

- ❖ Kothari, CR., Research Methodology, methods and techniques, New Age International (p) Ltd., publishers, New Delhi, 2012
- ❖ T.M.Bhasin, E-Commerce in Indian Banking, Authors Press, New Delhi

Journals:

- ❖ 1. Siddharth Gaur, Sonal Sapra (2015), “Indian Mobile Wallet Market In The Entailing India Expo”, Issues In Information System Volume 9 Online ISSDF 2278-8976
- ❖ 2. Hem Shweta Rathore (2016), in her research paper “Adoption of digital wallets by consumer” management research. Volume 8 issue 1, pp 69-75
- ❖ 3. Shalu Rat International (2016), “Mobile wallets: an upcoming mode of business transaction” journal in management and social science. Volume 4 pp 356-363
- ❖ 4. Triloknath Shukla (2016),” Discussed about mobile wallet working, types and its advantages and disadvantages”. Journal of Management Blue eyes intelligence engineering & science publication 2: pp.123-134
- ❖ 5. R. Mesh sardar (2016), in his study, entitled “Preference towards mobile wallets among the urban population of Jalgaon City” Journal of Management (JOM) Volume 3, Issue 2, July, Dec (2016), ISSN Print: 2347-3940, pp. 01-11

Websites:

- ✓ [https://economic times.Indiatimes.com/definition/e-wallets](https://economic.times.Indiatimes.com/definition/e-wallets)
- ✓ [https://en.wikipedia.org/wiki/Digital wallet](https://en.wikipedia.org/wiki/Digital_wallet)
- ✓ <https://en.wikipedia.org/wiki/Paytm>
- ✓ <https://www.phonepe.com>
- ✓ <https://w.sbsite.phone.com>
- ✓ [https://en.wikipedia.org/wiki/phone](https://en.wikipedia.org/wiki/Phone)
- ✓ [https://www.amazon.in/mazon pay](https://www.amazon.in/mazon_pay)
- ✓ <https://pay.amazon.com>



**A STUDY ON ASSESSMENT OF DTC PHARMACEUTICAL
ADVERTISEMENTS ON PATIENTS' DRUG CONSUMING BEHAVIOUR IN
THOOTHUKUDI CITY**

M. Ramalakshmi and A. Mary Anugraha

PG & Research Department of Commerce, St. Mary's College (Autonomous) Thoothukudi
Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamilnadu, India

Abstract

The study aims to the assessment of DTCA pharmaceutical advertisements in patients' drug consuming behaviour in Thoothukudi. The data for the study were collected through a survey. Both primary and secondary data were used in this study. Primary data were collected through Google forms. Secondary data were collected through various websites, magazines, journals etc. The sampling technique for this study was a convenient sampling method. In this study, 120 respondents were selected and their response was collected using Google form. Google forms received were a great source of information. The collected data were analyzed using excel. Statistical tools like Percentage analysis, Chi-square test, and Garrett ranking. This also reveals the that majority of the respondent's opinion is that the DTCA pharmaceutical advertisements are positive trend in healthcare and majority of the respondents agree that that pharmaceutical advertising rather than healthcare and building more brand more brand identity for the drugs is very helpful to improve DTCA advertisements. DTC pharmaceutical advertisements if advertised by the doctors to increase the good perception about the drugs.

Keywords:

DTCA, pharmaceutical advertisements, patients' drug consuming behaviour, DTC pharmaceutical advertisements.

Introduction

Direct-to-Consumer Advertising (DTCA) of pharmaceuticals, defined as “any presentation or promotion of the information of the prescribed medications in media to the general population”, has gained increasing attention over the past two decades, enhancing consumer access to prescription drug information. Direct-to-consumer advertising of prescription drugs is a powerful force in the health care market. Proponents claim that good direct-to-consumer advertising educates and empowers patients in their relationship with their health care providers. Is to analyse the impact of DTC pharmaceutical advertisements among consumers. Majority of the respondents opinion is that DTC pharmaceutical

advertisements are DTC is positive trend in healthcare. Building more brand identity for the drugs is very helpful to improve DTCA advertisements.

Statement of the problem

DTCA, or prescription drug advertising, is permitted by the FDA, the regulating government agency. Marketing of prescription drugs is distinctive in that potential risks to the patient in the marketing of these drugs are required to be disclosed by the FDA. However, patient perceptions about these advertisements may be distorted, given their often limited clinical understanding. In many cases, patients are either not afforded adequate time and or lack the ability to fully understand the risks and benefits of prescription drugs. Not fully understanding the side effects, complications, and the cumulative interactions of prescription drugs presents a potential risk of injury or even death for patients. DTC pharmaceutical advertisements have caused a great impact on some of the customers and made them to use the drugs without the prescription or help of a pharmacist or doctor or physician. It is in this regard the study is made to know the assessment of DTC pharmaceutical advertisement on patient's drug consuming behaviour.

Objectives

- To identify the usage level of drugs based on DTC pharmaceutical advertisements.
- To analyses the impact of DTC pharmaceutical advertisements among consumers.
- To measure the satisfaction level of consumers towards DTC pharmaceutical advertisements.

Methodology

Methodology is an essential aspect of any research. It refers to the method of generating, collecting, and evaluating the data. It enables the investigators to look at the research problems in a systematic, meaningful, and orderly way methodology comprises the source of data collection sampling design and techniques used for analysing the data. The study aims to the assessment of DTCA pharmaceutical advertisements in patients' drug consuming behaviour in Thoothukudi. The data for the study were collected through a survey. Both primary and secondary data were used in this study. Primary data were collected through Google forms. Secondary data were collected through various websites, magazines, journals etc. The sampling technique for this study was a convenient sampling method. In this study, 120 respondents were selected and their response was collected using Google form. Google forms received were a great source of information. The collected data were analyzed using excel. Used Statistical tools like Percentage analysis, Chi- square test, and Garrett ranking.

Period of the study

The study has been conducted during the period from February 2022 to May 2022.

Hypothesis

Ho: There is no significant relationship between interest in DTC pharmaceutical advertisements and giving importance to DTC pharmaceutical advertisements.

H1: There is a significant relationship between interest in DTC pharmaceutical advertisements and giving importance to DTC pharmaceutical advertisements.

Analysis and interpretation

Hypothesis: Ho: There is no significant relationship between Interest in pharmaceutical advertisements and Giving importance to DTC pharmaceutical advertisements.

Hypothesis: H₁: There is a significant relationship between Interest in pharmaceutical advertisements and Giving importance to DTC pharmaceutical advertisements.

Internet in DTC pharmaceutical advertisements/ importance giving to DTC pharmaceutical advertisements	Easy tuse	Cost	Side effects	Treatment faced on the advertised medicine	Total
It reviews the side effects	10	7	9	5	31
Interactions with other drugs/or medicines	10	8	7	10	35
Danger of the drug	7	5	5	8	25
Cost of the drug	9	8	4	8	29
TOTAL	36	28	24	31	120

$$\begin{aligned}
 \text{DEGREE OF FREEDOM} &= (r-1) \times (C-1) \\
 &= (4-1) \times (4-1) \\
 &= 3 \times 3 = 9.
 \end{aligned}$$

The above table indicates 9 degrees of freedom at 5% level of significance is 16.916. It found that calculated value i.e., 3.975 which is lesser than the table value thus the result is dependent. Hence it is concluded that there is no significant relationship between

the respondents' interest in DTC pharmaceutical advertisements and giving importance to DTC pharmaceutical advertisements. Therefore, the null hypothesis (H₀) is rejected.

Discussion

- Majority of the respondents are female.
- Majority of respondents are aged between 18 to 25 are interested in pharmaceutical advertisements.
- Majority of the respondents are salaried people.
- Majority of the respondents have only one aged person in their family.
- More number of respondents have acceptable health conditions.
- Majority of the respondents are moderately physically impaired.
- Most of the respondents are get a health checkup only when needed.
- Majority of the respondents spend below Rs 1000 on monthly medical Expenses.
- Majority of the respondents are occasionally using the pharmacy services.
- Most of the respondents are prefer a pharmacy is available near the hospital.
- Most of the respondents are agree that the pharmacy give instructions about to take amedicine.
- Majority of the respondents opinion is that DTC pharmaceutical advertisements areDTC is positive trend in healthcare.
- Most of the respondents are aware about availability of medicine to direct-to-consumeradvertising.
- Majority of the respondents have seen or heard pharmaceutical advertisements ontelevision.
- Majority of the respondents prioritize the information in DTC pharmaceutical advertisements
- Most of the respondents are will ask their doctor to prescribe to an advertised drugs
- Majority of the respondents are see most DTC pharmaceutical advertisements ontelevision.
- Majority of the respondents agree that pharmaceutical advertising rather than healthcare.
- Majority of the respondents would recommend the advertised drugs to their friends andfamily.
- Majority of the respondents are answered they tried the DTC pharmaceutical drugs.
- Most of the respondents are answered the reason for DTC pharmaceutical advertisements in the mindset is interaction with other drugs/medicines.

- Majority of the respondents are think that the health seeking behaviour of patients at the point to access to care is the advantage of DTCA pharmaceutical advertisements.
- The interest in DTC pharmaceutical advertisements and the importance given to pharmaceutical advertisements are dependent factors through the ranking method.
- Majority of the respondents perception is that Direct-to- consumers advertising (DTCA) for prescription on drugs can give patients confidence to talk with doctors about their concerns.

Suggestions

- Building more brand identity for the drugs is very helpful to improve DTCA advertisements.
- DTCA pharmaceutical advertisements is easily reach to the people then it is helpful.
- DTC pharmaceutical advertisements if advertised by doctors to increase the goodperception for the usage of drugs.
- DTC pharmaceutical through television, health magazines, health pamphlets and radioeasily reach the customers.
- DTC pharmaceutical advertisements can explain the correct and full information aboutthe drugs.

Conclusion

Pharmaceutical companies continue to increase funding for direct-to-consumer advertising. Evidence discussed above suggests that direct-to-consumer advertising stimulates patient demand for pharmaceuticals, may influence physician prescribing habits and likely increases drug spending. Consumers are aware of these advertisements, and discussions about them are becoming part of the routine provider-patient relationship. As the phenomenon of direct-to-consumer advertising evolves and the prevalence increases, providers need to continue in their role as advocates for patients. To do this effectively, providers should stay educated about new medications and the evidence for their use. Providers need to understand that patients may not have adequate information about a particular drug from advertisements, especially risks, and that specific reinforcement of the risks of a drug is key to assuring the patient makes an informed decision. Additionally, providers may want to prepare printed material for patients ahead of time for some of the most heavily advertised drugs. This may save time during the visit for other concerns and reinforce the provider's role as advocate rather than create tension during a visit. Finally, it is important to understand that patient questions and inquiries do not necessarily represent

expectations for a particular drug but rather are opportunities to strengthen the provider-patient bond. This bond remains the foundation of optimal medical care.

References

- Lal.. J Assoc physicians India . “ pharmaceutical drug promotion : how it is being practiced in India?” Published in 2001 Feb; Volume 49; Pg 266 -73
- P Nelson et al. J Urol. “Sales and science: changing patterns of pharmaceutical and medical device advertising in peer reviewed urology publications" published in 2001 Dec; Volume 166(6); Pg 2317-20; doi: 10.1016/s0022-534(05)65569-3.
- Alan Lyles. Annu Rev Public Health “Direct marketing of pharmaceuticals to consumers” published in 2002; Volume 23; Pg 73- 91. Doi: 10.1146/annurev.Publhealth.23.100901.40537. Epup 2001 Oct 25.
- John E Calfee. Pharmacoeconomics. “ The role of marketing in pharmaceutical research and development” published in 2002; volume 3; 77-85. Doi: 10.2165/00019053-200220003-00008.
- Barbara Mintzes. CMAJ “How does direct-to-consumer advertising (DTCA) after prescribing? A survey in primary care environments with and without legal DTCA" Published in 2003 Sep 2; volume 169 (5); Pg 405-12.
- Woodie M Zachary, Arch Intern Med. "clinicians’ response to direct-to-consumer advertising of prescription medications” published in 2003 Aug 11-25; Volume 163(15); Pg. 1808-12. Doi: 10.1001/archinte.163.15.1808.
- Elizabeth Murray et.al J Am board fam pract. “Direct-to-consumer advertising: public perception of its effect on health behaviours, health care, and the doctor-Patientrelationship” published in 2004 Jan-Feb 2004; Volume: 17(1); Pg. 6-18. Doi: 10.3122/jabfm17.1.6
- Barbara Mintzes et.al. Res Social Adm Pharm. “Introduction of direct-to-consumers advertising of prescription drugs in canada: an opinion survey on regulatory policy” published in 2005 Jun; 1(2) outcomes. Doi: 10.1016/j.sapharm.2005.03.008.
- Mansi B Shah et.al. Res Social Adm Pharm. “Direct-to-consumers advertising and patient- physician relationship" published in 2005 Jun; Volume: 1 (2); Pg. 211-30. Doi:10.1016/j.sapharm.2005.03.008
- Gregory A Abel et.al. J Clin Oncol. “Cancer related direct-to-consumer advertising: awareness,perception, and reported impact among patients undergoing active cancer treatment “ published in 2009; Volume: 27(25); Pg.4128-7. Doi: 10.1200/JCO.2008.20.6599.

- Jennifer Gerard Ball et.al. Health Mark Q “Consumer young and Old: segmenting the target markets for direct-to-Consumer prescription drug advertising “ published in 2011 Oct. Volume: 28(4); Pg. 337-53. Doi: 10.1080/07359683.2011.623112.
- Tim K Mackey et.al. Res Social Adm Pharm. “Prescription drug coupons: evolution and need for regulation in direct-to-consumer advertising" published in 2014 May-Jun; Volume: 10(3); Pg.588-94. Doi: 10.1016/j.sapharam.2013.08.002.
- Mina Lee et.al. J Health Commun.”Factors influencing consumers' attitudinal and behavioural responses to direct- pro-consumer and over-the-counter drug advertising" published in 2015 Apr; Volume: 20(4); Pg. 431-44. Doi: 10.1080/10810730.2014.965367. Epub 2015 Mar 2.
- Hisen-Yen Chang et al. J Med Care “Effect of direct-to-consumer advertising on Statin use in the United states” published in 2017 Aug; Volume: 55(8); Pg. 759-764. Doi: 10.1097/MLR.0000000000000752.
- Young-Mo yang et.al. PLoS One. “A survey of perceptions and attitudes about direct to consumer advertising of prescription drugs among college students in South Korea.” Published in 2018 Jul; Volume: 13(7):e0201108. Doi: 10.1371/journal.pone.0201108.ecollection 2018.
- Jessica T DeFrank et.al. Health Commun: “Direct-to-Consumer Advertising of Prescription Drugs and the Patient-Prescriber Encounter: A Systematic Review" published in 2020 May; Volume: 35(6); Pg.739-746. Doi: 10.1080/10420236.2019.1584781. Epub 2019 Apr 11.
- Anna A Filipova J Healthc. Qual .”Relationship of Direct-to-consumers Advertising to Efficiency of Care, Quality of Care, and Health Outcomes" published in 2020; Volume:42(3); e18-e31. Doi: 10.1097/JHQ.0000000000000226.

A STUDY ON CONSUMER PERCEPTION TOWARDS ONLINE SHOPPING VIA MEESHO

D. Daisy Bai and T.Vijaya Lakshmi

PG and Research Department of Commerce, St. Mary's College (Autonomous), Thoothukudi
Affiliated to Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India.

Abstract

The study enables the readers to have a clear information about the consumer perception towards online shopping via Meesho. The data analysis is conducted with the help of the suitable statistical tools. The conclusion of the study is inferred from the findings and suggestions. The introduction explains the main aim of the study.

Introduction

In today's era of globalization not only the nations in the world and thereby their communities have come closer to one another but also most of the sector have undergone significant changes. Purchasing product or services over the internet, online shopping has attained immense popularity in recent days mainly because people find it convenient and easy to shop from the comfort of their home or office and also eased from the trouble of moving from shop to shop in search of good of choice.

In the present scenario, the biggest market for this (online shopping) business is by highly educated people, mostly. This system has been designed keeping in mind all the aspects such as loading the data, complexity, and maintaining the security of user credentials. Here in this system, complexity refers to the total number of features being provided to users, and their smooth arrangement and functioning required.

Review of literature

Vyshnosri Pendyala (2021) on her study "A Study on factors influencing the Consumer Buying Behaviour with respect to Meesho" explained that a few years ago, industries like beauty and personal care thrived more on the store experience of touch, feel and smell. We never knew that industries like beauty and personal care would probably make their way into digital platforms. We are all well-known with the fact that the evolution of e-commerce sites has made lives easier, simpler and time-saving in the world. Through this the changing trends have proved that the beauty and personal care industries are no exception to the digital mode. This paper explains about how did the e-commerce platforms have changed the way consumers choose online medium of shopping over the offline and the factors affecting the buying behavior of the

consumers regarding an online platform, Meesho, with respect to their purchase of cosmetic and beauty products.

Akshay Kumar (2021) on his study "A Study on Factors Influencing the Consumer Buying Behaviour and Satisfaction in Online Shopping of Cosmetic Products with Respect to Meesho" stated that the Indian beauty industry is growing, and it is projected to become one of the top 5 global markets according to revenue. The study is aimed at understanding the effect of pricing, discounts and advertising on purchase of cosmetic online. A survey of 30 respondents was analyzed using Google form. The results show that pricing, advertisements and discounts influence the purchase behaviour of consumers while purchasing cosmetics online. The research also explains how the e-commerce platforms have changed the way consumers choose online medium of shopping over the offline and the factors influencing the consumer buying behaviour and satisfaction of the cosmetics and beauty products regarding an online platform, Meesho. Though Meesho has witnessed exceptional growth in the Indian cosmetic industry, the attractiveness of the industry tempts many competitors which make it important for Meesho to strategize market domination by analyzing consumer buying behaviour and by satisfying it.

Statement of the problem

A few years back online shopping was known to very few, however over the past couple of years, or probably the last decade saw a tremendous increase in the number of people who buy products online. Today from groceries to cosmetics, everything we need for daily life is bought online. This is because of a variety of reasons including the availability of stock which may vary in a physical store. Convenience also matters. Amidst a busy schedule, people find it extremely useful to buy their necessities from online stores. Whether it is BB creams, perfumes, makeup tools, or lipsticks, the best online beauty stores offer endless choices to customers. It is easier to shop online than searching for our favorite foundation shades in local stores in this digitalized world. Furthermore, online beauty stores have a wide range of products that cater to the tastes and requirements of every individual.

Objectives of the study

- ❖ To know the consumer's perception over Meesho products.
- ❖ To determine the factors influencing the choice of consumer towards online shopping.
- ❖ To determine the impact of advertising on consumer's purchasing decisions with respect to Meesho.

- ❖ To study the most widely used products from Meesho.
- ❖ To examine the satisfactory level of Meesho products among the consumers.
- ❖ To suggest some new strategies to be incorporated to enhance customer satisfaction.

Methodology

Primary data

Primary data were collected by framing a questionnaire. A set of questionnaires was prepared through google forms and was sent to the public to collect data related with the preference of consumers towards online shopping.

Secondary data

The secondary data were collected from books, journals, Newspaper, magazines and through various websites.

Period of study

The survey conducted among citizens in Thoothukudi city during a period of 4 months from February 2022 to May 2022.

Area of the study

The study area is limited to Thoothukudi City. It is identified as one of the fastest developing city in India. It is a port city and an individual city of the Indian State of Tamil Nadu. It is known as pearl City due to the pearl fishing carried out in the town.

Sampling design

The data collected are original in nature. Convenience sampling method was adopted and 95 respondents who were using online shopping from various parts of Thoothukudi city were selected. The questionnaire was distributed to collect the primary data.

Analysis and interpretation

1. MOST PREFERED PRODUCTS FROM MEESHO

ITEMS PURCHASED	NO OF RESPONENTS	PERCENTAGE
Cloths	39	41
Sports item	12	13
Bags	14	15
Accessories	30	31
TOTAL	95	100

2. SOURCE OF INFORMATION

SOURCE	NO OF RESPONENTS	PERCENTAGE
Social media	47	50
Advertisement	21	22
Friends	19	20
Self	8	8
TOTAL	95	100

3. REASONS TO CONTINUE WITH MEESHO

REASONS	RESPONDENTS	PERCENTAGE
Good quality of products	41	43
Good sales services	16	17
Convenient and clear website	24	25
Others	14	15
TOTAL	95	100

4. FACTORS INFLUENCING THE DECISION TO BUY GOODS FROM MEESHO

FACTORS	NO OF RESPONENTS	PERCENTAGE
Social media	32	34
Quality	12	12
Guarantee& warrantee	17	18
Availability of various brands	35	36
TOTAL	95	100

Chi- square test

Chi-Square test is applied to find out whether there is any significant relationship between monthly income and amount spent on online shopping .

The χ^2 test is used to understand the accuracy of the variables used and to find out whether they are independent or dependent. It is applied to validate the result of the study.

Null hypothesis: H0

There is no significant relationship between monthly income and amount spent on onlineshopping.

Alternate hypothesis: H1

There is a significant relationship between monthly income and amount spent on onlineshopping.

MONTHLY INCOME AND AMOUNT SPENT ON ONLINE SHOPPING

MONTHLY INCOME	AMOUNT SPENT ON ONLINE SHOPPING				TOTAL
	Rs.100-500	Rs.500-1000	Rs.1000-3000	Above 3000	
Less than 2000	2	5	5	3	15
Rs.2000-5000	6	7	2	4	19
Rs.5000-10000	6	4	2	5	17
Rs.10000-40000	8	6	7	7	28
Above 40000	5	5	3	3	16
TOTAL	27	27	19	22	95

Degree of freedom = (r-1)

$$x (c-1)$$

$$= (4-1) x (5-1)$$

$$= 3 x 4$$

$$=12$$

Inference

The table value of X^2 at 5% level of significance for 12 degrees of freedom is **21.02**. The calculated value is **6.23**. Thus null hypothesis is **Accepted**, and conclude that there is no significant relationship between the monthly income and amount spent on online shopping.

Findings

- ❖ The majority 36% of the respondents are influenced by the availability of various brands at reasonable price.
- ❖ The majority (50%) of the respondents came to know about Meesho through Socialmedia.
- ❖ The majority (41%) of the respondents have purchased cloth items.
- ❖ The majority (43%) of the respondents feel that Meesho has good quality of products and that is the reason to continue their shopping from Meesho.
- ❖ Majority of (61%) of the respondents prefer cash on delivery.

Suggestions

- Meesho should cater to a variety of people by offering numerous cosmetic

brands that are reasonably priced, and also high-quality expensive brands that cater to different set of people. The goal of customers is to find all their cosmetic online rather than going to malls to find one thing that they could not find online. Hence, it is important for Meesho to list versatile brands that has products to suit customer needs.

- A good pricing plan is essential for attracting customers. Customers look for good pricing, economical pricing, the cheapest price, and exclusive pricing before ordering products online. Customers are always on the search for buy one get one free offers, flat discounts and other special offers. Meesho should continue to offer such appealing bargains to keep customers interested and returning for more.

Conclusion

Technology has made considerable progress in providing consumers with a better online shopping experience over the years and will continue to do so in the future. People have predicted that internet shopping may overtake in-store purchasing due to the rapid increase of products and brands. While this may be true in some cases, there is still a demand for brick and mortar businesses in market locations where customers prefer to see and touch the products they are purchasing. The advent of online purchasing, on the other hand, has resulted in a more knowledgeable customer who can browse around with relative ease and without wasting a lot of time. In exchange, online buying has provided opportunities for numerous small businesses that would not otherwise exist.

Reference

- Philip Kotler, “Marketing Management” 12th edition, Prentice Hall of India.
- Suja Nair, “Consumer Behaviour in Indian Perspective”, First Edition 2003, Himalaya Publishing House Pvt.Ltd. Mumbai.
- **Vaishnosri Pendalaya; Jai Narain Vyas University; Seventeenth AIMS International Conference on Management; “The Impact of Shopping Environment on Customer Satisfaction”.**
- www.nextbigbrand.in



**“A STUDY ON EMPLOYEE WELFARE FACILITIES AMONG EMPLOYEES
IN VELAN SALT PRIVATE LIMITED, THOOTHUKUDI”**

M. Fatima Lucia Sheeba and R. Deepika

Department of Human Resource Management, St. Mary’s College (Autonomous), Thoothukudi.

Affiliated to Manonmanium Sundaranar University, Tirunelveli, Tamil Nadu, India

ABSTRACT

Employee welfare means anything done for the comfort and improvement of the employees over and above the wages paid which is not necessary for the industry. The basic purpose of employee welfare is to enrich the life of employees and keep them happy.

An employee spends at least half their time at work or getting to it, or leaving it. People are entitled to be treated as full human beings with personal needs, hopes, and anxieties. The logic behind providing welfare schemes is to create an efficient, healthy, loyal, and satisfied labour force in the organization. The purpose of providing such facilities is to make their work-life better and also raise their standard of living.

This project is on basis of work conducted on Employee Welfare with reference to **Velan Salt Private Limited Thoothukudi.**

INTRODUCTION

Employee welfare means the adoption of measures to promote the physical, social, psychological, and general well-being of the working population. Welfare work in any industry aim, or should aim, at improving the working and living conditions of workers and their families. The concept of employee welfare originates in the desire for a humanitarian approach to the sufferings of the working classes. Later, it became a utilitarian approach to the suffering of the working class. Later, it became a utilitarian philosophy which worked as a motivating force for labour and for those who were interested in it. Employee Welfare is an important fact in industrial relations extra dimension, giving satisfaction to the worker in a way that even a good wage cannot. With the growth of industrialization and mechanization, it has acquired added importance. The worker in industry cannot cope with the pace of modern life with minimum subsistence amenities. He needs an added stimulus to keep body and soul together. Employers have also realized the importance of their role in providing these extra amenities. And yet, they are not always able to fulfil workers' demands, however

reasonable they might be. They are primarily concerned with the viability of the enterprise.

REVIEW OF LITERATURE

- Punekar, Deodar and Sankaran (2004) “Employee Welfare, Trade Unionism and Industrial Relation” stated that employee welfare is anything done for comfort and improvement, intellectual, and social-wellbeing of the employees over and above the wages paid, which is not a necessity of industry.
- According to Todd (2009), “Employee Welfare means anything done for comfort and improvement, intellectual or social wellbeing of the employees over and above the wages paid which is not a necessity or industry.
- According to Arthur James, “Employee Welfare measures for the statutory and voluntary betterment of the employee”
- According to Prof. H.S. Kirukaldy. “The whole field of welfare means anything done to combat these and to help them to achieve a wider sense of frustration of industrial workers, to relieve them of the personal and family worries, to improve their health, to offer them some sphere in which they can excel in other and to help them to a wider conception of life.”
- According to N.M. Joshi, “Welfare work covers all the efforts which employers make for

Statement of Problem

Employee welfare measure provide staff with improved physical and mental health and foster a safe working atmosphere, facilities such as accommodation, medical care, and schooling and leisure facilities for the families of staff help raise their living conditions. It allows staff to concentrate more on work and thereby increase productivity. By having healthcare services, workers provide a stable workforce. Workers are deeply involved in their roles and work with a sense of engagement. The welfare measures of employees increase organizational productivity and promote sound industrial relations, maintaining industrial peace.

OBJECTIVES OF STUDY

Primary Objective

To determine the awareness and level of satisfaction of the employees towards the welfare measures. Working conditions and social security schemes are provided by the organization for the employees.

Secondary Objective

- To evaluate the level of employee satisfaction.
- To find out the employee welfare adopted by the company.
- To know the working environment of the employees.
- To find out the awareness among employees about employee welfare measures.

METHODOLOGY SAMPLE DESIGN

Population

There are a total of 280 employees working in the organization.

Sampling size

Out of the total population, for the study, a sample size of 100 respondents was selected.

Sampling area

The research was conducted at Velan Salt Private Limited.

Sampling Procedure

The research was done in the survey in accordance to the convenience of the employee. The sampling technique used was convenience sampling.

Data collection

Primary data

Primary data refers to collection of first-hand data. The information was collected from respondents by administering a collecting questionnaire and also through observation, interview discussion with Management.

Secondary data

A part from primary data collected through text books, the records of Velan Salt Private Limited, journals from libraries, academic reports and the internet is used for a study.

STATISTICAL TOOLS USED

Percentage analysis.

Graphical analysis.

PERIOD OF STUDY

The period was conducted from the period February 2022 to May 2022.

DATA ANALYSIS AND INTREPRETATION

Happiness level of working in this organization

S.NO	options	No. of respondents	Percentage
1	Happy	50	100
2	Not happy	-	-
TOTA	L	50	100

Inference

From the above chart it can be inferred that 100% of employees are happy working in this organization. Majority 100% of employees are happy with their job in this organization.

Satisfaction level in the Working Environment

S. No	Satisfaction Level	No. of respondents	Percentage
1.	Highly satisfied	35	70
2.	Satisfied	13	26
3.	Neutral	2	4
4.	Dissatisfied	0	0
Total		50	100

Inference:

From the above chart it can be inferred that 70% of respondents are highly satisfied with the working environment and 26% of respondents are satisfied with the working environment and 4% of respondents have a neutral opinion about the working environment.

Majority 70% of respondents are highly satisfied with the working environment.

Satisfaction Level with Medical Benefits

S. No	Satisfaction Level	No. of respondents	Percentage
1.	Highly satisfied	21	42
2.	Satisfied	21	42
3.	Neutral	8	16
4.	Dissatisfied	0	0
Total		50	100

Inference: From the above chart, it can be offered that 42% of respondents are highly satisfied with medical benefits and 16% of respondents have a neutral opinion.

Majority 42% of respondents are highly satisfied with medical benefits.

Satisfaction with Welfare Facilities in Organization

S. No	Particulars	Highly satisfied	Satisfied	Neutral	Dissatisfied	Score
1.	Drinking water	80	10	6	4	3.66
2.	Canteen	23	70	5	2	3.14
3.	Rest Room	38	52	7	3	3.25
4.	Lunch room	20	60	6	4	2.76
5.	Wash room	36	49	11	4	3.17

Inference

From the above chart, it can be inferred that the majority of respondents assume that drinking water, washing room, canteen and launch room are satisfactory.

The study reveals that respondents ranked highly satisfied with drinking water, followed by the rest room, washing room, and canteen.

Satisfaction Level with Conveyance Allowance

S.NO	Satisfaction Level	No. of respondents	Percentage
1.	Highly satisfied	17.5	35
2.	Satisfied	18	36
3.	Neutral	14.5	29
4.	Dissatisfied	0	0
Total		50	100

Inference

From the above chart, it can be inferred that 35% of respondents are highly satisfied with the conveyance allowance and 36% of respondents are satisfied with the conveyance and 29% of the respondents have neutral option with the conveyance allowance.

Majority 36% of respondents are satisfied with the conveyance allowance.

FINDINGS

- 100% of employees are happy working in this organization.
- The study reveals that (70%) of respondents are highly satisfied with the working environment.
- It is found from the study (42%) of respondents are highly satisfied with medical benefits.
- The study that respondents ranked highly satisfied with drinking water, followed by the rest room, washing room, and canteen.
- It is found that (36%) of respondents are satisfied with the conveyance allowance.

SUGGESTIONS

- The company has to improve the medical benefits.
- Medical physicians may be appointed within the company to take care of employees during the working hours
- The conveyance allowance has to be improved in the company
- The overtime allowance can be increased in the company

- Companies should improve the leave policy.

CONCLUSION

Human resources play an important role in any area organization. Employee welfare facilities are a concern for this department. If the employee is happy with welfare facilities, the productivity of that organization can be increased. Based on the study of facilities in Velan private salt, it is clear that the company is very keen on promoting all welfare facilities. The respondents were satisfied with the welfare measures like quality first aid appliances, facility for training and education, adequate travel allowances, adequate social security measures, maintenance of rest and lunch rooms, adequate production incentives for controlling and reducing stress. This study shows that the employee working in Velan's private salt limited is satisfied with welfare measures.

REFERENCE

Journals

- V.S.P. Reo, Human Resource Management, textbook, New Delhi, 2004.
- Yadav. L.B., Social and Labour Welfare, Anmol Publications, New Delhi, 2000.
- Venkata Ratnam C.S. Industrial Relations, Oxford University Press, New Delhi, 2006.
- Sivarethnamohan, R. Industrials, and Labour Welfare, text box, New Delhi 2010

Websites

- www.google.com
- www.scribd.com
- www.wikipedia.com
- www.slideshare.com
- www.velansaltprivateltd.com