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COVID-19 Impact: Strategies for Indian Educational Institutions

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Abstract

The education sector had been disrupted significantly by the pandemic which acts as a crucial determinant in a country's economic future. This has turned out to be an important time for education sector board exams, nursery school admissions, and entrance. Entrance exams for various university admissions and competitive exams etc. are conducted during this period. The school structure and learning including teaching and assessment methodologies were affected first by these closures. In addition to lost opportunities for learning, students do not have a great access to healthy meals during this time. They are also been brought to severe economic and social stress. The positive and negative impacts of Covid-19 on education have been discussed in this paper in detail. Some fruitful suggestions have also been pointed at, to carry out educational activities during this pandemic situation.

Keywords: Education sector, E-learning, Teaching methodology.

Introduction

Schools and colleges are to shut down temporarily by the state governments due to the coronavirus pandemic. In the present scenario, re-opening of schools and colleges remains an uncertainty. Entrance test of a number of universities and competitive exams are being held at this period of time. It is definitely a crucial time in the educational sector. An immediate solution to the coronavirus is inevitable. If the schools and colleges continue to remain closed for long. Instead of having short term impact in India there



would be far reaching social and economic consequences. Covid-19 has a significant impact on Indian educational sector. Due to prolonged suspension of classes academic modules of schools and higher educational institutions have been disrupted.

Significance of the study

We could observe the impact of Covid -19 pandemic in all sectors around the world. The educational sectors in India and the world got affected adversely due to this pandemic. A worldwide lockdown has been enforced which indeed created bad effects on the life of students. It is a shocking fact that around thirty two crore learners did stop going to schools and colleges to learning. The educational activities have come to a halt in India. What Covid -19 outbreaks taught us is that changes are inevitable. Changes do work as a catalyst to growth for the educational institutions and to use various platforms with technologies. The educational sector is really straining to survive the crisis using a different approach and to digitalize the challenges to completely remove the threats of the pandemic.

Potential and present impact of Covid-19 on the educational Sector

Corona pandemic has laid its impact on a number of schools around the country in this crucial period of academic life in such a way that it could last for several weeks from now. In the teaching and learning areas public schools and low-fee private schools are facing a bigger impact in delivering lessons. In the absence of schools providing mid-day meals the parents are facing huge economic burden in a country like India. Private schools which have adequate resources should try their hand in minimizing the impact on teaching-learning process. But, they could also face severe issues in cash flow if there is a delay in payment. Counseling operations of students also get affected.

In the present situation, most of the higher education institutions are not fully equipped enough in the implementation of online learning due to the constraints in technology, digital content and delivery capabilities. In the

coming academic year, Covid-19 pandemic is going to lay a big impact on admission to higher education institutions. Placements and internships for students are also going to be affected with the delay of companies in the onboarding of students. It is expected that the Covid-19 pandemic is to have far reaching consequences like decreased global student mobility, difficulty in faculty recruitment etc. All the major entrance examinations have been postponed including engineering, medical, law, agriculture etc. This situation can be a dangerous ringing of alarming bell mainly in private universities. Some faculty members and employees may face salary cuts and increments.

In the lockdown period technology may take up an important role like 'work from home' and 'study from home'. In India, online teaching methods could be adopted by some private institutions. It would be difficult for low income private and government schools to cope up with online teaching methods. As a result, there is a chance of complete shut down due to non-accessibility to e-learning solutions. In addition to learning opportunities, students may also miss their daily mid-deal meals and it will result in social and economic stress.

Higher education sector gets disrupted which paves way for an impact on the economic future of the country. Various students from India have taken admissions abroad in countries like the U.S, the U.K, Australia, China etc. These countries have been badly affected because of Covid-19. There is also a possibility for students not taking up admissions in the future. And, if the situation persists for a long time there shall be a decline in the demand for higher education at the international level also.

Employment is another major concern. Graduate students may have fear in their minds of job offer withdrawal due to the existing situation from the corporate sector. And, we could not ignore the fact technology playing a significant role in the educational system and the current situation's demand is only this.



Popularity will be gained by such a system which blends traditional classroom teaching and online exercises. There are institutions which run or cater to only practical training classes. These institutions will emerge by aiming at the students who have learnt theory from somewhere else in the online platform. There will be a number of need based short term schedules apart from usual three year or six semester programs. In recruitment, priorities will be given to employees in their skills than approved degrees.

Important challenges and constraints for Educational institutions, Teachers and Students

The teachers and students who participate in online classes need to have good internet connectivity at their homes. The quality of connectivity is also important and video conferencing should also be used. Online classes or virtual medium go beyond replicating classroom.

All the teachers who take online classes should have a requisite training. Teachers would be required to go for a re-orientation of their class delivery techniques by giving frequent assignments to understand the pace of all the students.

In order to have a good accessibility to online classes, both teachers and students ought to have devices like smartphones, laptops, desktops tablets etc. Getting access to these devices greatly depend on the economic status of child's family.

At present, there are a good number of education technology companies with online teaching platforms and diverse content. These institutions relatively focus mostly on the urban areas catering to the rich sections of society. There is charging of additional fee to cover up the subscriptions and set up costs.

A well-equipped strategy is inevitable to crisis management and to building a long term resilient Indian education system:

There should be certain immediate measures for ensuring a kind of continuity in learning at universities and government schools. We have to

adopt open source digital learning solutions and learning management software to take classes online. There should be development of inclusive learning solutions especially, for the marginalized and vulnerable. There is a clear cut increase in the use of mobile internet users in India which is expected to be 85% by 2024. Even, the remotest parts of the country are enabled a universal access and personalization of education by technology.

We need strategies to prepare and equip the higher education sector to the evolving demand-supply trends across the globe particularly in relation to the global student mobility and faculty and to improve the quality and demand of higher education studies in India. We also need immediate measures to alleviate the pandemic effects on job offers, internship programs and research projects. It is also important to re-check the existing delivery and pedagogical methods in school and higher education by integrating classroom learning with modes of electronic learning in building a unified learning system.

Indian traditional knowledge is famous world over for its innovations in science, values and benefits to developing sustainable technologies and medicines. At this time of grave crisis, what we need is a well-rounded and effective educational practice to build the capacity of young minds. It will enable them to develop skills which drive their productivity, employability, health and well-being in the future decades.

Zoom, Google meet, Cisco WebEx etc. are different methods of online classes. Zoom is considered the leader in modern enterprise video communications. It has a relatively easy and reliable cloud platform for video and audio conferencing, chats and webinars. Business and organizations are helped by zoom in such a way by bringing in their teams together in a frictionless environment to get more things done. Google, a video communication device was developed by Google. It is one of the two apps that constitute the replacement for Google Hangouts, and the other being Google Chat. Cisco WebEx is helping us meet, communicate, and collaborate from



remote locations without the need to travel. This helps us devote more time for making life better for children. It also offers integrated audio, video and content sharing with highly secure web meetings from the Cisco WebEx cloud.

When the students have a sense of comfort they could view the video lectures repeatedly. Lesson benefits can be drawn in from the best educators of the country. Online teaching is viewed and understood as a public exercise .So, only those who have fine teaching skills will survive.

Government facilities for the improvement of educational sector

E-learning through web and video courses is provided by The National Programme on Technology Enhanced Learning (NPTEL). DIKSHA, a National Digital Infrastructure for Teachers lays its focus on teacher's requirements, lesson plans, concept videos, worksheets and so on. We can see a number of universities and educational institutions experimenting with video lectures and webinars.

There is a blessing for us at the global level like MOOC programs such as edX and Coursera which is like a home to more than 20 million learners. More than 60 million people have already started learning Coursera. There are a good number of courses ranging from traditional subjects to latest areas of artificial intelligence. And, to our attention there are many of them who do not charge fee except for certification.

Twenty percent credit for online programs is held through the SWAYAM platform that has already been issued directions by AICTE. UGC has also issued a similar direction to make use of SWAYAM online courses to enable students to transfer credit in colleges.

Possible alternatives for un-interrupted education during COVID-19

- It is necessary to go for expiration by seeking the help of power supply, digital skills of teachers, students and internet connectivity.
- We should include distance learning programs for students coming from low income groups or with a presence of disability.

- Due support ought to be provided for the digitalization of teachers and students and digital learning platforms should also be included.
- Proper measures should be taken without fail to mitigate the effects of the corona pandemic on job offers internship programs and research projects.
- In the present education system, educational technology reforms should be focused at the national level. We cannot close our eyes to the fact that educational reforms are utmost needed at this difficult time of crisis to build the capacity of young minds.

Conclusion

It is important to note the fact that even when in the midst of social distancing, self-isolation and online studies; students are facing unparalleled levels of anxiety. They are not able to hang out with their friends, peers and classmates. Children are also not being able to channelize their energy on sports. As educators, we should take up the responsibility to make the students cope up with appropriate mechanisms and to help them to building and strengthen their connections for each other.

Technology can be used in an effective manner by reducing the spending of time and by making the teachers take up tasks like paper setting, evaluating and grading. It would help the teachers to lay their focus more on teaching and course improvement. To keep the students engaged in interaction and engagement in physical classrooms should be built. There is a high degree of creativity among students and teachers in physical classrooms. Educators should bring in a lot of technological innovations to boost the element of integration and collaboration in their e-learning modules. There is a need to incorporate social distancing principles. New social distancing rules will necessarily bring about some revolutionary changes in imparting education. Social distancing is going to be a norm for all activities.



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A Study on Customer Preference towards the Service Quality of Internet Banking

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Abstract

The success of Internet Banking not only depends on the technology but also to a large extent, it depends on the attitude, commitment and involvement of operating at all levels. The expectation and experience of the customers, based on how far the customers reap the benefits from Internet banking services, is another yardstick. It is crucial for banks that offer internet banking services to periodically and consistently measure the satisfaction of their customers. Hence, the present study is quite relevant and timely from the point of view of both academics and banking industry. This study focuses on preference of people using internet banking. This study was conducted on the people in Pala municipality.

Keywords: Internet banking, Banking services, Customer preferences, Service quality

Introduction

Most of the business organizations have been swiftly adapting to the advancement in technology and internet facility. Adopting new internet applications have resulted in enhancement of efficiency and quality of service provided as well as attracting prospecting customers. Thus, evolution of internet facility had transformed entire business world around the globe and the same has happened in banking sector. Banking sector have always been on the top in using ICT in its business arena. In the last thirty years, the financial industry has seen dramatic and revolutionary changes. Globalization, advancement in technology and integration have transformed banking sector



in last two decades worldwide and compelled the regulators to deregulate financial system. Deregulation resulted into enhancement of banking customer base, mark-able presence of banks into new markets with modern technologies involved in individual as well as institutional customer interaction. ICT facilitates conventional financial institution to inflate their business to and through internet facility. Internet Banking refers to systems that enable bank customer to get access to their accounts and general information on bank products and services through the use of bank's website, without the intervention or inconvenience of sending letters, faxes, original signatures, telephone confirmations. Pikkarainen et al. (2004) defines Internet Banking as an "Internet portal, through which customers can use different kinds of banking services ranging from bill payment to making investments". Thus Internet Banking is the use of internet by banking customers for transacting their banking transactions. In other words, it is the use of internet by bank to deliver banking services to customers irrespective of their geographical location. According to Sathye (1999), internet facility transformed the financial sector in terms of packaging, delivery and consumption of products and services. Kamal, 2005 and Nath, Shrick & Parzinger, 2001 described internet banking as a valuable and influential tool to economic development and growth, to promoting innovations and to improving competitiveness. Banking and other financial institutions adapted e-banking technique to enhance their efficiency, service quality and customer base. Today; internet has evolved as the prime medium of service delivery for various financial institutions. Earlier to this, customers were not able to perform their personal and commercial banking transactions with such fast speed as they can perform with internet banking. The internet facility enables banks to perform their traditional activities on a virtual medium, which they use to perform earlier in their branches.

Initially, financial institutions were enthusiastic on identifying the advantages of internet and were one of the initiators to adapt e-commerce. After few years down the line, they transformed their websites from only

informational websites to dynamic transaction- oriented websites that are providing 'anytime anywhere' banking services.

Besides having a large internet user population, most of banks are still having a wide branch network that delivers same products and services that are provided online as well. Therefore, there must be few opportunities to address this service overlap existed between two kind of distributional channels. The banking institutions were quick to imbibe the technological innovations taking place in the industry; so much so that it can be said that the banking industry is completely revolutionised post 1991. The need for change had been experienced for quite some time but the initiative of technological upgradation was taken by the private sector banks that can be said to have revived the industry. The success of Internet Banking not only depends on the technology but also up to a large extent on the attitude, commitment and involvement of the operating at all levels and how far the customers reap the benefits from Internet banking services. It is crucial for banks that offer internet banking services to periodically and consistently measure the satisfaction of their customers.

Thus the study is stated as a study on customer preference towards internet banking service quality with special reference to Pala municipality.

Objectives of the Study

- 1) To identify the factors affecting customer satisfaction on internet banking service quality.
- 2) To evaluate the satisfaction level of internet banking users.
- 3) To examine the major problems faced by users while using internet banking services.
- 4) To identify the level of trust and awareness level on the security features of internet banking.



Review of Literature

Rahmath Safeena (2011) found that banks need to highlight the benefits of internet banking, make it easy to use, and enhance internet banking security to improve consumers' trust. They also need to make the consumers aware about the system by providing them the details of the benefits associated with it and also ensuring safety of the system. **Dixit N. & Datta S. K., (2010)** in their study, they found that country like India, there is need for providing better and customized services to the customers. Banks must be concerned the attitudes of adult customers with regard to acceptance of online banking. **Khan M.S. & Mahapatra S.S., (2009)**, explored the service quality of internet banking operative in India from customer's perspective. It is observed that customers are satisfied with the reliability of the services provided by the banks but are not very much satisfied with the measurement 'User friendliness'. **Lio Z. & Cheung M.T., (2008)**, the study conclude that Internet banking to become significantly more important in the progressively technology and information-based global economy. Financial institutions must therefore deliver ever-better service quality in their online operations and products. **Srivastava, (2007)**, reveals that the perception of the consumers can be changed by awareness program, friendly usage, less charges, proper security, and the best response to the services offered. **Sohail et al (2007)**, the results of the factor analysis in the present study produced three dimensions. While this result reveals that "efficiency and security" is the most influencing factor in users' evaluation of service quality, the factor group produces a combination of diverse measures which may be due to the highly correlated nature of service quality dimensions. **Prabha, Divya et al, (2006)**, in their study revealed that even though customers are more satisfied with the competence, capability and customer-oriented dimensions of service quality, banks yet need to focus on the aspects of communication, innovation and promptness of service.

Research Methodology

The study is descriptive in nature. The paper makes use of data from primary and secondary sources. Secondary data was collected from various

resources like articles, websites, books etc. A municipality from central Kerala, Pala is selected for study. Accordingly, the primary data was collected from the respondents, who are the internet banking users in Pala municipality. Sample size was 50, who were selected using convenience sampling method. The data collection instrument was a structured questionnaire which was distributed to the respondents.

The study was conducted during the period from 1st February 2019 to 30th April 2019. The collected data was analysed using Excel, percentage analysis, average and weighted average is used for analysis. The major findings are as follows.

Findings

(a) Demographic Representation

- The majority (30%) of internet banking users belong to the age group between 21-25
- Among the respondents 42% are males and about 58% are females
- Among the respondents 48% were married and 52% were unmarried
- When the respondents were grouped on the basis of their educational qualification the majority of them were graduates (34%), PG and professional degree holders accounted for 32% and 22% respectively.
- The job wise classification of respondents revealed that the majority of them are private sector employees (34%), 24% are working in public sector and while 22% are professionals, 20% are unemployed.

(b) Internet bank usage

- Among the respondents a majority of them use internet banking i.e, 88% and 6 were non internet banking users with a percentage of 12% of total respondents.



- Among the respondents a majority of them use internet banking i.e, 88% and 6 were non internet banking users with a percentage of 12% of total respondents.
- Out of 44 respondents 40.90% were using the internet banking services once per week. Another good portion i.e., 36.36% of the respondents were using internet banking services once per month. 18.18% of respondents were using internet banking services around 2 to 3 times in services.

(c) Satisfaction level of Internet banking users

- Among the respondents 11.36% rated excellent opinion about accessibility of internet banking services, while 45% rated as good and 13.63% have very poor opinion.
- 25% of the respondents have excellent opinion about website presentation of their bank. 11.36% of respondents have positive opinion. A minority of respondents (9.09%) have very poor opinion about website presentation of their bank.
- Convenience & user friendly are the major reasons for respondents for using internet banking services (i.e 31.81%). 18.18% of respondents were using internet banking services because of speed and transaction efficiency.
- A good portion of respondents (40.90%) believed on the statement that all the transactions in internet banking are secure.
- 25% of respondents are highly satisfied with internet banking service quality. 29.54% of respondents are moderately satisfied. A portion of respondents (18.18%) are dissatisfied and a very small portion (2.27%) is highly dissatisfied with the quality of internet banking services.

(d) Problems faced by Internet banking users**Table1.1 Problems faced by Internet banking users – Ranked based on scoring**

Reason		Very high (5)	High (4)	Medium (3)	Low (2)	Very low (1)	Total score	Weighted average score	Rank
Low speed	F	8	12	12	8	4	144	3.27	1
	F*W	40	48	36	16	4			
Inability to operate account	F	1	9	14	16	4	119	2.704	3
	F*W	5	36	42	32	4			
Connection problems	F	7	9	17	10	1	143	3.25	2
	F*W	35	36	51	20	1			
Inability to get one time password	F	0	11	13	12	8	115	2.613	4
	F*W	0	44	39	24	8			
Leaking personal details	F	4	0	8	14	18	90	2.045	5
	F*W	20	0	24	28	18			

Source: Compiled for primary data

Suggestions

Respondents are dissatisfied with online customer service representative. Most of the banks do not have online service representative or have inexperienced online service representative. Those who do not have online customer service representative need to hire and train energetic employees. Safety and security features of webpage need to be improved because most of the respondents feel that Internet Banking is not safe and secure. People are so much conscious about the security measures whether it might provide privacy and security for the information that entered. It is founded that Low Speed and Connection problem due to server errors are the major problems faced by Users. Therefore banks need to take corrective measures to improve their server efficiency. Banks have to conduct various awareness programs in order to improve the level of awareness and knowledge of customers about the functioning of internet banking and its attributes.



Conclusion

The results of this research indicated that transaction efficiency, ease of use, service content are important determinants of customers' satisfaction with internet banking. However, privacy and security problems, low speed and connection problems due to server errors are the main/major problems faced by the internet banking users. As it saves cost and time, it improves the overall performance of the bank, and with performance measures, problems can be identified, and wastage of productive time can be decreased. The way forward therefore, is for the banks to increase awareness about the use of this technological tool to help them capture relevant and timely information for decision making. Managing e-banking demands analytical ability and attention to details, for the satisfactory performance of this system, these determinants should be mixed in their right prescription to get high quality internet banking and incorporate newer ideas. With concerted efforts towards operational efficiency of internet banking, customer satisfaction will increase.

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A Study of the Students Perspective on E-Learning in Higher Education

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Abstract

E-learning has become more vital to various types of learners. Laurillard (2004) in his study states that e-learning describes the interaction in which students use different types of ICTs in their learning process. Education in a knowledge society context is given a key role for developing new ideas in learning and teaching through e-learning (Kahiigi, Ekenberg, Danielson, & Hansson, 2007). The present study was designed to identify the perception of students on e-learning in higher education. The results indicated that students have significant knowledge on the effectiveness of e-learning methods when used in their learning. The credentials of e-learning have to be imparted to students to increase the knowledge in learning.

Keywords: E-learning, Technology, Tools, Higher education

Introduction

E-learning is the process of learning with the usage of electronic technologies to get access to educational curriculum outside a traditional classroom. It refers to a course, program or degree delivered online. To create, foster, deliver, and facilitate learning, anytime and anywhere network technologies are used. Learning can occur any time regardless of location and time, which enables more opportunity for the learners. This highly helps the learners who are unable to cope up the education because of their work schedule. For the educators and learners, one of the most important ways to make the resources available for research and learning is through the internet.

(Richard and Haya 2009). Irrespective of geographical locations, more flexible solutions for students are created using utilization of technologies for an online study (Sanderson, 2002; Anderson, 2008; Laurillard, 2004).

The best alternative to enhance traditional educational approaches is elearning. According to OECD (2005), e-learning is outlined because the use of knowledge and communication technologies in numerous processes of education to support and enhance learning in establishments of upper education and it also includes the usage of ict as a complement to traditional classrooms, online learning or mixing the two modes.

Why e-learning?

The most important feature of e-learning is said to be it is student centered. It empowers the students irrespective of the students background to get the same access to the referral materials, best resources, tutoring and best teachers across the globe. It promotes active and independent learning environment. There are no hard and fast rules for elearning. Online interaction is possible through discussion forums. Multiple usages of the audio and video are possible through this type of learning. (McKinney, Dyck, and Luber 2009) in their study stated that higher educational outcome was found with the students who personally created their own set of notes than students who had received a full set of notes by lecturers.

Objectives

1. To identify the students perspective on e-learning in higher education.
2. To identify the effective use of e-learning in learning process.

Hypotheses

1. There is significant effectiveness of knowledge on e-learning in higher education



Methodology

Design of the study

A self designed questionnaire was used to conduct the survey to identify the effective use and awareness about e-learning in higher education.

Sample:

The sample of the study consisted of students of undergraduate degree from the Institute of Hotel Management Catering Technology and Applied Nutrition. The chosen students answered the questionnaire which focused on e-learning in higher education.

Tool Used:

Both reliability and validity were established by the investigator for the purpose of the study.

Data Analysis

Data was collected manually and graphs were generated using Microsoft Excel.

Findings

The findings were achieved from the questionnaire distributed and answers received from the sample of 50 students

Awareness of e-learning among the students:

The survey clearly says that 91% of the sample population accepted that they are aware of the e-learning concept. Very less percentage of the students was not aware of e-learning. There was significant difference in awareness about e-learning in higher education.

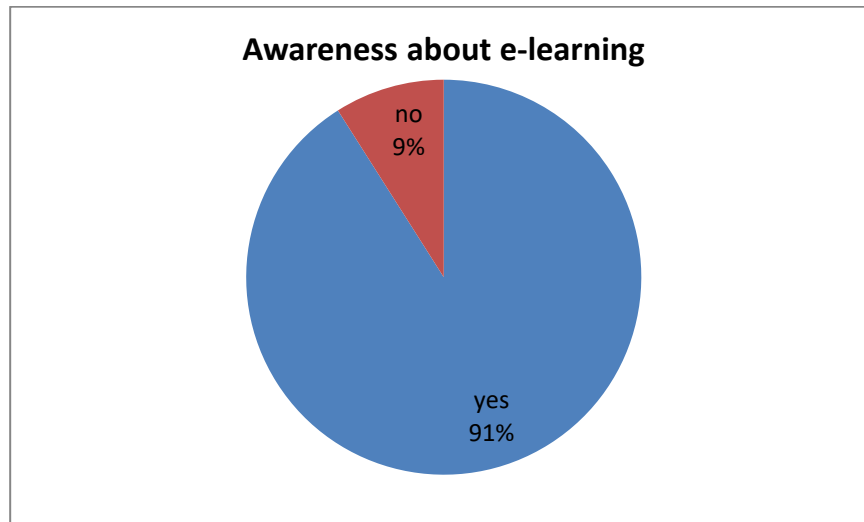


Fig 1: Awareness of e-learning among the students

Awareness on different types of e-learning:

Around 65% of the respondents claimed that they have awareness about different types of e-learning such as web log, RSS, TEXT CHAT, internet forums, MOOCS and blended Learning.

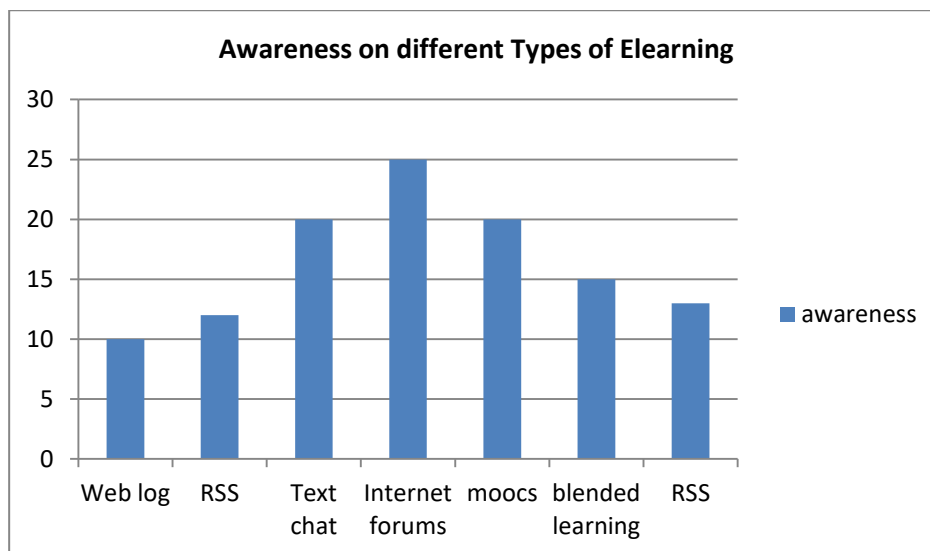


Fig 2: Awareness on different types of e-learning



Usage of e-learning:

From the graph it is clear that a variation in usage of e-learning facility by the students in their learning process is found. Almost 75% of the usage is identified. However with more awareness the percentage of the usage can be increased positively to promote learning.

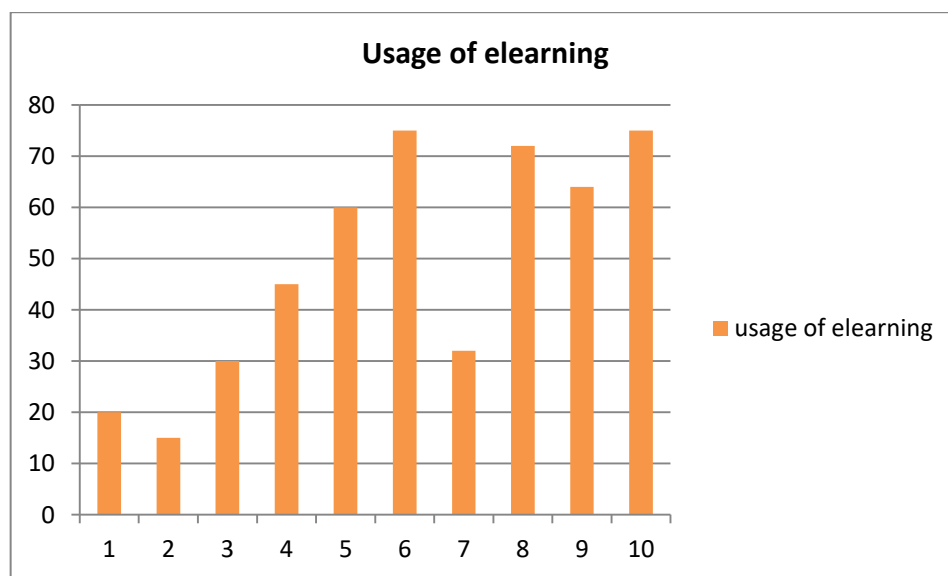


Fig 3: Usage of e-learning:

Conclusion

The objective of this study was to provide with a summary of students' perception on e-learning in higher education. McLoughlin, (2000) in his study explains that to augment course material, the learning experience of students can be enhanced with the help of bulletin boards; resources and databases; student portal pages; assignment submission; online quizzes; sharing of files, graphics, e-journals; and so forth. Nearly all the students have the major interest on e-learning in higher education. The foremost advantage when pages are accessed on the web is that hyperlinks are found in most of the web pages that will lead to another page which in-turn enables to open up a large amount of information on the internet.

Overall the present study indicates that students' perspectives were positive on the use of technologies in higher education. When analyzed, the students' perspectives showed that they clearly realized the benefits to be achieved from using technologies in their education. From the overall samples who participated in this study, 90% respectively, agreed that the use of technologies in higher education makes a positive difference to studying; the present findings are in line with the findings by Rogers (2004).

Limitations

- 1) The data had been collected only from the students of Institute of Hotel Management Catering Technology and applied Nutrition, Chennai. The survey can be done for various disciplines of students of different colleges to avail more accuracy on the study.
- 2) The survey can be done for a bigger sample size to have better clarity about the study.

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Emerging Changes in Higher Education in the fourth Industrial Revolution

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Abstract

Ubiquitous, mobile supercomputing. Intelligent robots. Self-driving cars. Neuro-technological brain enhancements. Genetic editing. The evidence of dramatic change is all around us and it's happening at exponential speed in the fourth Industrial revolution. Different opportunities are available that will shape and enrich the role which can be undertaken by higher education in the Fourth Industrial Revolution. Combining the strength of the traditional higher education with the increasing trend of MOOCs represents necessary steps to scale quality education. Currently, education is being connected to mobile devices through applications in the cloud and is no longer limited to knowledge but extended to skills acquisition. With the expansion in networking services nationally and globally, physical boundaries are no longer barriers to education. MOOC is looking to reinvent education. The idea is to offer education to people worldwide. Dramatically increase access to education, but at the same time, dramatically improving oncampus education from blended models of learning. Learning is not going to be the same anymore, whether on campus or worldwide it brought online technologies, computing technologies, internet to bear on something that we're all passionate about-- learning and education. By making a strenuous attempt at improving education, I think that this is having a real impact.

Introduction

In the 21st century the concept of distant learning and online courses has gained great popularity, MOOC is the latest and the most successful development in online education. MOOC (Massive Open Online Course) is



the new trend on the internet and has rapidly gained much popularity. MOOC allows learners from all over the world to learn in a connected way and in unprecedented scale. These are gaining huge attention from students all over the globe. These MOOC are acting as a revolution in the field of education. MOOC can prove to be a great helping hand in a country like India.

About MOOC

MOOC are Massive Open Online Courses, that are available online, anytime, anywhere and anybody can be benefitted from it. MOOC can be free or paid. These courses are massive in size may be 4 to 10 weeks long. Students have to register themselves online to avail these courses and weekly they need to spend 2 to 6 hours. These courses mostly aim to promote higher education, employee development and executive education. These courses are conceptualised and designed by various well known universities and MOOC platform vendors across the globe. Major players are Coursera, Udacity, edX, Khan Academy. Reputed universities from all over the world offer these MOOCs. In India it is an evolving concept, few Indian Universities and IIT's, BITS Pilani have taken the initiative for MOOC. Huge enthusiasm among Indian students has been seen over last few years regarding online Courses. "As of December 2013, edX had 1.9 million online learners. About 15 percent of these learners were from India, which is the second largest chunk, in comparison to US students accounting for 37 percent". Certificate of completion and participation is also given after course completion based on the certain criteria. Year 2013 is marked as a revolutionary year for the Indian educational system when first MOOC was launched.

MOOC Platform

Coursera, Udacity, edX, Khan Academy are the major MOOC platforms.

edX is owned by prestigious institutes like Harvard University, Massachusetts Institute of Technology majorly provide course contents from their highly regarded courses. It is a non-profit organization primarily

aims to promote the higher education. Khan Academy is a MOOC platform designed in a way to provide excellent learning experience to learner ranging from kindergarten to 12 year age learner. Udacity it includes courses mainly in the field of Computer Science. Coursera it provides different 212 free courses in various fields of Computer Science, music, economics, health and medicine, food and nutrition and many more. It was established with a motive to earn profit. It has consortium of well know world renowned universities including Harvard, Stanford, Melbourne and others too.

Challenges and Issues with MOOCs

Individual Instruction:

A wide variety of individuals register for MOOCs, so it becomes the responsibility of designer and deliverer of MOOC to maintain their interest in the course. For the same many researchers are trying to provide the solution. Machine learning is proposed as one of the solution. Behavioral and sentiment analysis can be done to study the learners interest and their learning habits.

Student Assessment:

Assessment of student performance is a major concern for MOOC [11] Plagiarism of assignments has to be checked in order to avoid false evaluation. In MOOC with certification and credits this is prerequisite. Many MOOC platform use plagiarism detection software's in order to detect copying.

Adaptability:

For developed countries providing MOOC infrastructure to promote higher education is not a concern but for developing country like India adaptability to this new paradigm of education is a concern. Huge investment and support from various universities and institutes can help to widen the reach of MOOCs.

Motivation:



Lack of motivation level in MOOC [16] lead to huge drop rates of students. Although there may be large registrations in the MOOCs but the completion rate is very less. Due to lack of motivation participation level falls and hence the whole purpose of mass connectives fails and leads to low success rates for MOOCs.

MOOCs in India

Online Education is not new to India. There is (NPTEL) National Programme on Technology Enhanced Learning, free e-resource for various academics, video lectures by renowned Indian Professors from IIT's and IISC. But still India lacks behind and has to accelerate its efforts towards higher education by launching various MOOC. As a beginning effort it has launched its first MOOC in Oct, 2013. These courses were in the field of Computer Science and was designed and conceptualized by the efforts from seven IIT's and Industry.

About SWAYAM

SWAYAM, an forthcoming MOOC platform by the Indian government, has ambitious goals. It is designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy. The courses hosted on SWAYAM will be in 4 quadrants – (1) video lecture, (2) specially prepared reading material that can be downloaded/printed (3) self-assessment tests through tests and quizzes and (4) an online discussion forum for clearing the doubts.

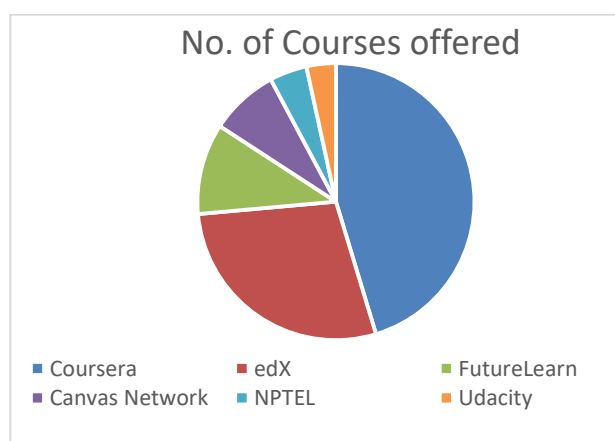
SWAYAM was originally supposed to be built using Open edX, but now it seems it will be built by a team at Microsoft. The courses on SWAYAM will be free to take for anyone in the world. But SWAYAM's biggest impact lies in its potential to increase the quality of higher education

across India. Not only can students learn from the best universities and colleges in India, but they can now earn credits from them via SWAYAM. The UGC (credit framework for online learning courses through SWAYAM) Regulation, 2016, allows students who are enrolled in higher education programs across India to earn credits via SWAYAM. Each credit will be equivalent to 13–15 hours of learning activities. Any academic institution in India can offer up to 20% of its catalog in a particular program via SWAYAM. The institutions also need to provide any resources that students need in order to take SWAYAM courses, like computers or lab space, to those students for free.

Top Providers of MOOC

The participation by Indians has been overwhelming in the major platforms such as Coursera, edX and Udacity. According to recent numbers the leading MOOCs platform has 10.5 million enrolled students.

Providers	No. of Courses offered
Coursera	2605
edX	1623
FutureLearn	610
Canvas Network	461
NPTEL	251
Udacity	197





Conclusion

This paper has proposed a vision for implementing MOOCs in Indian education system. There are many challenges that India has to come across while stepping ahead towards this innovation. India need to move strategically, various new educational policies needs to be made.

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Individuation in Anna Burns' *Milkman*

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“...but it would seem that in an even more crowded future, we are going to need a pretty strong sense of self to survive”

(The Self Illusion 296)

The interaction between the individual self and the collectivities/communities which encircle it is a subject that engages continuing intellectual enquiry. The relative importance of these two entities, the self and the collectivity, in the discourse has varied contextually among ages, nations, races, families and individuals. Thus, certain ages give prominence to individual self, while many others prioritize collectivity over its individual member. In the same way, in any given age, the degree of priority ascribed to individual self or collectivity may vary among nations, classes, races etc.

This paper reads the 2018 Man Booker prize winning novel, Anna Burns' *Milkman*, to explicate the complex networks of self – community interactions. The reading is informed by David Reisman, Glazer, and Denny's 1950 work on American society, *The Lonely Crowd*, psychiatrists Stella Beatriz Kerl and Thelma Duffey's 2001 essay on selfhood, and, French philosopher Bernard Stiegler's insights concerning the process of individuation.

Placing *Milkman* through the perspectives of these multiple lenses, we see the interplay of myriad identities competing and intermixing in the survival strategies of individual human selves. This also tells us how such interplays, struggles and stratagems are further punctuated by sheer luck which is part of all



human endeavors. At the same time, *Milkman* shows how these survival strategies are augmented by one's "long circuit" relationships (Steigler).

The French philosopher Stiegler defines individuation using terms like "short circuit" and "long circuit," where, "short circuit" refers to a break or departure in thought, and "long circuit," is seen to be "that intimate a range of connectivities that allows for the passage of thought across time." Thus, in the specific case of this novel, a self's transit from what Riesman et. al has termed as a "tradition directed community" to that of an "inner directed community" can be traced through the breaks of thought ("short circuit") it experiences from its immediate surroundings and its "long circuit" relationships.

Many contemporary writers all over the world have taken up the opportunity to enter into the symbolic in ways which give light onto the muffled and subaltern voices. New literatures in English have sprung up from India, Australia, Canada, Latin America, from the African states, and even from the unexplored nooks and corners of the English speaking nations. Anna Burns' *Milkman* is one such work which brought the Man Booker prize for the first time ever to a Northern Irish writer. With an expert mastery in craftsmanship Burns deals with issues which are not easy to vocalize.

Milkman follows the life of an eighteen-year-old girl living during the time known as "Troubles" in Northern Ireland. The place and time is beset with nationalistic and political conflict, violence and social oppression. The novel deals with a period in the girl's life when the girl was being harassed by a revolutionary leader. This leads to stories and gossips around her. And, having to live with the gossip distorts her personality and detracts her decision-making powers.

The narrative makes the whole situation unnerving since no place is named, no person is given a proper name, and, though the plot is underlined by religious and political tensions no religion or political party is named. And, the Milkman is not even a real milkman. Instead what we encounter are a maybe-girlfriend and a maybe-boyfriend, first, second, and, third brothers-in-law, Somebody

McSomebody, etc. for persons, and “over the road”, “over the water” and “over the border” (20) for place names. Religion is “their religion” and “our religion” and politics is “defender of the state” and “renouncer of the state” (18).

Though the first person narrator recounts the whole story from the girl’s perspective, on a closer reading it is interesting to note that the narrator is not the eighteen year old girl herself, but a perhaps “twenty years later” (7) version of herself who poses to be much more knowledgeable, confident, and emotionally mature than the girl of the story. This narrator, because of her temporal distancing from the story’s protagonist, is capable of making learned twenty first century liberal judgements concerning the psychological, sociological, religious and political context of the novel’s milieu from an unobtrusive third person standpoint.

Given this framework of the story, the work can be used as a site to map the formation of individual selfhood. In their influential and frequently cited mid-twentieth century academic study on the American society, *The Lonely Crowd*, Riesman, Glazer, and Denney classify societies in terms of their social character as “tradition-directed,” “inner-directed” and “other-directed” (8). Typical members of tradition-directed society conform “by their tendency to follow tradition.” In contrast, members of an inner-directed society develop through “an internalized set of goals,” and those of the other-directed society are motivated “by their tendency to be sensitized to the expectations and preferences of others” (8).

Though Riesman et. al.’s classification of “tradition-directed,” “inner-directed” and “other-directed” individuals appear to be stages of evolution of humans as social beings, yet *The Lonely Crowd* acknowledges the existence of all these types within a single age. At the same time, individual members of a society can transform their selves from identifying themselves as part of one community to being members of another community. *Milkman* can be read as one such story of individual mobility from a “tradition-directed” society to an “inner-directed” society.



The society of *Milkman* is termed “tribal” by the narrator in various occasions in the novel. This reference to the primitive, tradition bound community anticipates a continuity from the past in all the actions of its individual members. At the same time, it is possible that some members of the tribe will deviate from the absolute loyalty expected of the tribal tradition. The deviations can be categorized, in the words of the protagonist, into two. “the slight, communally accepted ones and the not-so-slight, beyond-the-pale ones....the former fitted tolerably into society and this was pretty much everybody, including all the various drinkers, fighters and rioters who existed in this place” (51). The “beyond-the-pale ones” included the protagonist herself, as she had the habit of reading while walking. And she knew that in her place and time, she better be careful not to distinguish herself. “It was best then, in those days, to keep the lowest of low profiles rather than admit your personal distinguishing habits had fallen below the benchmark for social regularity” (52).

It was all the more imperative that she should be part of the community and act according to the “benchmark of social regularity” as she was a woman. This was a milieu which clearly stated that it was, as the older narrator points out unobtrusively blending into the narration, an “I’m male and you’re female territory” (8). In this “official ‘male female territory’” “what females could say and what they could never say” were ingrained into the psyche of its individual members as part of their social training. Which was the reason why, she explains as she narrates her second meeting with the Milkman when he stalked her while she was in the course of her routine long distance run, she did not say anything “when the Milkman curbed, then slowed, then stopped my run” (9). But she did not always obey the rules of the social dictums.

In a study on the conceptions of selfhood, psychiatrists Stella Beatriz Kerl and Thelma Duffey observe that in Euro-American culture, the individuated self is more the characteristic of its dominant class. On the other

hand, the subordinate groups like women, Blacks and Jews were found to possess more relationship oriented selves.

If the larger societal system has any part in shaping one's sense of self, it follows that the people on top (dominant) in a hierarchical system would have a separate sense of self (the prevailing modal or "norm"), while the people on the bottom (subordinate) would have a relational sense of self. In other words, the sense of self might be consistent with one's position in the social hierarchy. (Kerl and Duffey)

In *Milkman*, the denial of individuation, or rather its marginalization and minimalization is suggested from the very name with which the readers know the protagonist. She is the "middle sister" among ten siblings, and curiously is called just that than her proper name by her sisters. The mother calls her "daughter," and the father had found it difficult to remember any of his offspring's name that his final solution was to address them as "son" or "daughter" alone.

And, the mother has her tribal community of neighborhood women, the ones who bring her all the scandalous gossips including those about her own offsprings.

The story also tells about incidents revealing the collective power of these women, the traditional women from the district, who, "on occasion, would instinctively unite and rise up to put an end to some gone-mad political or district problem." For example, these traditional women were capable of organizing themselves and positively intervene whenever there was a serious problem, like when the renouncers unjustly imprisoned a man, or when the renouncers wanted to kill off the seven feminists, "the issue women" who used to convene meetings to discuss women's issues. This collective power might also justify the individual's anxieties to belong to such a group.



The relational sense of selfhood can even be seen in the case of the men in the story. The boys have to conform to the commonly agreed upon traits of manhood, without which they too might be stigmatized. The difference between men and women in this case is that men are allowed a greater number of choices, or rather, an illusion of a greater number of choices.

When the maybe-boyfriend of the protagonist gets a second hand Bentley by luck all his neighbors come in to share the experience breaking into what might have become some intimate moments between the protagonist and him. It seems that they are basking in the joy emanating from the lucky turn their neighbor enjoyed, but just a single person's remark ruins the whole situation. One jealous neighbor points out that the Bentley might have a flag of the "other side." The car itself then become symbolic of the "other side" and in the end of the discussions even maybe-boyfriend's friends wished he had properly explained things so that there would not be any gossip. Gossip itself was fatal in their world and people were anxious to prove their allegiance to whatever community they belonged to.

Whether you were a "defender of the state" or a "renouncer of the state," that was part of your tribal identity to which you had to stick on to. Individual aberrations like drinking, fighting and rioting, and even gossiping were allowed if your allegiance to the tribe was not questioned.

But the protagonist here had an aberration which pushed her into the category of people with a mental deviation "beyond the pale(51)," as she used to read while walking. It was noted by the Milkman and even by the third brother-in-law, who was someone about whom she had a particularly good opinion. The third brother-in-law commented upon it saying that it was a dangerous habit. But for the middle sister it was something she was not going to discard off, and that meant that she was readying herself to face the consequences it might bring forth.

This process of voluntarily chosen individuation can lead to further expanses of her lived experience pointing way, finally to be the third person

narrator capable of making discerning judgements and statements related to liberal political ideals.

For, reading while walking was also reading. And she was reading books from “the nineteenth century, even the eighteenth century and sometimes the seventeenth and sixteenth century (252).” The insights from those books, as insights from books can, might have had the power to distinguish her, and individualize her from the community of her physical and geographical proximity.

Along with reading while walking, the middle sister had distinguished her with another oddity. This too could have made a pathway through which she might have reached the selfhood of the third person narrator. She got enrolled in an evening class which taught French, and it was there that she gets the enlightenment about the colors of the sky. The French teacher had tried to open the minds of the adult class which had obstinately refused the reality of their vision that the sky was not just blue, but a myriad of colors.

It was not that she attended the French class as such, though that itself was problematic, and the Milkman had even suggestively questioned her need to attend such classes, though he had misappropriated them as Greek and Roman classes. It was her active enjoyment in it that made the difference, which could result in her being “beyond the pale.” She realized that “I’d enjoyed it, as always I enjoyed it – the eccentricity of teacher, her talk of that ‘still, small voice’, of ‘living in the moment’, of ‘abandoning what you think should happen for what then might happen’” (85). She also enjoyed it when the teacher said, “there was too, her ‘change one thing, class, just one thing, and I assure you, everything else will change also’ – and to say that to us, to people who were not only not into metaphors, but not into admitting to what patently was there” (85).

The story goes on to relate how the protagonist discovers the long term affair her maybe boyfriend was having with a man called Chef, and how when in a state of shock she steps out the Milkman offers her a lift. He had



offered her a lift even before, even during her first encounter with him, she was offered a lift which she had managed not to accept. And later in the course of the story, she had promised herself that she would never ever accept it. But this time, in the numbness of her spirits, she enters the van and he drops her at her home telling her to be ready the next day when he would come to pick her up. She was also instructed to wear a nice dress.

The next day, it turns out that the Milkman gets killed by his political antagonists, and the protagonist escapes the ignominy of being that man's keep. And, we are also introduced to another instance of violence on her by a Somebody McSomebody, whose overtures she had once refused. But this time too she escapes with some luck.

Luck apart, we find the maturing, in true bildungsroman fashion, of her emotional and intellectual selfhood, when she encourages her mother to renew her life at fifty by opening herself up to a man who she cared for. And when she found that the mother did not have enough power of conviction in her abilities to start a new life, the protagonist lets off her grouse against her eldest sister and calls her in. The "First Sister," as she is called, comes in and convinces the mother, thus helping the mother to embark on a new and fruitful life.

This growth in the mental horizons and emotional sinews of the protagonist could be seen to be solid steps through which she might have ascended to the third person narrator who appears to be a much more confident and powerful person, capable of wielding agency in her life. Thus, the trajectory of her self's maturing is punctuated by the "short circuits," the breaks from her common collectivity, provided accidentally by her affairs with maybe boyfriend and Milkman, and, voluntarily by her decision to read while walking and to attend French classes. Her selfhood's mobility from being bound by the clutches of a tradition directed society to a person with agency, capable of controlling the narrative of her story is also accentuated by her "long circuit" connections, her involvement with the nineteenth, eighteenth and seventeenth century books that she used to read, and the French lessons she enjoyed.

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Fireworks caused air pollution and change in air quality during festival season in Kannur, Kerala

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Abstract

Vishu is a major festival celebrated throughout the state of Kerala and in parts of the neighbouring state of Tamil Nadu during the first day of Medam, in the Malayalam calendar, which usually falls during the month April. This concurs with the commencement of the Malayalam New Year according to the pre-existing calendar, and is celebrated irrespective of caste, creed or religion throughout the State. The celebration is widespread and concludes in fireworks overall parts of the state. Continuous fireworks are set off from 18:00-22.00 h (IST) on the eve of Vishu on April 14th and 4:00 to 6:00 h (IST) the following day, April 15th. Such incessant fireworks over lengthy periods of time weakens the air quality as well as contributes to noise pollution. The significances of such celebratory fireworks among a region with a very high population density such as Kerala need to be evaluated. This paper deals with the impact of air quality changes during festival seasons in north Kerala during 2010 to 2018.

1. Introduction

Atmospheric pollution is caused by the mixing of smoke, toxins and other chemicals in the air. It could threaten the very existence of humans and other living things on earth. Domestic pollution and poor urban air quality are cited as serious problems in India. Atmospheric pollutants are substances in the air that are harmful to humans or the ecosystem itself. These are often natural or man-made solids, liquid droplets, or gases. Pollutants are mainly classified as primary pollutants and secondary pollutants. Primary pollutants are released into the atmosphere in the form of ash from volcanic eruptions, carbon monoxide from vehicles, and sulfur dioxide from factories. Secondary pollutants usually do not dissolve directly in the atmosphere. These are formed by the interaction of primary pollutants.

Air pollution is an emerging problem in the state of Kerala. It is worth noting that there exists no continued air monitoring program in the region. Apart from the general emission sources, there are also episodic emissions from various social activities relevant only to the state. One such important source is from fireworks set off all over the state during the very large number of festivals peculiar only to the state of Kerala. When we hear of Vishu, the first thing that comes to our mind is when we were a children, we used to buy firecrackers for the celebrations. On the day of Vishu, it is a fun experience to see the colorful wonders of the sky and to be scared when the firecrackers explode and also like to light candles. But at that time we did not know that this celebration would harm anyone. Elderly people and children were seen getting upset when firecrackers exploded. Vishu, one of the biggest festivals in Kerala, causes a great deal of pollution that is harmful to humans other living beings. The excitement from Vishu fireworks, lasts for a few seconds, but it leaves harmful pollutants in the air for children and adults alike, as well as the fact that the this festival has the incidence of burns. This study is focused on the influence of fireworks on the air quality at Kannur, India, during Vishu festival for nine consecutive years from 2010 to 2018.



2. Methodology

The impact of firecrackers on the air quality over Kannur district in North Kerala was carried out at the Kannur University Campus (KUC) (11.9° N, 75.4° E), situated 15 km north from Kannur town. A Respirable Dust High Volume Air Sampler was placed on top of the building at a height of 10 m from the ground to collect dust particles that are less than PM₁₀ present in the ambient air during the period of study. The filter containing the dust sample was examined to identify the concentrations of Na, Hg, Cd, Cu, Pb, Ba, Ca, Fe, and Zn using an atomic absorption spectrophotometer. Vapour phase organics were collected using an air sampling tube filled with about 200 mg of XAD-2. The samples were collected for an interval of 24 hours in the period before and after the sparklers event.

3. Results and Discussion

3.1 Quantitative Analysis of Metal Concentrations in PM₁₀

The metal analyses for Na, Hg, Cu, Pb, Ba, Ca, Fe, and Zn were carried out from PM₁₀ samples collected on the pre-Vishu day (13 April), Vishu day (15 April), and post-Vishu day (17 April) for 24h during the study period. The identified concentrations of the eight metals for 24 h (08:00 to 08:00) on pre-, post-, and Vishu days for nine continuous years are shown in table 1. The table clearly indicates the enhanced metal concentration in the ambient air, which in turn reduces the air quality. The concentrations of metals in present PM₁₀ was found to have increased and the percentage of increase varied from metal to metal. In this study, a dramatic increase was observed in Hg (366.67%), Cu (225%), Ca (183.93%), Pb (171.19%), Na (145.90%), Ba (137.50%), Zn (97.22%), and Fe (89.58%). One of the important observations was the enhanced amount of mercury present in the ambient air, which is a serious concern owing to its high toxicity. Barium was found in huge quantities in the firework debris followed by lead and copper, and their observed quantities were about three times higher than those on the normal days, indicating that the ambient air was contaminated with fine particles of barium, lead, and copper salt compounds used in the fireworks.

Table 1. Twenty-four hour average concentrations of different metals in ambient air of during pre-, post-, and Vishu days for the years from 2010 to 2018.

Metals	Concentrations (µg/m ³)						Average % of increase of metal concentration on Vishu day
	13 April (Pre-Vishu)		15 April (Vishu)		17 April (Post Vishu)		
	Avg.	Stdv	Avg.	Stdv	Avg.	Stdv	
Na	0.61	0.14	1.50	0.21	0.74	0.08	145.90
Hg	0.06	0.03	0.28	0.11	0.08	0.01	366.67
Cu	8.00	1.76	26.0	2.52	11.0	1.95	225.00
Pb	11.8	1.03	32.0	2.43	13.0	1.45	171.19
Ba	16.0	1.50	38.0	4.31	22.0	1.60	137.50
Ca	1.12	0.16	3.18	0.60	1.32	0.40	183.93
Fe	0.48	0.12	0.91	0.36	0.54	0.15	89.58
Zn	0.36	0.09	0.71	0.20	0.41	0.11	97.22

3.2 Organic chemical associated with PM_{10} and vapor samples

This study also identified a variety of organic compounds associated with the particulate matter and vapour phase samples respectively collected during the festival over a period of three days and they are listed in Tables 2 and 3 respectively. The number of compounds identified in the vapour phase is much greater than that on the particle phase. It was also evidently observed that the amount of the chemical present on the particulate matter on 14 and 15th of April is much greater than that measured before the festival. This shows that a large number of organic chemicals found in the particulate matter are possibly specifically related with the fireworks on the 14th and the 15th of April, 2011. Vapor sampling was conducted with samples collected from April 13-17. This inferred that these elements are probably associated with the fireworks. The organic compounds contained significant fractions of aldehydes, ketones and aliphatic compounds which can primarily generate peroxy radicals.

**Table 2:** Organics with the PM10 and aliphatic compounds, aromatic chemicals detected in the ambient air during fireworks display

Aliphatic compounds and derivatives	Pentane, 2,3,3-trimethyl- Heptane, 3,3,5-trimethyl- Nonadecane	Dodecane, 2,6,11-trimethyl- Tetradecene Tetrapentacotane
	Octane, 2,6-dimethyl- Octane, 2,3-dimethyl- Octane, 3,3-dimethyl- Octadecene	1-Hexene, 3,3-dimethyl- 2-Pentene, 2,3,4-trimethyl- 2,4,4-Trimethyl-1-hexene Cyclotetradecane
	Butane, 1-bromo-2-methyl- Octane, 1-iodo-	Dodecane, 1-iodo-
	Phosphorous acid, tris(2-ethylhexyl) ester Valeric anhydride 1,2-Benzenedicarboxylic acid, diheptyl ester	Methyl 2-hydroxydecanoate 2-Propenoic acid, 2-methyl-, octyl ester
	4-Tetradecanol 2-Buten-1-ol, 2-methyl- 1-Pentanol, 2-ethyl-4-methyl- 1-Hexanol, 3,5,5-trimethyl- 3,3,5,5-Tetramethylcyclohexanol	3-Heptanol, 2,6-dimethyl- 3,3,6-Trimethyl-1,5-heptadien-4-ol 1-Penten-3-ol, 3-methyl- 3-Heptanone, 4-methyl-
	Aliphatic compounds and derivatives	
	Dodecane, 4,6-dimethyl- Pentane, 2,2,3,4-tetramethyl- Hexane, 2,3,4-trimethyl- Hexane, 3,3,4-trimethyl- Pentadecane Butane, 2,2-dimethyl Hexane, 2,4,4-trimethyl- Dodecane Pentane, 2,2-dimethyl- Neopentane	2,3-Dimethyl-1-hexene 2-Pentene, 4,4-dimethyl-, (Z) 1-Pentene, 4-methyl- 3-Heptene, 2,6-dimethyl- 1-Hexene, 3,3-dimethyl- 2-Octane, 2,6-dimethyl- 3,3-Diethoxy-1-propyne 1,5-Hexadien-3-yne, 2-methyl- Cyclohexane, 1,1-dimethyl- Cyclopropane, 1,1,2,2-tetramethyl-
	Hexane, 3,3-dimethyl- Diazene, bis(1,1-dimethylethyl)- Undecane, 3-methyl- Decane, 3-methyl-	Pentanenitrile, 4-methyl- Carbon Tetrachloride Cycloheptane Butane, 2,3-dimethyl-2,3-dinitro-

Table.3: Halogenated Aliphatic compounds and Aldehydes / Alcohols / Ketones, Organic Acids / Esters and other organic detected in the vapor phase

Halogenated Aliphatic	
Dodecane, 1-iodo-	Heptane, 1-iodo-
Propane, 1-chloro-2,2-dimethyl-	Pentane, 3-(bromomethyl)-
Octane, 1-iodo-	Butane, 1-chloro-3,3-dimethyl-
Nonane, 1-iodo-	Butane, 2,3-dichloro-2-methyl-
Ethane, iodo-	
Aldehydes / Alcohols / Ketones	
2,2-Dimethyl-3-hydroxypropionaldehyde	(6Z)-Nonen-1-ol
Paraldehyde	2-Pentanol
Propanal, 2,2-dimethyl-	3-Buten-2-ol
Butanal	1,3-Benzenediol, monobenzoate
1-Hexanol, 2-ethyl-	4-Heptanone, 3-methyl-
3-Hexanol, 2-methyl-	3-Hexanone, 2,5-dimethyl-
4-Methyl-1,6-heptadien-4-ol	3-Heptanone, 2-methyl-
1-Pentyn-3-ol, 3-methyl-	3-Hexanone
2-Pentanol, 4-methyl-	3-Hydroxy-3-methyl-2-butanone
1-Pentanol, 3-methyl-	3-Penten-2-one
Ethanol, 2-nitro-	3-Hexen-2-one
Isopropyl Alcohol	2,3-Pentanedione
Organic Acids / Esters	
2-Butenedioic acid (Z)-, dibutyl ester	2-Butenedioic acid (Z)-, dibutyl ester
Bis(2-ethylhexyl) phthalate	Bis(2-ethylhexyl) phthalate
1,2-Benzenedicarboxylic acid, dihexyl ester	1,2-Benzenedicarboxylic acid, dihexyl ester
Propanoic acid, ethenyl ester	Propanoic acid, ethenyl ester
Acetic acid, 2-ethylhexyl ester	Acetic acid, 2-ethylhexyl ester
Methyl 2-hydroxydecanoate	Methyl 2-hydroxydecanoate
2-Propenoic acid, 2-methyl-, octyl ester	2-Propenoic acid, 2-methyl-, octyl ester
Others	
Acetyl valeryl	1,2-Propanediamine
Di-tert-butyl peroxide	2,4,5-Trihydroxypyrimidine
Glycidol	2,2'-Bioxirane
Formamide	Binapacryl
2-Butenoyl chloride	Cyclopropanamine, 2-phenyl-, trans-
	1-Propanesulfonyl chloride
	4-Fluoroveratrole
	2-Hydroxy-2-methylbutyric acid
	Butanenitrile
	Propane, 1-nitro-
	1-Propanesulfonyl chloride



3.3 Air Quality Index during Vishu

The air pollution index is considered to be the standard tool to represent day-to-day changes in air quality. It transforms complex air quality data of various pollutants into a single value nomenclature. According to Central Pollution Control Board of India (CPCB), the AQI is divided into five categories: good (0–50), satisfactory (51–100), moderate (101–200), poor (201–300), very poor (301–400) and severe (401–500) respectively. Figure 1 represents the temporal variation of air quality index during control days and Vishu day in the study area.

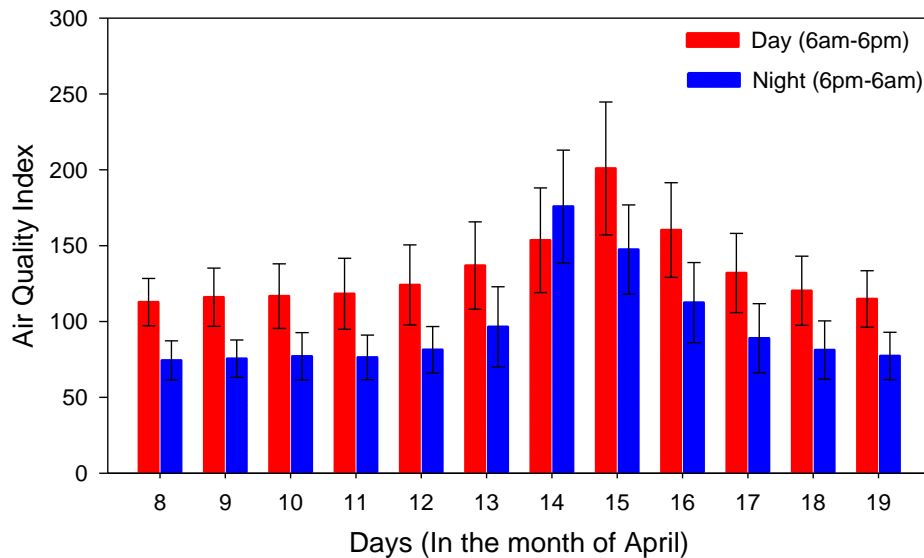


Fig. 1: Air quality index for pre-, post-, and Vishu episode.

The highest index of 201 (poor) was detected on 15 April 2017 during the day time, followed by 176 (moderate) on the 14 April night. The weakening of air quality during the night time is a serious concern because of the trapping of pollutants in the shallow boundary layer and low convective activities from the ground.

4. Summary and Conclusion

This study exposed the influence of extended fireworks incidents during Vishu festival in the atmosphere over Kannur. A detailed organic analysis revealed the finger prints different toxic organic compounds that emitted into the atmosphere which can severely worsen ambient air quality and cause serious health impacts. The air quality index assessed from different pollutants indicate the highest index value of 81, specifying heavy air pollution in Kannur on Vishu day. It is also established that the yearly air pollution is growing in Kannur, by which the air quality index value has amplified gradually from 2010 to 2018. It is important to explore the effect of widespread fireworks on the health of a local community within a high population density region such as in Kerala. If this trend continues, certainly the blissful festivities may also impact the overall health of the community in this region. This work has been initiated since 2009 and is still ongoing, the changes in air quality over this location have a social impact. Our previous publications have had a media effect, by which the Central Pollution Control Board (CPCB) of India steered a campaign in this region and several health monitoring camps were organized to retrieve the changes in air quality. Let us work together to ensure that Vishu, one of Keralites happiest celebrations, is not polluted.

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Multifaceted Impact of Covid-19 on the Lives of Common: A Reflective Analysis

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Abstract

The unpredictable outbreak of covid 19 pandemic had forced the countries and population to fall on a crisis that adversely affects their physical, psychological and emotional well being. The sudden and uncontrollable spread of the virus had made a tremendous increase in cases reported and raised fear among the public by increasing the mortality rates. The lack of prevention strategies like vaccines, medicines etc. had add upon fuel to the fire. The declaration of pandemic and awareness about it's harmful effects, most of the countries had moved towards the enforcement of a complete lockdown to keep themselves away from infection. The lockdown had became the major contributing factor for making the covid 19 health crisis as the risk factor which is responsible for the imposing of psychological, economic, emotional hardships on the population. This paper discusses on the consequences made by the covid 19 health crisis and lockdown on people by looking forward to social, economic and psychological aspects.

Introduction

On 7th January 2020, the novel coronavirus was identified in Wuhan, China which was later on named as the COVID 19 virus. And on 11 March, 2020, the World health organisation had declared COVID 19 outbreak as a pandemic. The virus had deepened it's roots globally in a short period of time and evolved as a life threatening disease by increasing the number of infected peoples and death rates. The quick spreading of disease all over the world had impacted the physical, psychological, social and emotional wellbeing of all countries.

India, occupying the second position in population rate by inhabiting a population of more than 135 crores is also carrying its privilege through upholding a unity within all those diversities made up of blending various religions, communities, regional cultures and language variations. Hence the country can be compared to a chain made of different coloured beads. Along with all other countries, India is also hard hit by the COVID 19 pandemic crisis. The number of positive cases reporting in India is increasing in a daily basis even after the enforcement of lockdown and social distancing measures as the major prevention strategy.

The sudden outbreak of the highly infectious and deadly covid 19 pandemic had triggered the arousal of many psychological problems including fear, anxiety, depression etc. across the whole world. Besides being a health and socio - economic crisis, the pandemic had also resulted in a mental health deterioration among general population. The unplanned lifestyle changes happened due to the closure of schools, workplaces etc. had made people stuck in their homes along with the fear and anxiety of being infected, uncertainties about the future etc. Maintaining good mental health also gains equal importance as that of physical health. Hence the emotional or psychological impact of covid 19 on public had to be analysed and addressed along with the physical and financial crisis.

Besides being a deadly dangerous disease, that is grabbing a large number of human lives, COVID 19 pandemic has also paved way for the destruction of economic, social and all other sectors. The pandemic has resulted in many other issues which are lurking in the shadows. Thus it can be said that each and every individual is affected by the pandemic crisis, but the ways in which they are affected varies. There were many contributing factors to these variations inclusive of their social conditions, financial status, health & biological differences etc. Violence against vulnerable, social exclusion, stigmatization, economic deprivations etc. forms the major issues that gains equal importance and must be addressed along with this pandemic.



1. Domestic Violence

"Locked down with abusers: India sees surge in domestic violence"
The headline of a news reported by Al Jazeera media that grabbed attention to an other pandemic which we must have to fight.

The present situation of COVID 19 pandemic crisis has lead to the implementation of lockdown across the whole country. This lockdown had in turn paved way for a sudden increase in another pre existing pandemic that was lurking in the shadows - domestic violence. This is one of the major issue raised along with this COVID 19 pandemic and gains equal importance to be addressed. There were multiple factors contributing to the sudden increase in the number of domestic violence cases reported. The vulnerability of those victims facing the violence increased during lockdown as they were locked down with their abusers because of the sudden job loss or closure of employment opportunities happened during lockdown.

The sudden job loss that resulted in economic crisis in many households had made immense stress on people, that had become a triggering factor for some of the male breadwinners to engage in intimate partner violence to get rid of those stress and strain they have to experience due to the financial crisis facing by them. The news reported by Al Jazeera narrates the painful experiences faced by a 45 year old cook Parvathi which is cited below;

The 45-year-old cook in the southern Indian city of Chennai had become accustomed to physical abuse from her unemployed, alcoholic husband in the early years of her marriage, but the violence had diminished recently, largely because of the salary she brought home every month, she said.

Under the lockdown, Parvathi's employer asked her to stay home. She was not being paid, and her husband, deprived of his daily drink, was in a foul mood.

Half an hour later, she ran out again, this time working up the courage to walk to the police barricade, and asked to be taken to the police station.

"Go home and sort it out," the officer on duty told her from behind a mask. "The police and courts are shut for 21 days.

Being the breadwinner of her family, Parvathi was able to escape from the abuse or violence by her husband. But the unexpected job loss had forced her to experience physical assault along with the financial crisis suffering by her to sustain her household. Parvathi is a living example or voice of many women who is tolerating physical and mental torturing and violence against them and are not able to seek help or rescue from those hardships. The pandemic crisis and lockdown situation had also contributed in lowering the accessibility to services available for the immediate help of victims.

In some countries, the number of women calling support services has doubled, healthcare providers and police are overwhelmed and understaffed, and local support groups are "paralysed" or short of funds, the UN chief said.

The sudden increase in the cases of domestic violence and shortage of services had resulted in the increase in severity of the issue. In many countries, authorities are not able to address or take immediate measures against the violence even when those issues are known to them. Thus it can be said that besides being a health crisis, COVID 19 pandemic also contributed to the explosion of another pandemic- domestic violence.

2. Economic Deprivation

The tremendous increase in the number of COVID 19 cases and the fear of societal spread had forced the country to live in a state of complete lockdown which is taken as an immediate measure of prevention through the closure of schools, shops, malls, markets and every social platforms.

Unexpected lockdown had made the country's economy to a standstill and hard hit the poor who has been shut in their homes without work or pay and not having enough money to meet their basic needs.



"India COVID-19 lockdown means no food or work for rural poor", A news reported by Al Jazeera on 3rd April 2020 that visualises the pathetic situation of poor Indians who had been restricted to their homes without having work and wages which became the only source for their livelihood.

The pathetic situation of Karmu Bhuiya, a 45 year old male breadwinner was reported by Al Jazeera is mentioned below;

Karmu Bhuiya, lives in a village in Jharkhand and has to support his mother, wife and son.

Bhuiya is a casual labourer who does odd jobs which get him about 250 rupees a day. But since the lockdown started, work has dried up. Most days, the family eats rice with a little oil and salt.

"Other days, if we find any edible greens growing around our house, we crush it into a chutney and eat it with rice, because spices are too expensive," he says.

Bhuiya's family is one among the hundreds and thousands of families onto which the economic deprivation and a situation near to starvation is exerted by enforcement of sudden lockdown.

Along with all other states, the Indian state of Kerala which firstly reported with a covid patient across the country also battles the same situation of economic deprivation that mostly affected the workers in unorganised sectors. A study conducted in Thiruvananthapuram district by activists of CAPSULE (Campaign against Pseudo-Science Using Law and Ethics), an initiative of the Kerala Sasthra Sahithya Parishad, which was published by The New Indian Express on 13 the May 2020 is given below;

"Lockdown serves a bitter pill to the poor"

As per the findings, 94 per cent of daily wage workers who participated in the survey had either faced income loss or were getting paid less. The

study also noted that 69 per cent of the people's living conditions got affected due to income loss. While 62 per cent had to borrow money for their living.

Besides these poor Indian residents who has been devastated economically, the declaration of a sudden lockdown had made the situation even more worse in the case of migrant workers who had migrated from their native places in search of job opportunities. The outbreak of COVID 19 pandemic had imposed multiple hardships on those people who depend on their daily wages as the only source of livelihood. In addition to the emotional trauma, fear of infection and anxiety about uncertainty of future, they also had to face lacking of food, shelter and their wages. Majority of them were locked at their work places without having enough money for satisfying the basic needs.

Thus both the central and state governments has to give equal concern for diminishing economic crisis and poverty, which exploded along with the pandemic crisis of COVID 19.

3. Social Exclusion

The sudden outbreak of COVID 19 and its widespread infection had resulted in the enforcement of an immediate lockdown as a major preventive strategy and also efforts were undertaken for identifying and keeping in quarantine the people who had reported positive and being suspected cases. The intention behind these quarantine process is to prevent the spread of the virus, but it also became a causal factor for the arousal of some kind of discrimination and social exclusion. The discrimination against the infected or suspected persons may range from verbal abuse to even violence also. The fear and anxiety about the infection became one among the major reason for this exclusion as people are very much afraid of getting infected.

But this kind of social exclusion will render the people from an effective self quarantine. They will not be able to meet their basic needs of food, clothing and shelter, will have less access to medical practitioners and health



facilities etc. Along with the stress and frustration of being restricted to their rooms and fear of a deadly disease, these social exclusions will be a major reason for the formation of an emotional or mental trauma in those people which will force them to fall to a state of depression, anxiety and other mental disorders.

India coronavirus: 'Our neighbours made us Covid-19 pariahs'

The above cited headlines was taken from a news reported by BBC on 19 July 2020. The news describes an incident that visualises the social exclusion an infected family has to face.

Twenty-six-year-old Amrita Panda learnt about Covid-related social exclusion the hard way after four members of her family were infected in May. Most of them had mild symptoms and were quarantined at home in Howrah, a suburb of Kolkata.

Ms Panda's 82-year-old grandfather, however, developed breathing problems, and had to be taken to a hospital, where he recovered after treatment.

"There were raging rumours in my neighbourhood that my father and grandfather had died of the disease. Neighbours stopped approaching us. We had to let go of our domestic maid because her other employers threatened to sack her for working at our place," she told me.

Even after the family recovered and completed their quarantine time, neighbours have continued to avoid them. A local bank refused to let Ms Panda's father enter its premises. "It feels that contracting the disease is a crime. Even when we go out for our chores sometimes, people shout at us and scream, look the Covid people are out and about!" says Ms Panda.

The rejection or isolation imposed by the society on the infected people will hinder the effective functioning of prevention measures as people will avoid testing and hospitalisation due to the fear of being quarantined and discriminated.

3. Stigmatization

At a time when the whole world is passing through a difficult situation of battling a highly infectious and deadly disease, several reports from all over the world had proven the arousal of another deadly poisonous pandemic called upon by the term 'stigmatization' which is deepening its roots globally. The United Nations says "fears, rumours and stigma" are key challenges accompanying Covid-19 globally. Many harmful stigmas are spread along with the pandemic that hinders the effectiveness of prevention strategies and contributes in developing fear, anxiety among the public through spreading unhygienic information.

"Fear and stigma have devoured us," says M Mitra, a Kolkata-based homemaker whose father had tested positive for the disease. This was reported by BBC news on 19 July, 2020.

In India, social stigma around the disease has led to people being labelled and discriminated against. It has forced people to hide illness, avoid tests and delay hospitalisation, often with fatal consequences. Stigma attached to quarantine has meant that people returning from isolation are often treated as outcasts. The news reported by Hindustan Times on 25 July, 2020 mentioned below supports the statement.

The fear and stigma over Covid infection has led to several such incidents in the state of Odisha. Early this week, a man in Mayurbhanj district had to carry his father's body on a bike to funeral ground after they were deserted over fears that the man had died of Covid. The 56-year-old man had earlier tested positive, but had recovered. When he was being taken to a private hospital in Bhubaneswar from Mayurbhanj in a rented car by his son, he died on the way. The car driver then fled with the car fearing that the man had died from Covid. As the man's son could not find a hearse van, he put his father's body on a motorcycle and brought it to the cremation ground for last rites.



Like all the other Indian states, Kerala having the highest literacy rate is also experiencing the prevalence of stigma that shackle the minds of infected people through discrimination and social exclusion.

‘Hounded by social stigma’: Kerala family dubbed ‘super spreader’ on Covid-19 fight.

The news reported by Hindustan Times on April 17, 2020 that proves the hardships a family has to face because of the stigmatization.

A family of non-resident Indians (NRIs) in Kerala, which contracted coronavirus disease Covid-19, has said that it was a “big mistake” on their part to not follow the advice to remain in home quarantine.

The family, who lives in Italy, came to their home in Kerala’s Ranni on February 29 on a three-week leave and attended many functions before testing positive for Covid-19 a week later.

“We did a big mistake. It was unintentional and borne out of ignorance. Many cursed us. Some of our family members even said we will not come alive from the hospital,” said 26-year-old Rijo Moncy, who works in Italy.

They were dubbed “super spreader” after Pathanamthitta, a hilly district in central Kerala which Ranni is part of, was declared a Covid-19 hotspot. More than the virus, the stigma and guilt hounded them.

They were vilified and were targeted by trolls online, who wanted them to be flogged publicly. “We three were together at the hospital. After initial shock and counselling, my parents took to spirituality reading Bible throughout the day. I was allowed to use my mobile but I stopped checking social media to avoid a barrage of criticism and bad news from other parts of the world which upset me. At one point I thought it is difficult to come out,” Moncy explained. The family spent 25 days of isolation at the hospital.

“At times I used to watch news on my phone. But all channels bombarded worst news on virus and that made me more nervous. The

counsellors advised me to watch movie clips and hear songs. I was particular not to show my nervousness or worries before my parents because they were banking on me heavily,” he said, adding that he enjoyed comic strips most.

The incident shows the worse effects of stigmatization that made the family to suffer from emotional trauma in addition with the physical illness.

In April an incident involving an Indian Islamic organisation, Tablighi Jamaat, caused massive outrage and led to reports of Islamophobia across the country. This incident visualises how a health crisis is used in creating religious disputes among the citizens at a time where unity is most needed.

Conclusion

The tremendous spread of covid 19 pandemic had imposed severe hardships over the population all over the world through increased rate of infections and mortality rates. Hence it can be said that the whole world is passing through a difficult time of battling the pandemic for striving their lives and sustaining their livelihood by rescuing themselves from the deadly infectious covid 19 virus. The pandemic had become an uncontrollable health crisis through its immediate spreading and it had lowered the population rates of countries because of the lack of any preventive vaccinations or medicines to seek permanent cure and protection from infections. Apart from these atrocities imposed by covid 19, the pandemic had also triggered the outbreak of many other pre existing issues that hindered the process of coping or adapting and coming back to normalcy. Violence against women, economic deprivation of the poor, social exclusion and stigmatization of the infected population had only resulted in increasing the adversities put forward by the pandemic. The emergence of these issues during the enforcement of lockdown situation will negatively influence the coping strategies taken by the governments and increases the vulnerability of people. These 'other' pandemics are also powerful enough to grab the lives of people even when they are uninfected by the virus but through economic deprivation, violence, emotional trauma, isolation, fear, anxiety and other psychological issues that lead them to suicides. Hence, both



central and state governments has to take in concern all these issues with equal importance to be addressed.

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Women, migration and climate change: Public health focus

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Abstract

Women across the globe is on the move. Migration has now become a social, economic and universal phenomena and it is found to have significant impact on socio-economic development of a region or a country. Health is deemed to be central to the social, economic and environmental dimensions of the sustainable development agenda, both as a beneficiary and a contributor. Sustainable development goals recognise the importance and interrelation between health and migration. It considers health as an indicator of 'people-centred, rights-based, inclusive, and equitable development' (UN, 2015). Gender is a significant factor across all areas of climate change, migration and health. The vulnerability of women and girls to adverse effects of climate change is well established. Though women play a significant role in responding to climate change through strengthening resilience and adaptation in their communities and countries yet they often become part of the 'invisible and forgotten' group and their efforts are insufficiently reported. This paper encapsulates the relation between climate change and health on women migrants aiming at helping to understand the potential health issues faced by female migrant workers as a result of climate change along with addressing their challenges and barriers faced by the female migrants in availing health services. The paper suggests the strategies to be adopted which will help in providing better health care facilities for the women migrant workers thereby being able to reduce the threat of outbreak as well as to improve the public health.

Keywords: Migration, Climate Change, Public Health, Gender



1. Introduction

International Organization for Migration (IOM) deals with migrants and migration-related issues, in agreement with relevant states, with migrants who are in need of international migration services. IOM defines a migrant as any person who is moving or has moved across an international border or within a State away from his/her habitual place of residence, regardless of (1) the person's legal status; (2) whether the movement is voluntary or involuntary; (3) what the causes for the movement are; or (4) what the length of the stay is. The total global migrant population that is the international migrants are estimated at 214 million people that is, about 3% of world population while the internal migrants are estimated at 740 million by Human Development Report 2016, on Human Mobility and Development the major factor for this increase in migrants could be attributed to urbanisation. Urbanisation has led to increase in flow of people to cities, it was reported that in the year of 2000 the urban population has raised to 73.9% and 40.5% from 30% and 9.1% in the year 1900 in the developed world and developing world respectively.

For instance, the migration in china it was estimated that about 140 million rural to urban migrants out of the total 225 million rural populations formed the China's working urban class. They were deprived off any permanent residence rights or other access in the urban areas and were often forced to live in poor quality and crowded housing resulting in limited access to water and sanitation and unsafe work places that increases high occupational health risks and poor access to health care. Kerala has being ranked second among major states undergoing urbanisation at the rate from 26% in 1991 to 48% in 2011. There are wide reasons for the inflow of migrants to Kerala such as the change in the age structure of population where the share of young workforce of age 20-34, has reduced from 50% in 1991 to 38% in 2011 and the increase in out migration and emigration thus created shortage of both unskilled and semi-skilled labour. This has indeed resulted in hike of wages for the same.

Health has always proved to be a problem for the migrant workers since most of the countries have formulated nationalised schemes based on the place of residence. For example, China's national policy has entitled schemes based on locality. It states for an individual to enjoy certain rights such as the free education and access to social welfare, one must have household registration. Since for the migrants from the rural area the household registration is not easily transferable to urban and hence they are forced to pay for their medical services in cities and are not provided public medical insurance and assistance programme away from their residential area. (Peng, Chang, Zhou, Hu & Liang, 2010)

Health is deemed to be central to the social, economic and environmental dimensions of the sustainable development agenda, both as a beneficiary and a contributor. Sustainable development goals recognise the importance and interrelation between health and migration. It considers health as an indicator of 'people-centred, rights-based, inclusive, and equitable development' (UN, 2015). the most important SDG's linked in relation to health of migrant workers is SDG 3 that aims to 'Ensure healthy lives and promote well-being for all at all ages', including that of migrants, while there are other number of SDGs that incorporate elements relating to Health Outcomes and Migration such as Poverty(1.3), Hunger, Gender (5.2,5.3,5.6), Water (6.1,6.2), Employment (8.8), Inequality (10.4,10.7), Peace (16.1,16.9), Implementation (17.18).

2. Review of literature

2.1. Women and migration

Women and girls represent about 48% of international migrants. These women migrants are provided job opportunities predominantly in unregulated sectors where labour standards are usually weak or non-existent, such as agriculture, domestic work, services, and the sex industry. According to the census of India 2001, Out of 309 million internal migrants, 70.7 per cent are women that is about 218 million. The current researches on migration have failed to address the gender specific issues related to migration even though women constitute an overwhelming majority of



migrants. A gender specific perspective on migration become imperative in modern times since their motivations, patterns, options and obstacles for motivation differ significantly from men. Most of time all the other factors are camouflaged by one major factor that is getting married, which by default deems them to be dependent thus working women who move for marriage are not considered and recorded to be labour migrants, even if they had been working prior to and even after migrating (Taran, 2018).

The reasons for women's migration are complex and include both economic and non-economic factors. Migration can be an option to escape social control or gender discrimination (Posel, 2003) as well as prejudice in their home community if they pursue socially stigmatized work ranging from certain manual wage labour to sexual services (Tacoli, 2001). Due to the absence of security, access to health coverage and other social protection provisions the risks of discrimination, exploitation and abuse are heightened. Female migrants are faced with 'triple discrimination'- as women, as unprotected workers, and as migrants. This threefold discrimination of gender, class and nationality has a major impact on women migrants' well-being. It also results in their marginalization from participation in labour market moreover participation in society (Taran, 2018).

2.2 Women migrants and health

The study by Raul A Mendoza-Sassi and Jorge U. B  ria in southern Brazil revealed dissimilarity in self-reported morbidity between men and women assessed using six different measures of reported illness. It was found to be of different degrees depending on type of morbidity. Women in general were found to be at higher risk for health issues with the only exception being for chronic health problems (Mendoza-Sassi & B  ria, 2007). The finding from another study also suggested that women tends to perceive their health problems more intensely and to report them better than men, especially for minor problems. Women employed in cross-border trading are concerned with survival needs, these traders may self-medicate using over

the- counter medications due to difficulty taking time away from work and limited access to nearby health facilities (Wrigley-Asante, 2013).

The paper titled “Maternal deaths among rural–urban migrants in China: a case–control study” aimed at identifying associations with and risks for maternal death among rural–urban migrant women in China. The findings from the study revealed that migrant workers consistently underuse health services in their destination cities due to lack of health insurance placing them at risk. Poor health seeking behaviour among migrant women was found to be associated with women having poor education, low income, lack of health insurance, having poor knowledge on maternity care, being unregistered in the healthcare system during pregnancy and not attending antenatal care during pregnancy (Zhang et al., 2014).

Another qualitative study aimed at exploring the health seeking behaviours of Vietnamese migrant women and their experiences with health care system in Umeå, Sweden. They found that though Sweden had high quality health staffs and fully equipped health facilities it was noted that the lack of familiarity with health system, communication and discrimination were detected as the barriers to health care access. There were negative feelings associated to the unawareness of health staff in cultural differences, unmet expectations and suspicions on quality of medical expertise. The findings suggested hype in self-medication among migrant most dependent on Swedish non-prescribed drugs and Vietnamese medicine to deal with minor illness before contacting to health centre (Le & Chi, 2018).

2.3 Women migrants and Perceived morbidity

Worldwide, studies on the prevalence of health conditions among migrant workers have yield a mixed picture. It is inferred that the urbanization process associated with migration can result increased risks of morbidity and mortality due to the availability and abundance of calorie-dense or low-fibre foods resulting in the adoption of sedentary lifestyles. Cross sectional study found that respondents with a history of migration had



a higher prevalence of chronic disease when compared with those with no history of migration. Diabetes, hypertension, and cardiac complaints were found to be more prevalent among those with history of migration of over 5 years. (Hameed, Kutty, Vijayakumar, & Kamalasanan, 2013). The studies conducted in Netherlands (Jong, & Wesenbenk, 1997) and France (Gliber, 1997) have revealed that infectious diseases like Tuberculosis is found to be higher among migrants than the resident population while studies from Europe indicated higher prevalence of Chronic diseases like diabetes and stroke among migrants (Cruickshank, 1989); (Cruickshank & D. G. Beevers, 1989). Studies also support higher incidence of mental disease and alcohol and drug abuse among migrants (International Centre for Migration & Health, 1998); (Gaspar & Sil'es, 1997). Health risk behaviours such as substance abuse and STD's are found to be common among migrant workers. Poor literacy and low socioeconomic status have resulted in the use of tobacco, smoking, and chewing in majority of the migrant workers.

2.4. Women migrants and Health seeking behaviour

Migrant populations are considered vulnerable since they are exposed to many health problems which could be ascribed to their migration to urban areas. This leads to decreased awareness about local health facility followed by their inability to cope with psychological stress, unhealthy sexual practices, and frequent travelling. The study conducted in Bangalore showed that about 52.9% of respondents delayed to seek health care by more than 3 days indicating that the health seeking behaviour was poor in migrants (Shweeta & Prasad, 2018).

Peng, Chang, Zhou, Hu and Liang conducted a multilevel model analysis which indicated that health-seeking behaviour among migrants is significantly associated with their medical insurance coverage. The hospital visit by the migrant is also affected by the factors such as household monthly income per capita and working hours per day. The study has tried to bring in the influence of socio-demographic characteristics on the migrant workers' health care decision making when they fall ill. They have recommended the

need for relevant policies to provide public medical insurance and assistance program to provide affordable health care services to the migrants. They have found that feasible measures need to be taken to reduce the health risks among the migrant workers which is associated with current hygiene practices and that the migrant workers should be assured equity in access to health care services (Peng, Chang, Zhou, Hu & Liang, 2010).

3. Linkages between Women Migration, Climate Change and Public Health

Most often the female migrants are not considered while formulating the policies and the gender sensitivity is not maintained. This is due to the major presumption that females migrate as dependents and not as economic head. This reduces their chance for visibility among government policies. They are deprived of the security and assistance which would otherwise be available for the male migrants. Hence there must be studies that focus on health of female migrants to help address their health concerns so as to integrate it with the state health policies. The lack of significance given to the health issues can indeed reduce the health status of the concerned region/country. There are literatures available on health seeking behaviour of different segments of society encompassing both urban and non-urban regions but very less emphasis are given to the health care issues related to migrant workers especially female migrant labourers. While available studies on female migrant labourers have primarily focused on AIDS, tuberculosis or their reproductive health and that of very limited research has been conducted on health care access and the health-seeking behaviours of this population. The countries should move beyond from focusing on one single disease to that of catering to the overall health profile of the migrants. With this focus the study find its relevance in understanding the health profile of the female migrant workers along with addressing their health seeking behaviour, the challenges and barrier faced by the female migrants in availing health services.



4. Suggestion for enhancing public health

- Women should be considered as active respondents to climate change crisis than passive receivers of the effects of climate change. Ensuring participation of women in policy formulation and analysis can help in the implementation of gender sensitive policies.
- There is dearth of high quality data available for understanding association between gender, climate and health. Therefore there is a need to capture the factors associated with climate change and migration thereby helping to formulate predictive community based interventions that can better enhance health in times of crisis both men and women.
- Improve multi-sector coordination and also civil society involvement is the key for promoting public health during crisis. There should a readdressal mechanism present at various sectors wherein policies needs to discussed, redrafted and implemented.
- Women are the stakeholders at the outset of any project and they should be empowered to effectively design and implement culturally acceptable interventions where they are needed most. Roles of women as educators, caregivers, holders of knowledge, and powerful agents of social change should be recognised.
- Awareness generation on gender-specific health threats of climate change is needed within public health, policy, medicine, and general education. The government and civil society engagement should focus on capacity and skills among women to help them foster leadership and strengthen resilience

5. Conclusion

The literatures examined showcase the need for studies concerning gender specific perspective on migration related issues. This would help in obtaining evidence on health of women migrants. The study has research and policy implication. Migration needs to be seen as a multidimensional

phenomenon that has its roots on economic, political, social and public health dimension. The current literature review find its relevance in understanding the ongoing research trends and gap regarding health of female migrant workers along with addressing their health seeking behaviour, the challenges and barriers faced by the female migrants in availing health services. Studies on the health of female migrants can help in formulating the needed changes to be adopted that will help to provide better health care facilities for the women migrant workers thereby reducing threat of outbreak as well as to improve the public health.

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Comparative Study on the Efficacy of Bioaugmented Vegetable Compost, Vermicompost and Cowdung Based on Physico Chemical Parameters and Plant Growth

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Abstract

With rapid urbanization, industrialization and increasing population, solid waste productions are growing rapidly making garbage pollution a serious problem. Current SWM systems are inefficient as wastes produce a negative impact on public health, the environment and the economy. This urban waste can be converted to a potential plant nutrient enriched resource –compost and vermicompost that can be utilized for sustainable land restoration practices. So this study tries to evaluate the efficacy of the bioaugmented vegetable compost, vermicompost and cow dung by chemical parameter analysis and plant bioassay study models. Results indicate that the organic bioaugmented vegetable compost is the better manure compared to the other two manures used in the study since this have a better NPK value, organic C content, C/N ratio and moisture. The plant growth studies also revealed that the vegetable composting augmented with bacteria gave better results. The special properties of the bacterial inoculum, p-solubilising and nitrogen fixation *etc.* made the bioaugmented vegetable compost more effective than the other manures in the physicochemical analysis and on plant growth. The composting has a multidimensional approach which helps to regulate waste, clean up the environment and production of good quality natural manure. It can be used in the promotion of organic farming and boost the economy too.

Introduction

Solid Waste Management (SWM) is a major problem for many urban local bodies (ULBs) in India, where urbanization, industrialization and economic growth have resulted in increased municipal solid waste (MSW) generation per person (U.S Environmental Protection Agency, 2008). Effective SWM is a major challenge in cities with high population density. Despite significant development in social, economic and environmental areas, SWM systems in India have remained relatively unchanged. The informal sector has a key role in extracting value from waste, with approximately 90 percent of residual waste is currently dumped rather than properly land filled. There is an urgent need to move to more sustainable SWM, and this requires new management system and waste management facilities. Current SWM systems are inefficient, with wastes having a negative impact on public health, the environment and the economy (Statistics Canada, 2000). The Waste Management and Handling Rules in India were introduced by the Ministry of Environment and Forests (MoEF) (Australian Bureau of Statistics, 2010), although compliance is variable and limited. The proper management of solid waste needs appropriate technology, which is economically affordable, socially accepted and environment friendly.

With rapid urbanization, industrialization and increasing population, solid waste production is growing rapidly making garbage pollution a serious problem. The urban green waste generally comprises of domestic and commercial food waste which is generated in large amounts and accumulated in unhygienic way, emanating unbearable malodor due to lack of proper scientific disposal management particularly in developing countries like India. This urban waste can be converted to a potential plant nutrient enriched resource –compost and vermicompost that can be utilized for sustainable land restoration practices. In the process of composting, microbes breakdown organic matter and produce carbon dioxide, water, heat and humus, the relatively stable organic end products. Vermicomposting is the



process of breaking down of organic matter under mesophilic conditions through the interaction between earthworm and microorganisms.

According to growing trend of using chemical fertilizers in agriculture and its associated environmental impacts specially in developing countries, application of management strategies are necessary to reduce its effects. Non fundamental and long-term consumption of fertilizers not only leads to degradation of soil quality, but also can reduce product quality, that disrupt the natural balance of the ecosystems and increases environmental pollution. In the past half century, using chemical fertilizers significantly has increased the yield of the agriculture products. The use of compost or organic manure is currently being advocated as an option for improving soil fertility conditions for poor farmers. The use of organic fertilizers increases the soil organic carbon pool and soil pH, improves the soil structure, decreases bulk density, provides macro- and micronutrients and enhances microbial activity. The maize treated with organic materials plus inorganic fertilizer had higher grain yield compared to the recommended rate of inorganic fertilizer. It was evaluated the effect of vermicompost on crop productivity, Organic manures provide a good source for the growth of microorganisms and maintain nutritional balance and soil properties. Organic fertilizers contain relatively low concentrations of the actual plant nutrients and are not immediately available for plant utilization. Hence, the fortification of organic wastes and their composts as a source of organic nutrients are imperative for sustainable agriculture¹. By the use of chemical fertilizers, the environmental stability was changed drastically. In this situation, microbes (i.e., bacteria and fungi) naturally occurring in soil or supplied as bio-fertilizers, could represent a promising approach to increase nutrients bioavailability and improve soil structure. There are different types of composts used for the management of solid waste in a proper way. Most of these composts can be used as fertilizers to increase the agricultural production. The uses of natural manures also decrease the harmful effects of chemical fertilizers on the properties of soil. Therefore using these composts as manures can increase the land productivity

without damaging the soil properties. The quality of the compost and the structure of the microbial community in the compost differed when green waste was processed by vermicomposting vs. aerobic composting. Relative to the aerobic compost, the vermicompost had a lower pH, lower lignin and cellulose concentrations ($P < 0.05$), a higher EC value, and higher TN and available P concentrations². This project aims at finding which type of manure has higher nutrient content and have high effect on the crop yield. This also aims at finding whether the natural composts are better than the animal manure, cowdung. In this context, a comparative study on the efficacy of bioaugmented vegetable compost, vermicompost and cowdung based on physico chemical parameters and plant growth are presented in this paper.

Materials and Methods

Materials required: The study evaluated the chemical constituents and the efficiency of one natural and two synthetic manures. The natural manure, cowdung was collected directly from the dairy farm and was used for the study. The synthetic manures used for the study was vermicompost and bioaugmented vegetable compost. Vermicompost was prepared in the laboratory. A pot was first filled by leaves, organic waste and cowdung to the half. Then about 60-70 earthworms, the *Eudrilus sp* were added and the rest of the pot was filled again by the cowdung and leaves. The mixture was mixed at every 3rd day till complete powdered soft compost was formed after 36 days.

The bioaugmented vegetable compost was prepared by using the three pots that were arranged one over the other in a horizontal way. The three pots were labeled as A, B and C. The bottom part of the pots A and B are open but has a wire mesh. The pot C was first filled with leaves for about half an inch. Then above the pot C, the pot B was kept and above the pot B, pot A was kept. In the pot A, the mixture of dried coconut husk and bacterial inoculation which included strains of *pseudomonas sp.* and *bacilli sp.* was added. Above all the food waste was added and again the mixture was added. This procedure was repeated for the next ten days till the pot A got filled.



The pot A was then brought down and the procedure was repeated for the pot B while the pot C was still at the bottom. By this time the waste in the pot A was half decomposed and was added to the pot C emptying the pot A for the next cycle. Nearly after one month, the powdered compost was formed and was taken out from the pot C.

Methodology: The chemical constituents of the compost was analysed by standard methods³. The constituents measured were Moisture content, Nitrogen, Potassium, Phosphate and Organic carbon. The physical parameters, pH and electrical conductivity of all the three manures were also measured. The plant bioassay study of these manures were studied using *Amaranthus sp.*

Estimation of soil organic carbon: Took 0.5g sieved soil sample in a 500ml conical flask. Added 10ml of 1N potassium dichromate to sample. Mixed by stirring. Added 20ml concentrated sulphuric acid. Mixed gently by gentle rotation. Allowed the mixture to stand for 20-30 minutes for digestion to take place. Diluted the solution to 200ml with distilled water. Added 10ml 85% o-phosphoric acid, 0.2g sodium fluoride and 1ml Diphenyl amine indicator. Then ferrous ammonium sulphate was filled in burette. Solution was dull green in the beginning, shifted to turbid blue as titration proceeds and changed sharply to brilliant green colour at one drop end point. Prepared the reagent blank in exactly the same way, omitting only the soil sample. Titrated this against standard ferrous ammonium sulphate in burette.

Estimation of phosphate: Air dried the compost sample and weighed 5g. Then it was dissolved in 50ml distilled water. Mixed by stirring. Filtered the suspension through whatmann's filter paper. Three test tubes were taken labeled test, standard and blank. In the test, added 2ml of filtered clear sample, 1ml ammonium molybdate solution and 0.4ml stannous chloride. In the standard, added 2ml phosphate standard, 1ml ammonium molybdate and 0.4ml stannous chloride. In blank, added 2ml distilled water, 1ml ammonium molybdate and 0.4ml stannous chloride. Allowed to stand for 15 minutes and measured OD at 650nm.

Estimation of Nitrate: Arranged three test tubes and marked as test, standard and blank. Pipetted out 0.25 ml sample to the test tube marked as 'test'. 0.25ml nitrate standard solution to the 'standard' and 0.25ml distilled water to the 'blank'. Added 0.8 ml salicylic acid to all three test tubes and mixed thoroughly (the wine red colour develops in the test and standard). After 20 minutes, added 19 ml of 2N NaOH. Cooled the sample at room temperature and measured OD at 410nm.

Plant Bioassay Study: To test the efficacy of these three manures, Plant Bioassay studies were conducted by mixing these manures with soil and used for the growth of *Amaranthus sp.* *Amaranthus* saplings were planted in 4 pots and was labeled A,B,C and D and in the first three pots, cowdung, vermicompost and the bioaugmented vegetable compost was used as manure respectively. The fourth pot D was kept as control without using any manure. It was regularly monitored and growth parameters, leaf number and the height of the plant were periodically measured to check the growth efficiency of the saplings.

Results and Discussion

Chemical composition of manure is an important indicator that determines the quality of manure. This study compared the chemical composition of natural manure, cowdung and two synthetic manures, vermicompost and the organic waste compost using bacteria. The cowdung was used while synthetic manures were prepared using worms and bacteria. In both the composting processes, coconut husk and food waste were used. The results indicate that the organic bioaugmented compost, synthetic manure made by using bacteria and organic waste is the best manure compared to the other two manures used in this study.

The results of the current study comparing the efficacy of three different manures is recorded and tabulated. The physico chemical analysis of all the three were done and tabulated in Table 1, the parameters analysed were Moisture content, pH, Electrical Conductivity, Nitrogen, Potassium,



Phosphate and Organic Carbon. The moisture content of the cowdung was 47.7%, of the vermicompost was 46.8% and that of the organic compost was 47%. The pH of the cowdung was 6.8, vermicompost was 7.2 and that of the organic compost was 7.1. The electrical conductivity of the cowdung was estimated as 5.5ds/u, of vermicompost was 4.0ds/u and of the organic vegetable compost was 6ds/u. The amount of organic carbon was present higher in the vegetable compost, 32.5% compared to cowdung and vermicompost whose values were 28.6 % and 20.8% respectively. The nitrogen content of cowdung, vermicompost and the bioaugmented vegetable compost were estimated as 1624mg/kg, 1585mg/kg and 1686/kg respectively. The potassium content in the vegetable compost is 4512mg/kg which is higher compared to 4311mg/kg of vermicompost and 4389mg/kg of cowdung. The phosphorous content in the organic compost is estimated as 4986 mg/kg while that of cowdung and vermicompost was estimated as 4883mg/kg and 4816 mg/kg respectively.

Table 1. Chemical analysis of three different manures

Parameters	Cowdung	Bioaugmented Vegetable compost	Vermicompost
Moisture	47.7%	47%	46.8%
Nitrogen	1624 mg/kg	1686 mg/kg	1585 mg/kg
Potassium	4389 mg/kg	4512 mg/kg	4311 mg/kg
Phosphorous	4883 mg/kg	4986 mg/kg	4816 mg/kg
Organic Carbon	28.6%	32%	20.8%
Electrical conductivity	5.5ds/u	6.0 ds/u	4.0 ds/u
Ph	6.8	7.1	7.2

Table 2. C/N ratio of different manures

Manure type	Carbon %(C)	Nitrogen%(N)	C/N ratio
1.vermicompost	20.8	0.1585	131.2
2.vegetable compost	32	0.1686	189.8
3.cowdung	28.6	0.1624	176.1

The NPK values and organic carbon content were considerably higher in the bioaugmented vegetable compost. Therefore from the study it is depicted that the bioaugmented compost is the better manure compared to the other two manures used in the study since this have a better NPK value, organic carbon content and relatively moderate pH . The C/N ratio of the three manures is depicted in Table 2. The better C/N ratio was shown by the bio augmented vegetable compost than the other two manures. However, to determine the quality of all the three manures, they were tested in a plant growth bioassay as a follow-up study. Plant growth studies were conducted using *Amaranthus* sp. As time was a limiting factor, only preliminary data was collected for 35 days (10th feb-17th march 2019) in the studies for the plant yield. The growth data of the plant bioassay study in terms of stem length and number of leaves were compared and the plants grown with the vegetable compost showed a higher growth rate compared to the control and the other two manures. The current study indicates that the synthetic manure, bioaugmented vegetable compost is the best manure than the other two manures used in the study. The physico chemical analysis also showed a better composition in the vegetable compost. The formation of vegetable compost was also less time consuming than the other synthetic manure, vermicompost. So the vegetable compost showed the better chemical properties required for a fertilizer.

Table 3. Growth data of *Amaranthus* sp. in terms of stem length (cm)

Sl. no		days		Experiment 1.Stem length in centimeter											
				Control			Cowdung			Vermicompost			Vegetable compost		
				C1	C2	(C)	Cd1	Cd2	(Cd)	Vc1	Vc2	(Vc)	Bc1	Bc2	(Bc)
1	2	6	6	6	7	6	6.5	8	7	7.5	9	9	9		
2	4	7	7.5	7.25	8	9	8.5	9	8.5	8.75	10	10.5	10.25		
3	8	10	9	9	12	13	12.5	11	12	11.5	14	14.5	14.25		
4	16	19	18	18.5	21	21	21	20.5	19.5	20	21	21.5	21.25		

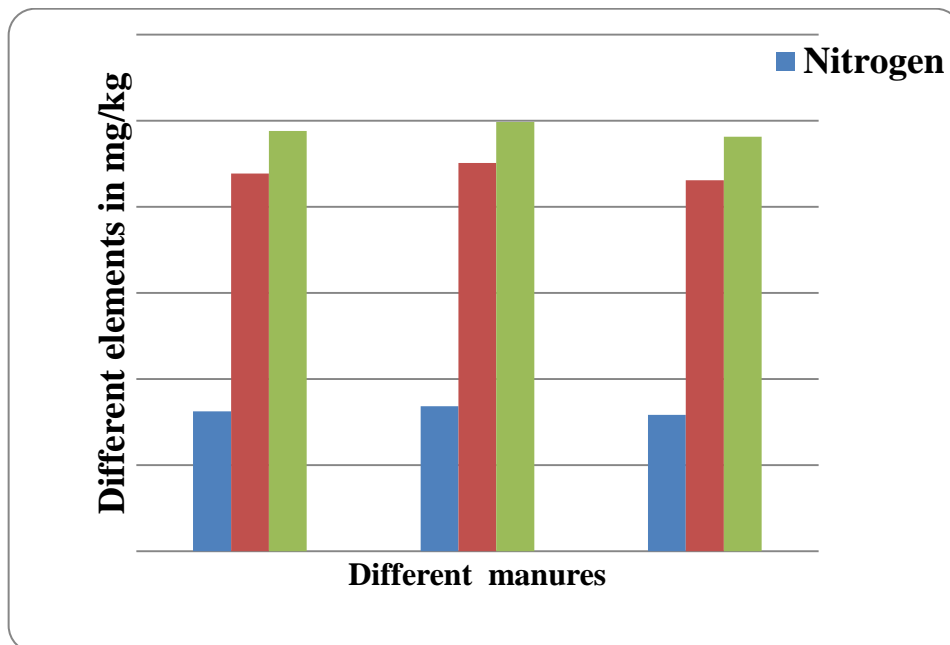


Fig. 1. Nitrogen, Potassium, Phosphorous content in the three manures

Table 4. Growth data of *Amaranthus* sp. in terms of leaf number

Sl. no	days	Experiment 1. Growth data based on the number of leaves											
		Control			Cowdung			Vermicompost			Vegetable compost		
		C1	C2	(C)	Cd1	Cd2	(Cd)	Vc1	Vc2	(Vc)	Bc1	Bc2	(Bc)
1	2	5	6	5.5	6	7	6.5	5	5	5	7	6	6.5
2	4	7	7	7	7	8	7.5	6	6	6	8	7	7.5
3	8	8	9	8.5	9	9	9	8	7	7.5	9	8	8.5
4	16	11	11	11	13	12	12.5	12	12	12	14	13	13.5

The current study indicates that bioaugmented vegetable compost was the most effective manure than the cowdung and vermicompost. This is attributed to the better chemical composition of the bacteria augmented compost with regard to N,P,K,C and moisture content than the other two manures (Table 1). The bioaugmented vegetable compost can effectively replace the high cost-chemical fertilizers and it can be used as an ecofriendly, cost effective biofertilizer.

The 'Green Revolution' in the 1960s and 70s ushered by the heavy use of agro-chemicals, increased food productivity but also created several socio-economic and environmental problems like decreased nutritional quality of food produced, decreased soil fertility, higher demand of water for irrigation, soil and water pollution and pesticide poisonings⁴. The pesticide remnants in vegetables can cause neurological and blood disorders, lung ailments and affect the reproductive system of women. The indiscriminate use of chemical fertilizers in the wake of Green Revolution in India has pushed the state to the brink of health hazards like 'blue baby syndrome' and cancer man civilization. In today's era, heavy doses of chemical fertilizers and pesticides are being used by the farmers to get a better yield of various field crops⁵. These chemical fertilizers and pesticides decreased soil fertility and caused health problems to the consumers. Due to adverse effects of chemical fertilizers, interest has been stimulated for the use of organic manures.

Addition of compost into vegetables crop field along with N, P, K nutrients showed very effective response on the growth of vegetables crops. A positive effect from the usage of microbe augmented compost among other fertilizers on cultivation of tomato plants using different fertilizers having equal concentration of nutrients and recorded a greater impact on different growth parameters of tomato plants^{6,7}. Bacterial and fungal inocula and organic amendments could be considered as a potential option to incorporate in crop integrated nutrient management strategy of degraded soils⁸. Introduction of these inocula can exploit, translocate, mineralize and mobilize soil P, K, Fe reserves, increase organic matter or fix N from the atmosphere^{9,10}. Arbuscular mycorrhizal (AM) fungi and biological N fixing bacteria annually contribute 5–20% to the total N demand of grassland and savannah¹¹. The contribution of AM fungi to temperate and boreal forests is 80% whereas total P acquired by plants through bacteria and fungi was 75%. The basic mechanisms through which bacteria and fungi promote nutrients bioavailability include N fixation, P, K and Fe mobilization through production of organic acids and siderophores. In addition to this, organo-



polysaccharides and proteins (gelmalin, mucilages and hydrophobins) are also produced that help to promote soil aggregate stability^{12,13,14}. These processes are carried out by bacteria, and AM fungi. Later group of microbes form a symbiotic association with legume roots infected by N fixing bacteria that increase P, micro and other macronutrients for plant uptake as well as mitigate the effect of water and salt stress¹⁵. Free-living and symbiotic bacteria enhance plant growth by providing N through atmospheric N₂ fixation and produce phyto hormone (auxins, cytokinins and gibberellins) in addition to anti-microbial molecules to protect the crops from diseases.

The current study also recorded several advantages in the use of bioaugmented compost over vermicompost and cattle manure in the field of vegetables crop. The benefits of compost were augmented using bacterial inoculation. Vegetable compost is rich in all essential plant nutrients (Table 1) and it had even better profile as a biomanure with higher N, P, K values tested. It provided good effect on overall plant growth and encourages the growth of new shoots / leaves and improves the quality and shelf life of the produce. Microorganisms are essential part of biodiversity and play significant role in structure and functioning of the ecosystem on the environment. The microorganisms (mainly bacteria, fungi, actinomycetes) are the primary decomposers of organic waste. The microorganisms not only mineralize complex substances (organic waste) into plant available form but also can synthesis whole series of biologically active substances¹⁶. Microbes are responsible for the biochemical degradation of the organic matter. Earthworms are the important drivers of the process, conducting the substrate (organic wastes).

Remarkable growth obtained in the compost treated plants may be due to favorable and optimum temperature; moisture and a balance between organic and inorganic nutrients in the compost which have significantly aided in increased growth of plants. The enhanced growth in these plants may be due to improved soil health and the physico-chemical properties of soil were enhanced leading to an increase in both microbial activity and

macro and micro nutrients. The current study indicates that compost augmented with microorganisms showed better properties of an effective fertilizer than the traditional vermicompost sample. Because this compost had a better chemical composition with regard to N,P,K,C and moisture content than normal compost. Remarkable growth obtained in the compost treated plants may be due to favorable and optimum temperature; moisture and a balance between organic and inorganic nutrients in the compost which have significantly aided in increased growth of plants. The enhanced growth in these plants may be due to improved soil health and the physico-chemical properties of soil were enhanced leading to an increase in both microbial activity and macro and micro nutrients.

Conclusion

Solid waste management is a major problem in India. Due to industrialization and economic growth it has resulted in increased municipal solid waste generation per person. Composting is an efficient cost effective ecofriendly method to manage biodegradable wastes. The current study recorded that the inoculation of microbes along with composting improved the chemical composition of the compost when compared to the vermicompost and the cowdung. The plant growth studies also revealed that the composting augmented with microbes gave better results. Bioaugmented compost contains plant nutrients including N, P, K, Ca, Mg, S, Fe, Mn, Zn, Cu and B, the uptake of which has a positive effect on plant nutrition, photosynthesis, the chlorophyll content of the leaves and improves the nutrient content of the different plant components (roots, shoots and the fruits). Thus the current strategy has a multidimensional approach which helps to regulate waste, clean up the environment, prevention of diseases and production of good quality natural manure. The compost evaluated in the current study had a better chemical profile in terms of N, P, K, moisture and C:N ration over the other two traditional manures and hence can be used in the promotion of organic farming.



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Postcolonial Digital Humanities in a New Digital Era.

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Abstract

Modern Language Association which was held in 2014 was the first kind of step to discuss the aspects of Postcolonial digital humanities. It occurs as a line of debate and discussion which seems to hold a dialogue between global analyses of knowledge production and power that lies within the domain of postcolonial studies. Unintentionally some of the digital humanities project the work as a fuel in colonialism which leads to violence. One of the very important goals or desire of the postcolonial digital humanities is to help in framing historical and intellectual project of decolonization in the modern era to record as well as to bear the practicality of colonialism. Easily accessibility of various forms of Digital Humanities and labour allow the people who want to contribute and want to put together all these records because of easy accessibility and friendliness. It is a way where building archives and other Digital project challenge the erasure width or misconception and the mere silence of print which we can replicate with digital humanities.

Keywords: Dialogue, Digital Humanities, Postcolonial aspects, easily accessibility etc

Introduction

Digital humanities help in understanding the fact among the common people that the internet or the digital world is influenced and dominated by English languages, Google, Search Engine and other sites which were developed by American companies and distributors. Some other European countries like

Russia, China and others join their hands for the purpose of spreading their influence in some areas and in regions, they have only one thing in mind and want to stand for what may be called postcolonial powers and their aim is to use their power to the rest of the world. The mechanism that is engaged by these colonial powers in the field of the digital era are noticed, revealed and not welcomed by the Roopika Risam in her book *Digital Worlds: Postcolonial Digital Humanities in Theory, Praxis, and Pedagogy* (2019), she has the concept of associating her familiarity of English literature and with postcolonial studies and applies it to the practical studies of digital humanities.

This books works not only as a critical approach to the present situation and the ways in the development of digital humanities, but this book is work as an effort to initiate the optional ways of energetic resistance to the upcoming power of the Global North and different ways of responding. Roopika Risam focuses on an approach to digital humanities called postcolonial digital humanities, which works to uncover and intervene “in the disruptions within the digital cultural record produced by colonialism and neocolonialism”(141).She affirms and warns the possibility of damage and downgrading of digital records which confirms the discourse of colonial power, but also lay stress on the fact that digital records provide a platform not only for colonial rule and power, but it helps in acknowledging the history of colonialism and help in filling the gap of knowledge that had to remain an ancestral legacy of colonialism. The most remarkable illustration of a thriving postcolonial digital human project that she provided in her book was the concept of the Early Caribbean Digital Archive. This is inadequate for the proof of what exists in the cultural record on Caribbean history, make a fraction of the important values and aspect of globe manufacturing in the digital world just like the Early Caribbean Digital Archive help to set hurdles the central stories and ideological philosophy that still subsist in the digital cultural record of the modern era.



Unintentionally some of the digital humanities help in contributing to the outbreak and violence and violence aspects, one of the essential elements of postcolonial digital humanities is to frame the past events and intellectual framework of various colonial aspects in the digital record as well to oppose the colonial rule and its aspects in its practice. Beached in the various aspects of literary, historical and philosophical inheritance of postcolonial studies and shows a clue of the possibility provided by the digital humanities. We put it in the emerging fields of study invested in the free from the clutches of colonialism. We are ready for making plans for colonial thoughts and are distracting initial narratives of the progress of globalization and in the progress of technology.

The days of ours will be used in engaged and scheduled with theory, on practicality and reflection indication on practice. The other parts include theoretical topics which include digital labour, subalternity, incarnation and beautiful things. The activities that are included in applied areas Scalar based game, mobile/media/film/ photography and mapping. In the theoretical study, we stress on the easy availability and less economic technology, inspiration and explanation and interpretation. There is no need for preceding experience with theory or practice is needed. It is an open and wide to discuss debate and discover the theory and practice of postcolonial digital humanities. Risam describes and reveals about some of the tools that can be used in digital scholarship which includes breaking or reading the colonial aspects in protest against the seeds of colonial rule and empire or kingdom by discovering and creating new knowledge with already existing theories and practices. She also emphasizes on the significance of tough tools and various strategies as a form of interference in the postcolonial digital era, how the digital era can supply as recovery and depicting of disqualified societies. At the end, she discovers and explores the various digital sources like twitter and hash tag which were born out of the existing platform of social media. According to her perception, she stresses on how much significant these digital sources are important for understanding the modern social activities.

The practices of the postcolonial digital era and the significant role of social media in the social sphere permit for, “emancipatory and expansive possibilities for resisting colonial world making in digital worlds”(7).

Roopika Risam’s new book, *New Digital Worlds*, depicts the grooming and potential humanist who thinks much on the digital achieves when there is turn to represent it in the modern era. She stresses on different ways where we are, even we unintentionally giving chance to colonial rule and narratives because we are not active participate for the protest. She also realizes that a variety of people with some vital intention platforms and projects have done the same disaster because they do not understand the lack of source s in not a justification for spreading and using a colonialist narrative. There are always different approaches and platforms to read and analyze various sources, especially when there is not the clue form the roots. The endurance and availability of the existing sources also speak about its presence as is verified in the Britain Foreign Aid offices subjugation and repression of colonial sources. We must always try to understand what the reason for our access is if already we have, but also to think and understand what is not present and what the Early Caribbean Digital archive does. There are the evidence and opportunities as humanist we must take part actively for our concern and engage with its discourse if we truly wish to create and debate about the postcolonial digital archive. We have to give due importance to the social media platform which proves to be expected and naturally more diverse.

Conclusion

There are always different approaches and platforms to read and analyze various sources, especially when there is not the clue form the roots, I would like to underline the place of the writer portentous the requirement of deliberate and planned action heading for interrupt the obtainable leading structure, be they educational, corporate or cultural. It should be done in the name of protecting not only our heritage but also the future diversity.



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Synthetic Modification and Antimicrobial Evaluation of (*E*)-Labda-8 (17), 12-Diene-15, 16-Dial from *Curcuma Amada* Rhizomes

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Abstract

Curcuma amada is an aromatic herb used as food as well as medicine. Herein we report the isolation of major phytochemical (*E*)-labda-8 (17), 12-diene-15,16-dial from the rhizome of this plant and its synthetic modifications. All the synthetically modified compounds were characterized using various spectroscopic techniques. All the compounds were evaluated for its antimicrobial properties against *Bacillus cereus*, *Salmonella typhi*, *Staphylococcus epidermidis*, *Staphylococcus aureus*, *Escherichia coli* and *Klebsiella pneumonia*.

Key words: *Curcuma amada*, (*E*)-labda-8 (17), 12-diene-15,16-dial, Zerumin A, Calcaratin A

1. Introduction

Curcuma amada Roxb, is a rhizomatous herb (commonly known as Mango ginger) which is extensively grown in Asia, Africa and Australia [1]. The rhizome of this plant has been used as crude drug in Ayurveda. *C. amada* is used for the treatment of bronchitis, dyspepsia, fever, asthma and inflammation. In 1994 Natkani et al, reported the isolation of (*E*)- labda-8 (17), 12-diene-15,16-dial from *C. amada* rhizomes [2]. This major phytochemical (*E*)- labda-8 (17), 12-diene-15,16-dial shown to have anticancer activity [3]. Another minor



phytochemical from this plant is zerumin A [4] which is isolated earlier from *Alpinia zerumbet* [4] is found to have promising Anti-angiogenic effect [5]. The present work aims the simple synthesis of zerumin A, Calcaratarin A (minor biologically active phytochemical present in *Curcuma mangga*, *Curcuma zedoaria*) and (*E*)-15,15-Diethoxylabda-8 (17),12-diene-16-al (Isolated from *Aframomum sceptrum*) from (*E*)-labda-8 (17), 12-diene-15,16-dial and their antimicrobial studies.

2. Material and methods

2.1 General

All chemicals were purchased from Sigma-Aldrich. TLC was carried out on Si gel 60 F254 (Merck, Bangalore, India) and CC on Si gel 100–200 mesh (Merck), CC on neutral alumina, 60–325m (Spectrochem). ¹H NMR (500MHz) and ¹³C NMR (125MHz) spectra were recorded on a Bruker AMX 500 NMR Spectrometer (Bruker AMX, Fallanden, Switzerland) using CDCl₃ with tetramethylsilane as internal standard. IR spectra were recorded on Bruker FT-IR spectrometer (Bruker AXS, The Helios, Singapore). Mass spectra were recorded under ESI/HR-MS at 61,800 resolution using Thermo Scientific exactive mass spectrometer (Thermo Fischer Scientific, Bremen, Germany).

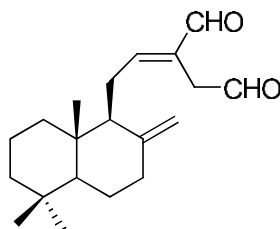
2.2 Plant material

The rhizomes of *Curcuma amada* were collected from CTCRI, Thiruvananthapuram. They are cleaned, washed, chopped and dried in a dehumidifying oven at 400°C and then it was powdered.

2.3 Extraction and isolation

400 g of the powdered *C. amada* rhizomes were subjected to extraction at room temperature in chloroform yielded 19.82 g extract. This extract was on purification using column chromatography on silica gel using petroleum ether and ethyl acetate as solvents yielded 197 fraction pools. Fr. 13-66 (7.308 g) was subjected to purification on silica gel and followed by crystallization

yielded the major compound 1 which is identified as (*E*)-labda-8 (17), 12-diene-15,16-dial from its spectral data and from the literature [2].

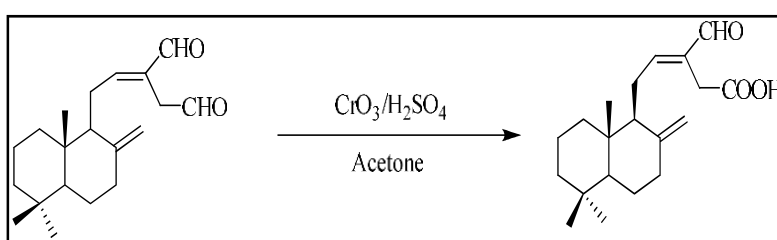


Structure of Compound 1

2.4 Synthetic modifications of Compound 1

2.4.1 Conversion of Compound 1 into Zerumin A

a stirred solution of compound 1 (0.1 g) in acetone, Jone's reagent was added until the reddish colour persisted. After the completion of reaction as indicated by TLC, excess reagent was quenched by the addition of isopropanol. The reaction mixture was then filtered through celite, concentrated, further extracted with ether (25 ml×3), washed with distilled water and dried with anhydrous Na₂SO₄. Solvent was removed and the residue was subjected to chromatography on silica gel column which afforded the Zerumin A in 60% yield (0.062 g)



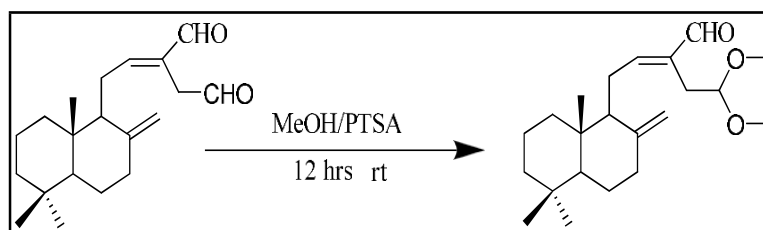
Scheme 1

2.4.2 Conversion of Compound 1 into Calcaratarin A

To a stirred solution of compound 1 (0.1 g) in dry methanol, added catalytic amount of PTSA and stirred for 12 hrs at room temperature. After



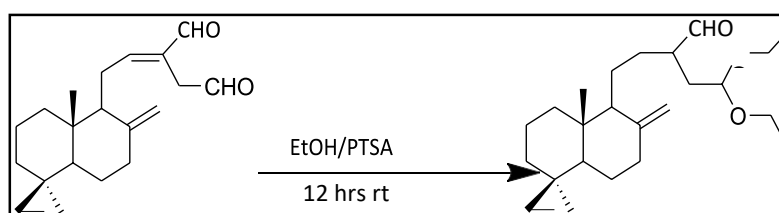
completion of the reaction indicated by TLC, the mixture was filtered, extracted with DCM (20 ml×3), washed with distilled water, dried over anhydrous Na₂SO₄ and then concentrated. This was subjected to column chromatography on silica gel to obtain compound (0.061 g) in 56.4% yield.



Scheme 2

2.4.3 Conversion of Compound 1 into (E)-15,15-Diethoxylabda-8 (17),12-diene-16-al

To a stirred solution of compound 1 (0.1 g) in dry ethanol, added catalytic amount of PTSA and stirred for 12 hrs at room temperature. After completion of the reaction indicated by TLC, the mixture was filtered, extracted with DCM (20 ml×3), washed with distilled water, dried over anhydrous Na₂SO₄ and then concentrated. This was subjected for column chromatography on silica gel to obtain compound (E)-15,15-Diethoxylabda-8 (17),12-diene-16-al (0.056 g) in 48% yield.



Scheme 3

3. Results and discussion

3.1 Characterization of synthesized compounds

The structure of the product was confirmed by spectroscopic techniques. IR spectrum showed the presence of a carboxylic acid group through the broad absorption above 3000 cm^{-1} followed by the absorption at 2847 cm^{-1} and 1713 cm^{-1} . Another strong absorption at 1689 cm^{-1} suggested the presence of an α, β -unsaturated aldehyde also. Absorptions at $2928, 1663$ and 890 cm^{-1} pointed the presence of exocyclic double bonds. ^1H NMR spectrum shows the presence of an aldehyde at δ 9.36 integrating for one proton, which is confirmed by a peak at δ 193.6 in ^{13}C NMR. Signal at δ 6.7 cm^{-1} integrating for one proton in the ^1H NMR and the carbon signals at δ 159.4 and δ 135.7, confirms that the aldehyde is an α, β -unsaturated aldehyde. The proton signals at δ 4.86 and δ 4.40 and carbon signals at δ 148.0 and δ 107.9 were characteristic of an exomethylene group. The three singlets at δ 0.89 (3H), 0.83 (3H) and 0.75 (3H) confirmed the presence of three quaternary methyl groups. The molecular ion peak $(\text{M}+\text{Na})^+$ in the mass spectrum was at 341.2089. Spectral details of the Zerumin A is almost match with compound 1 except the disappearance of one aldehydic proton which is at δ 9.63 in the ^1H NMR and carbon signal at δ 197.3 of the ^{13}C NMR. The appearance of carbon signal at δ 175.8 confirms the formation of Zerumin A.

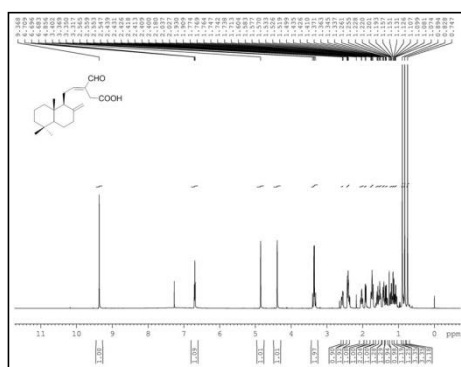


Fig. 1: ^1H NMR spectrum of Zerumin A

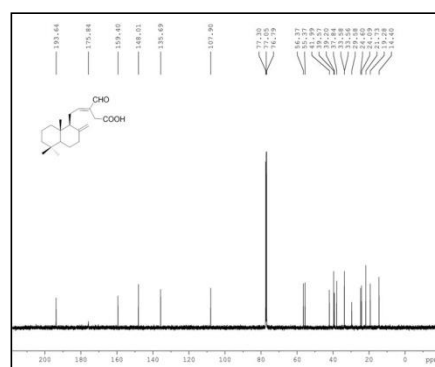


Fig. 2: ^{13}C NMR spectrum of Zerumin A



The structure of the product was confirmed by spectroscopic techniques. IR spectrum showed the presence of a carboxylic acid group through the broad absorption above 3000 cm^{-1} followed by the absorption at 2847 cm^{-1} and 1713 cm^{-1} . Another strong absorption at 1689 cm^{-1} suggested the presence of an α , β -unsaturated aldehyde also. Absorptions at 2928, 1663 and 890 cm^{-1} pointed the presence of exocyclic double bonds. ^1H NMR spectrum shows the presence of an aldehyde at δ 9.35 integrating for one proton, which is confirmed by a peak at δ 193.6 in ^{13}C NMR. Signal at δ 3.35 integrating for 6 protons indicated the presence of 2 – OCH_3 which is confirmed from ^{13}C NMR at δ 197.3. Signal at δ 6.7 cm^{-1} integrating for one proton in the ^1H NMR and the carbon signals at δ 159.3 and δ 135.8, confirms that the aldehyde is an α , β -unsaturated aldehyde. The proton signals at δ 4.87 and δ 4.50 and carbon signals at δ 149.0 and δ 108.9 were characteristic of an exomethylene group. The three singlets at δ 0.89 (3H), 0.83 (3H) and 0.75 (3H) confirmed the presence of three quaternary methyl groups. The molecular ion peak ($\text{M}+\text{Na}$) $^{+}$ in the mass spectrum was at 313.2077. The disappearance of an aldehydic proton at δ 9.63 in ^1H NMR and carbon signals at δ 197.3 in Compound 1 and appearance of signals integrating for six protons at δ 3.35 and proton signal at 4.45 in ^1H NMR along with carbon signals at δ 103.9 In ^{13}C NMR confirms the formation of Calcaratarin A.

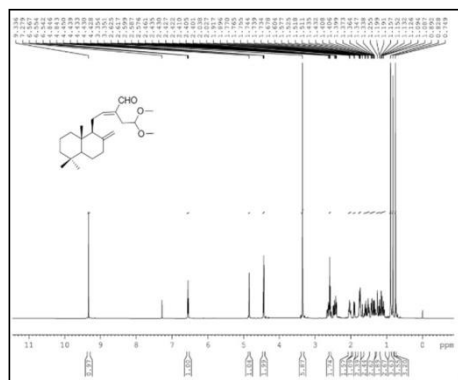


Fig. 3: ^1H NMR spectrum of Calcaratarin A

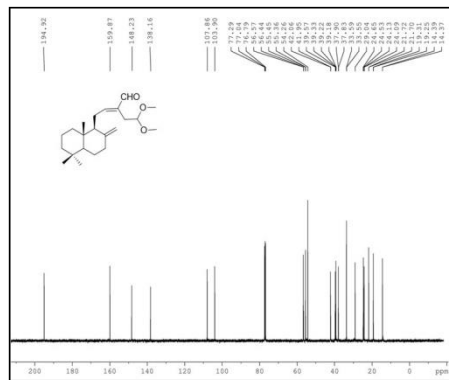


Fig 4: ^{13}C NMR spectrum of Calcaratarin A

The IR spectrum showed strong absorptions at 1685 cm⁻¹ which suggest the presence of carbonyl group. Absorptions at 2931, 1641 and 890 cm⁻¹ pointed the presence of exocyclic double bonds. Absorption at 1059 cm⁻¹ showed the presence of ether linkages. ¹H NMR spectrum showed the presence of a singlet at δ 9.34 integrating for one proton suggest the presence of an aldehydic proton, peak at δ 195.1 of ¹³C NMR confirmed the presence of aldehyde. From the signal at δ 6.55 cm⁻¹ integrating for one proton in the ¹H NMR spectrum and the carbon signals at δ 160.1 and δ 138.4 reveals that the aldehyde was an α , β -unsaturated.

The proton signals at δ 4.83 and δ 4.42 and carbon signals at δ 148.3 and δ 108.0 were characteristic of an exomethylene group. A triplet at δ 4.54 integrating for one proton indicating the presence of methine proton attached to an electron withdrawing group. Multiplet at δ 3.67 and δ 3.48 could be attributed to the presence of deshielded protons. A doublet at δ 2.58 integrating for two protons suggests the presence of methylene protons. DEPT-135 confirms the presence of ten –CH₂– groups. The three singlets at δ 0.89 (3H), 0.82 (3H) and 0.74 (3H) confirmed the presence of three quaternary methyl groups. The mass spectrum showed the molecular ion peak (M+Na)⁺ at 399.2863. The disappearance of an aldehydic proton at δ 9.63 in ¹H NMR and carbon signals at δ 197.3 in the Compound 1 and the appearance of signals integrating for six protons at δ 1.16 and at δ 3.67 and 3.48 integrating for two proton each in ¹H NMR along with carbon signals at δ 15.30, 62.8 and 62.9 in ¹³C NMR spectrum confirms the formation of (*E*)-15,15-Diethoxylabda-8 (17),12-diene-16-al.

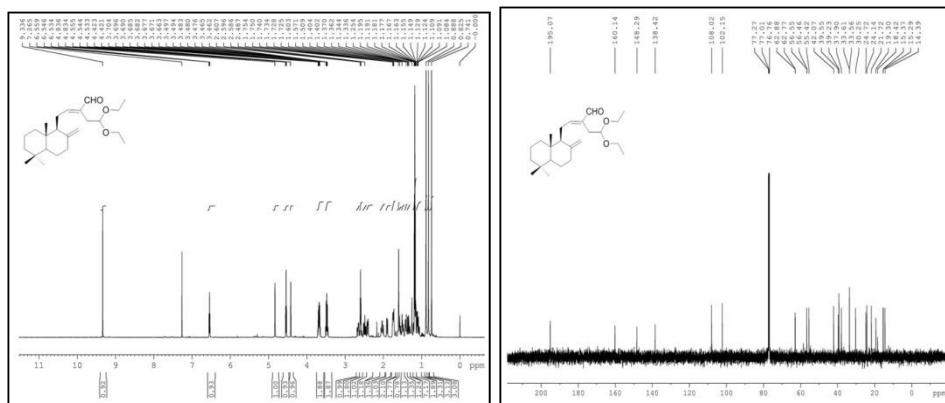


Fig. 5: ^1H NMR Spectrum of (E)-15,15-Diethoxylabda-8(17),12-diene-16-al **Fig. 6:** ^{13}C NMR Spectrum of (E)-15,15-Diethoxylabda-8(17),12-diene-16-al

3.2 Antibacterial studies

3.2.1 Collection of Microorganisms

The Microorganisms were collected from CSIR-NIIST, Thiruvananthapuram and sub cultured on nutrient agar plates. Microbial growth was determined by measuring the diameter of the zone of inhibition and the values are presented below in millimeter

3.2.2 Antibacterial test

Antibacterial activity of synthetically modified compounds were carried out by the disc diffusion method. First, the compounds were dissolved in DMSO at a concentration of 100 mg/mL and filtered through 0.45 μm sterile filter membranes. Then, 100 μL of bacterial inoculums containing 10^8 CFU/mL were spread over plates containing Mueller Hinton agar, and discs (6 mm in diameter) impregnated with 10 μL of the extracts solutions (1 mg/disc) were placed on the surface of the media. Two control discs were used containing DMSO and Gentamicin (10 μg / disc) as negative and positive controls, respectively. The plates were incubated for 24 h at 37 $^\circ\text{C}$, and the experiments were performed in duplicate. The diameters of inhibition zones were measured [6].

Table 1: Antibacterial activity of compounds-Zone inhibition

Bacteria	100µg/ml			
	i	ii	iii	iv
<i>B. cereus</i>	5	10	14	9.5
<i>S. typhi</i>	8.5	11	22	8
<i>S. epidermis</i>	10	12.5	20	11
<i>S. aureus</i>	10.5	12	24	10
<i>E. coli</i>	11.5	10	24	10
<i>K. pneumonia</i>	11	11	23	9.5

- (i) (E)-15,15-Diethoxylabda-8(17),12-diene-16-al
- (ii) (E)-labda-8(17),12-diene-15,16-dial
- (iii) Zerumin-A
- (iv) Calcaratarin A



Fig. 7: Zone inhibition of *B. cereus*



Fig. 8: Zone inhibition of *S. typhi*



Fig. 9: Zone inhibition of *S. epidermis*



Fig. 10: Zone inhibition of *S. aureus*



Fig. 11: Inhibition zone of *K. pneumonia*



Fig. 12: Inhibition zone of *E. coli*



4. Conclusion

(*E*)-labda-8 (17), 12-diene-15,16-dial were isolated from *C. amada* rhizomes. This compound has been synthetically transformed into Zerumin A, Calaratin A and (*E*)-15,15- Diethoxylabda-8(17),12-diene-16-al in good to moderate yield. Synthesized compounds were characterized by using NMR, IR, Mass analysis. All the compounds were submitted for its antibacterial activity against various microbes. Zerumin A showed promising antimicrobial activity.

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Otherring: A Posthuman Ecocritical Reading of Yann Martel's *Life of Pi*

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Abstract

Representation has been a vast and widely discussed concept since the age of Plato and Aristotle. This is true especially in the case of literature, where verbal representation is crucial. This paper attempts to analyze the representation of the other in Yann Martel's novel *Life of Pi*. The anthropocentric-animal perspective in the novel has been the focal point of the scrutiny of this study as part of a posthuman approach. Ecocriticism becomes post-human, post-natural, and post-green in critiquing the taxonomy of the human and the nonhuman. The theoretical framework proposed by Derrida in the image of the cat, Herbrechter's "ghostly ontology" and Wolfe's "I am who I become with companion species" may be best exemplified in the case of the relation between Richard Parker and Pi of Yann Martel's characters: one animal and its companion, a member of the human species, Pi. This is the species' convergence the theoreticians attempt in their philosophical discourses in various words. Martel accomplishes it in the literary framework. Whether Martel composed the source story totally in the imagination or it is a representation of the real may be a case for scrutiny. However, the union between Richard Parker and Pi in the teeth of an impending danger at sea has been authentically presented. It is the only means of salvation for everyone whether it is the other or homo sapiens. This paper attempts to establish the converging area between the self and the other.

Keywords: Ecocriticism, Posthuman ecocriticism, Species convergence, Anthropocentrism



Representation has been a vast and widely discussed concept since the age of Plato and Aristotle. Even though its canvas is huge and area wide, the linguistic factor is equally vast and wide. This is true especially in the case of literature. Here, the verbal representation is crucial. To be precise, language gives rise to new expressions from the given images or objects. This paper attempts to analyze the representation of the other in Yann Martel's novel *Life of Pi*.

A visible discourse of “othering” can be seen in representing animals, especially in Western history. “Animals are always the observed”, according to Berger. Humans observe and experiment with them for their pleasure and welfare. Most of the recorded discourses propose an anthropocentric view of ‘the animal-protagonist’. The underlying anthropocentric-animal perspective in *Life of Pi* has been the focal point of the scrutiny of this study as part of a posthuman approach.

Posthumanism is a development off humanist tenets often recognizing and, in certain cases, rejecting some of humanist principles. The term humanism has its roots typically in Renaissance humanism and it “assumed the dignity and central position of man in the universe [...] and insisted on the primacy of reason (considered the distinctively human faculty] as opposed to the instinctual appetites and the “animal” passions, in ordering human life” (Abrams 74). The principles of humanism have been acceptable for posthuman thought but it principally disagreed with the centrality of human position. A close analysis confirms how ecocriticism is transformed into posthuman ecocriticism and points out the significance of the change required in critical reflections on the emerging reconceptualizations of life and their scientific, literary and cultural interfaces. The theoretical framework of posthumanism that has changed the ecocritical understanding of what exactly is natural, environmental, and, most importantly, alive have been briefly mentioned below.

In their “Introduction” to *The New Materialisms*, Dina Coole and Samantha Frost argue that “the ways we understand and interact with nature are in need of a commensurate updating”(5). Posthumanism is the site of such updates. Several theoretical conceptualizations of new materialism such as feminisms, eco-materialism, agential realism, prismatic ecology, and material ecocriticism, “converge to produce new epistemological configurations” (Oppermann 24). They refer to new materialist epistemic positions and draw upon a broad field of studies, in particular quantum physics, biological sciences, bioethics, critical animal and plant studies, as well as advanced technologies that herald the beginning of a posthuman reality in which the figure of the human as we know it comes under scrutiny. Material ecocriticism has also progressively co-opted many of the critical posthuman visions, forging a post-natural environmental imagination in the making. It has already become part of the posthuman turn and can thus be called posthuman ecocriticism. The central argument of material ecocriticism is that matter is endowed with creative expressions, manifesting as storied matter, and that creative materiality is encoded everywhere and is amplified in its new form with the inclusion of matter's abiotic components. They are transmitted through techno-scientific practices. Also, posthuman ecocriticism investigates the literary, cultural and philosophical implications of discourses.

Richard Parker, the Bengal tiger and Pi's friend in the ocean after the ship wreck, is a crucial factor, which diverts attention of the reader towards the religious tone in the novel. Pi' religious faith, which is shown as naive and true, is given a new realm when he tries to survive along with the tiger, at mid-waters of the ocean. This is the beginning of a frightened and hopeless Pi's search for refuge in himself, trying to cope with his fear. He even exclaims that the animal, which scared him in the beginning, is the same that has brought him peace and wholeness. The feat he has for the tiger can be seen as a result of an anthropocentric act of his father's taming of Richard Parker in the zoo and training for Pi. In the heyday of business of the family by running the zoo at Pondicherry in India, he used to watch how a tiger,



which was made to starve for three days, would attack a goat thrown to it. This incident might have ignited an image of cruelty and darkness associated with the tiger in him. But the fact about the tiger has been completely forgotten, especially that it has been made to starve for a long period. As an adult, this reemerges and lingers in his mind; he is shown as someone with empathy towards animals. But he fails to acknowledge this fact.

This othering, that builds a cruel image of the tiger in Pi, reaffirms his religious spirit, the non-human element of his sea life triggered by Richard Parker. According to Linda M Morra, "religious beliefs and rituals sustain him throughout his perils" (163). Images and chants of mother that he experiences at the sea is a clear example for the same. Though one can't find any religious rituals he does or texts he recites at the sea, the reader is informed that he used to pray every day. It can also be assumed as a return to pagan worship for the source of the search for oneness with nature as a force that has always been represented by Richard Parker. "The most revered animals will be those raising strong 'negative' emotional response: awe, fear and anxiety. The mechanism through which religiosity is grounded is hypothesized as the sublimation of such emotions which would give rise to "mental images perceived as natural forces" (74).

The Bengal tiger, Richard Parker, has incited all feelings of fear, anxiety and wonder in Pi. He prays five times a day and finds activities to serve Richard Parker, as if taking him as a God-like master figure. This can be seen as a role reversal to what is the normal-animal behavior towards humans in serving them. The name Richard Parker is an intertextual reference from Edgar Allan Poe's only complete novel *The Narrative of Arthur Gordon Pym of Nantucket*. Richard Parker and three others, orangutan, zebra and a hyena, are the only ones, which save themselves from the shipwreck. The tiger kills them and eats them.

In the third part of the novel, Pi and Richard Parker have reached on the shore of Mexico after 227 days of their journey in the Pacific Ocean. When they reach at the shore, Parker runs away to the jungle without any consent

from Pi, who deeply feels hurt for the hostile behavior of Richard Parker. This shows Pi expects much concern and fondness from Parker as his savior and good companion. What he does is totally indifferent and unmindful of the human protector. As a good companion, Parker cannot behave like what Pi expects as a man, who is intensely attached to this animal. But animals are just opposite to it because they are ungrateful. After Richard Parker's disappearance, Pi has been admitted to hospital, where Japanese officials approach him and ask several questions including the reason behind sinking of Tsimtsum ship. As part of preparing a report based on the ship wreck, Japanese officials listen to the complete story of Pi, who truthfully narrates his life experiences with animals, particularly Richard Parker at sea. They are shocked and disapprove of the story of Pi and a tiger, Richard Parker, who survive 227 days together at sea. Moreover, they suggest that Pi retell a story, which is true and agreeable. So, he retells his story, replacing animals with humans as companions, his mother, a sailor and cook. The Japanese officials are willing to accept the story, which becomes human centered. The description is a "conventional anthropocentric reading Pi's interlocutors expect" (Martel 175). The pertinent question here is on the nature of anthropocentrism and its beneficiary as related in the text. One has to take note of the story that Pi reveals in front of the Japanese officials. This seems to be clumsy and untruthful to Pi himself, "You want a flat story. An immortal story. You want dry, yeast less factuality" (358).

The story should be more interesting and imaginative through the medium of using animals as tools. The rejection of the story means the refusal of nonhuman animals as characters, who are restricted and marginalized. Humans put them into secondary position. But the reality is the success of Martel's *Life of Pi*, which is the relation between Pi and Richard Parker. This cannot be replaced by any human element only.

Animal studies have signaled profound challenges to the traditional human subjects, as Wolfe points out in his framing of critical posthumanism. He writes:



Part of what makes animal studies significant ... is that it poses fundamental challenges ... to a model of subjectivity and experience drawn from the liberal justice tradition and its central concept of rights, in which ethical standing and civic inclusion are predicated on rationality, autonomy, and agency. That agency, in turn, is taken to be expressive of the intentionality of one who is a member of what Kant called ‘the community of reasonable beings’ — an intentionality that is taken to be more or less transparent to the subject itself. (Wolfe 127)

Wolfe demonstrates the inadequacies of the humanist model of subjectivity and its narrowly defined parameters. The question of “who or what comes ‘after’ the subject as it is modeled in liberal humanism” is a thoroughly posthumanist one that goes beyond the purview of the exclusively human (127): “In the wake of this ‘after’, new lines of empathy, affinity, and respect between different forms of life, both human and nonhuman, may be realized in ways not accountable, either philosophically or ethically, by the basic coordinates of liberal humanism” (127-28). Haraway has embraced the turn to the animal but actively distanced herself from posthumanism. “I am not a posthumanist,” she writes in *When Species Meet*: “I am who I become with companion species, who and which make a mess out of categories in the making of kin and kind. Queer messmates in mortal play, indeed” (19). Although she describes cyborgs as “a kind of companion species” (133), her theorization of companion species is firmly oriented towards the intimate process of “becoming with” nonhuman species (19).

Jacques Derrida’s famous encounter with his cat dramatizes the significance of the nonhuman animal to the construction of the human subject. Derrida exits the shower and is “caught naked, in silence, the gaze of an animal, for example, the eyes of a cat” (Derrida 3-4). This encounter, Nicole Shukin writes, is “charged” with a kind of spectrality (36). For Derrida, the scene is an “animalséance” and the cat’s stare is “[t]he gaze of a seer, a visionary or extra- lucid blind one” (4 emphasis in original). The

spectral nature of the nonhuman other suggests that the animal is not really present, but is rather a haunting visitation to human ontology—despite Derrida’s insistence that he is talking about “a real cat” rather than “the figure of a cat” (6 emphasis in original). As Shukin observes, similar figuration of the animal can be seen in John Berger’s critique of “the marginalization of animals in capitalist modernity” (33). For Berger, the animal is positioned as a kind of originary metaphor for forms of visual representation: “The first subject matter for painting was animal. Probably the first paint was animal blood. Prior to that, it is not unreasonable to suppose that the first metaphor was animal” (253). The figurative animal, or the absence of any real animal, precipitates representational forms for the human.

A comparable notion of more-than-human haunting can be found in Herbrechter and Callus’s description of “the spectre of posthumanism” (97). Elsewhere, Herbrechter elaborates the human’s “ghostly ontology” to describe how the decentring of the human is tied to the return of “its repressed ‘mirror images’ of identity” (29). This “teratology”—“the creation of monsters, the representation of monstrosity, inhumanity, animality, objectification, fetishization but also spiritualization and religion”—reinscribes difference in ways that uphold and destabilise human subjectivity (29). For Derrida, encountering the animal is central to the construction of human difference, but also, as Shukin argues, this “deeply ethical encounter [is] capable of dislocating the composure and presumed priority of the human subject” (37). “As with every bottomless gaze,” Derrida writes, “as with the eyes of the other, the gaze called ‘animal’ offers to my sight the abyssal limit of the human” (12). From this “vantage,” the human “dares to announce himself to himself” and philosophy emerges (12): “The animal looks at us, and we are naked before it. Thinking perhaps begins there” (29).

The theoretical framework proposed by Derrida in the image of the cat, Herbrechter’s “ghostly ontology” and Wolfe’s “I am who I become with companion species” may be best exemplified in the case of the relation



between Richard Parker and Pi of Yann Martel's characters: one animal and its companion, a member of the human species, Pi. This is the species' convergence the theoreticians attempt in their philosophical discourses in various words. Martel accomplishes it in the literary framework. The reader, along with the Japanese characters visiting Pi in the novel, is equally baffled with regard to its huge element of disbelief. Yet, they are tempted to take it as the real. Whether Martel composed the source story totally in the imagination or it is a representation of the real may be a case for scrutiny. But one is certain about the authenticity of the union between Richard Parker and Pi in the teeth of an impending danger at sea. It is the only means of salvation for everyone whether it is the other or homo sapiens. This is the religious fervor Linda M Morra speaks of and Richard Parker causes in the mind of Pi. From this "vantage," the human "dares to announce himself to himself" and philosophy emerges (12): "The animal looks at us, and we are naked before it. Thinking perhaps begins there" (Derrida 29). Posthuman ecocriticism also begins at this juncture. Here, the realization aimed at is: the other is the self. Finally, it is the advent of *vasudhaivakudhumbakam*, a "becoming with nonhuman species" (Haraway 225).

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Big B is Watching, Who Cares: Viewing Nnedi Okorafor's Zahrah, the Windseeker Through Foucauldian Lens

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Abstract

The process and the expanse of power deal with a visible subject and an invisible object. The prison design by Jeremy Bentham conforms to the psychological training that arises from the fear of being watched constantly. The idea of being watched evolved into reality in human lives when we ceased to believe that watching is a single dimensional concept. The days of GPS have made the monitoring of every single entity—living or non-living—possible. The reality of social control and power execution is too fictitious to be real in Orwellian times, though his prophetic novel 1984, has portended the present times. The Panopticism of Foucault elaborates upon a dreadful reality of a contagion and the consequential power structure. Today, with GPS, Arogya Setu, UPI transactions, Aadhaar cards and bio recognition sensors, CCTV cameras, “panopticism” is here and now. This paper will discuss the aspects of discipline, punishment, conversion of the panoptic arena into a heterotopic realm and the internalization and the normalization of reality of constant surveillance through instances from the novel, *Zahrah, the Windseeker*, an Afro-futuristic, other worldly novel of Nnedi Okorafor- Mbachu.

Keywords: Panopticism-Discipline and Punish- Heterotopic spaces- normalization of reality

This paper would discuss the panopticon-panopticism divide and its applicability in the present day world through Foucauldian lens of power relations and beyond with special reference to Nnedi Okorafor- Mbachu, novel *Zahrah, the Windseeker*, dealing with Afro futurism. Nnedi Okorafor-Mbachu is a Nigerian American novelist dealing with Afro science fiction of post-apocalyptic times twinned with fantasy. Her novels have young adult citizens with a boon of hybrid abilities collaborate with hybrid situations using hybrid solutions. They push their limits either for survival or identity or even camaraderie.

Foucault's *Discipline and Punish* views all things through the perception of straightening individual morals using an all-seeing external agency. It tries to "induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power" (Foucault 201). It speaks of a surveillant authority during a nondescript contagion and deaths there on a hierarchical system watching over, calling for utter control, warranting "a compact model of disciplinary mechanism" (Foucault 22); the concept of power exercised by one entity and the effect it has over another. The novel we have taken for analysis describes a "Forbidden Greeny Jungle" (Okorafor Ch 1). The forbidden greeny jungle is in itself a power model that is said to have resisted every possible fortressing or walling of the Ooni Kingdom whose periphery it occupies. The unwalled "Forbidden Greeny Jungle" verging on to the Ooni kingdom expands as an enticing possibility and substantially panoptic, watching constantly over the kingdom itself and the entrants if any by inflicting insurmountable fear and punishments. The 'Forbidden Greeny Jungle' for whatever reason it existed can be considered an all-seeing eye, i.e., *pan-opticon*.

[W]hen they rebuilt the wall, this time using wood voracious termites gnawed at it until it fell down. When they rebuilt the wall using metal, insects that had no scientific name dissolved it with acid produced in their thoraxes!... eventually, the metal wall melted (Okorafor Ch 9).



It was an all knowing, all seeing and all perceiving mechanism that would enable a fool proof control over the entire Ooni Kingdom and would not allow it to be walled out. “The Forbidden Greeny Jungle” existed there, resisting all walling or even entries. There is a certain fear associated with it. Even the field guides would not explain the area beyond a certain point. No one knew what it contained in its depth nor would they know why it is forbidden to go inside. There is a saying in Tamil, கண்டவர் விண்டிலர்; விண்டவர் கண்டிலர்! (kaNDavar viNdilar; viNdavar kaNDilar!), meaning the ones who have seen it, would never reveal it, those who revealed it haven’t really seen it comes handy in expressing the idea behind ‘the forbidden greeny jungle’, the one who has experienced it wouldn’t be in a position to tell and the one who would brag about it would not have experienced it in reality.

The Discipline mechanism of Bentham as interpreted by Foucault has opened up innumerable avenues of imaginative scapes in novels and critical works. The Afro Futuristic novels of Nnedi Okorafor-Mbachu present a futuristic outer world—a metonymy for the futuristic world itself. The Panopticon of Bentham and its interpretation of Foucault have dealt with distinct realities. One has conceived it as an inimitable possibility, and another perceived it as a clever and sadistic construct. According to Foucault, the very concept is not merely disciplining but embedding the invisible, omniscient object into the supposed reality and etching the insurmountable fear in the minds of the subjects.

The story of Nnedi Okorafor, ‘Zahrah, the Windseeker’, that we have taken for analysis is set in the northern Ooni Kingdom, where fear of the unknown is always prevalent. The protagonist, Zahrah, a *dada* by birth, believed to be born with special powers. She refuses to come to terms with her ability to levitate. Zahrah is a class apart but fails to recognize it until she is pushed to the wall of saving Dari’s life. Both friends are thick as thieves; they decide to cross the boundary, quite literally, venturing into the dark market first and then the forbidden green jungle. Their attempt to venture

into the so-called forbidden zone, yielding to the thrill every teenager experiences while doing what is forbidden. This thrill of 'knowing the unknown' makes them venture again into the 'Forbidden Greeny Jungle', lands them in trouble. In the pursuit of saving Dari's life, Zahrah faces the danger alone and emerges as a stronger individual. With the unique wisdom acquired from the forbidden zone of anthropomorphic plants and animals, she cures Dari of his coma using the unfertilized egg of an Elgort.

The Forbidden Jungle: A Panoptic Arena:

Some one will see us... or something! Only a few days ago, we'd gotten caught in the Dark Market, and what we were doing now was far more forbidden. (Zahrah) Some risks are worth taking," Dari said.... Going to the Jungle was Dari's idea (Okorafor Ch 9).

According to Dari, the jungle appeared forbidden because no one was able to understand it. He projects the forbidden jungle as a place for Zahrah to practice more and more of flying which she discovered that she could do. The children, Dari in particular, were reading a lot of 'field guide' to know more and more of the Forbidden Greeny Jungle. They had been told all these days not to set foot there and if they ever asked they were told that it was 'a place of madness'⁶ (Ibid) and it is not just the 'right thing'⁷(Ibid) to do so.

““A mile from here is your death”, you know, Iwane said”: (Ibid) is the kind of narrative that induced fear in people that their curiosity to venture into a forbidden area would perhaps end their life forever. They enter the jungle in an opportune moment. A too terrified Zahrah and a too emboldened Dari, suddenly find “everything growing louder, creatures clicked, chirped, squawked grunted and croaked, the jungle seemed packed with creatures behind every leaf and under and above every branch” (Okorafor Ch 10) suggestive of a panoptic reality of being watched. They continue walking into the jungle with a feeling of a thousand things watching them; they were not sure of it, though. They had many things to discourage them from moving further like ghost flies to flies whose bites would form an orange



circle on the skin to clacking red lizards to “certainly bizarre, even terrible, creatures and beasts there and who-knew-what lived miles in, the Forbidden Greeny Jungle...” (Okorafor Ch 11).

They even come across a dormouse peeping at them with large red eyes. This feeling of unpredictability or uncertainty whether you are watched in a panopticon especially when you are doing something unwarranted is present in the minds of Dari and Zahrah.

The Punishment: The punishment is a mechanism that entails wrongdoing. In a panopticon, as perceived by Foucault in “Discipline and Punish” suggests reprimansion and subjection rather than moral correction. (Foucault 1977, 26-27) ‘Orange bite marks’ resulting out of insect bite amounts to a mild public torture and shaming of the wrongdoer. The explicit coloured bite marks would be tell-tales of attempting a forbidden act, ‘in order to deprive the individual of a liberty that is regarded both as a right and as property’ (Foucault:1977, p11) This is a fine line of shaming that verges upon a pre-punishment mechanism to discipline the trespassers. The more severe forms include the ones like “War Snakes”. “War snakes were white with green splotches on their four-foot-long bodies. ‘These splotches were shaped oddly, like badges and stars....the snakes probably no longer knew or cared of what they were fighting for!’ (Okorafor Ch 11) suggesting that the idea of punishment is a more natural and spontaneous factor. The extensive references to war snakes moving in brigades and their attitude for “go for kill” (Ibid) when they encounter something they didn’t understand happening around them, all point towards a spontaneous, programmed punishment. Also, the mention of the first ever war snake coming close towards the forbidden jungle’s boundaries suggest that Dari and Zahrah were the first to forgo the rules of the kingdom, which perhaps invited the war snake closer to them. Zahrah felt that the war snake slithered into the bush yelling something like, “Retreat! Retreat!” (Ibid) suggestive of an unsanctioned act ending in a painful punishment, a war snake bite. The disciplining and punishment is an integral part and innate reaction in a panopticon. These components of the

‘forbidden forest’ can well be associated with such ideas of shaming or punishment as well.

A Heterotopic perception: The forbidden areas are mechanisms that seem to have been set up in order to create social discipline. There are two forbidden zones referred to in Zahrah, the Windseeker viz., the dark market and the forbidden jungle. The dark market had some fascinating and dangerous things; the kids were forbidden from going to the dark market. “Underneath the guilt” (Okorafor Ch 5) they were rather excited when they ventured into it. It had all kinds of “tricksters, thieves, con artists and evil magicians” (Okorafor Ch 4). The parents were afraid that the children would be too vulnerable and might fall a victim to something or the other. After being admonished for going into the forbidden dark market, the duo try a new escapade; an entry into the Forbidden Greeny Jungle. The control factor operates in two boundaries: one, the individual sense of morality and righteousness; and two, the control the society exercises over the group of individuals. Both the boundaries verge on to each other. The purported or the alternative reality is more often than not enticing. In the case of Dari and Zahrah, a visit to the dark market emboldens them to explore another fantastic space which is more heterotopic and exotic. “Heterotopias are defined as sites which are embedded in aspects and stages of our lives and which somehow mirror and at the same time distort, unsettle or invert other spaces” (Foucault 1998). In the case of adolescents, these heterotopic spaces are a means of gaining knowledge and power. Their curiosity to know more is an instrument to know more and gain more.

Dari goes to the dark market to get some personal peppers hoping that it would make him socially attractive, and thus powerful. He also persuades Zahrah to go with him into the Forbidden Greeny Jungle so that she can practice flying uninterruptedly. The power is synonymous to knowledge and that’s the central point of the Foucauldian tenet of power dynamics. Power according to Foucault is present in the social relationships. This is an



endorsement to forming meaningful relationships and practices. “Power and knowledge directly imply one another; there is no power relation without the correlative constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations” (Foucault: 1977). Therefore, to these teenagers, the power or the ability to act was a resultant action in their quest for more knowledge. Therefore, ‘knowledge’ is resultant of decoding the forbidden spaces.

Internalization and Normalization:

On spaces that seem to be both mundane and extraordinary, embedding multiple meanings around a set of spatio-temporal contradictions or ambiguities. Such research focuses on a social or cultural space that is both in place and out of place. The exotic spaces are both real and unreal (Johnson, 2014).

The grasp of the unknown once gained would always invigorate the search for “new objects of knowledge over all the surfaces on which power is exercised” (Foucault, 1977). While the power dynamics of an external agency on a subject was being discussed extensively in “Discipline and Punish”, “The History of Sexuality” elaborates upon the subject being a construct of the society. Between the subject being a product of observation and a product of society, there lies a fine demarcation of individual autonomy. Especially man being a thinking animal, possessing the ability to think and act, mere surveillance and submission would not be determining their physical province or mental faculty especially in heterotopic spaces; because “agents are creative beings; it is just that their creativity occurs in a given social context that influences it.” (Bevir. M:1999) Having experienced the new pathway to knowledge, however sensitive and minacious it is, a constant tickle for knowing and gaining more out of the forbidden idea is formed. When Dari was in the clutches of death, Zahrah had decided to venture into the same jungle searching for a cure for her dear friend, searching for an elgort’s unfertilized egg. Elgorts were no easy force to

reckon with, they were said to be 'raging with life'. By and by, the terrifying idea of panoptic reality gets internalized and gets fetishised into an enticing playfield of opportunity to find an inevitable cure.

The observer-observed dichotomy of panoptic reality has undergone a paradigmatic shift with reference to the widely prevalent panoptic reality of the present day world. The fear of constantly being watched has turned into the idea of partaking in the gaze and acting as a service provider for the same. From one watching many, it has turned into many watching many. While the watch is too prevalent and common, it loses its momentariness and turns into run-of-the-mill reality. So, the inter-terrestrial and interpersonal relationships have undergone a great change. The Panopticon is seeking service and provides some service in turn such as Google Maps asking the traveller to be the service provider to give it micro details such as traffic congestion and amenities in the places of one's visit. Zahrah, by entering the panoptic jungle experiences a heterotopic reality and turns into an innate service provider with fear being internalized and normalized. The *dada* girl, Zahrah comes out of the Forbidden Greeny Jungle experience, full of knowledge and cure for the incurable coma of her bosom friend Dari. In conclusion, it is concluded through Zahrah's experience that Panopticon exists with all its might, it is our call to decide whether to turn it into an opportunity or adversity.

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Relevance of KMAI in fourth Industrial Revolution

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Abstract

Knowledge management is an budding area which is gaining interest by industry, academia and government. In dimensions of fourth Industrial revolution. KMAI- Knowledge Management with Artificial Intelligence is a concept which aims at being a degree of difference in the organizations of the knowledge that propose to acquire competitiveness through the processing of information for decision making. This paper intends to demonstrate the system KMAI, and its various tools and respective phases namely engineering of the knowledge, collecting and storage of information, final analysis and diffusion. The study also covers the emergence and future of knowledge management, and its link to artificial intelligence.

Keywords: KMAI, Artificial Intelligence, Knowledge Management

Introduction

The fourth industrial revolution and its possibilities of AI have far reaching influences in dealing with Knowledge Management. It is said that like second industrial revolution resulted in us getting electrified, the fourth industrial revolution will end in us being ‘cognified’. We are reaching into a data and insight driven world and it will be exciting to check the linkage between Knowledge management and Artificial intelligence at this juncture so that we leverage AI in a more meaningful way. To produce intelligence alone is possible with the processes of management of the knowledge or, still, to produce strategical information (knowledge) the rude information



(data) must be organized. Most of the organisations, effective knowledge management requires a significant amount of time, attention, and energy. Adding artificial intelligence to knowledge management considerably reduces the amount of oversight required to manage the program.

Knowledge management combines various concepts from numerous disciplines, including organizational behavior, human resources management, artificial intelligence, information technology etc. The aim is how best to share knowledge to create value added benefits to the organization. Knowledge management (Liebowitz, 1999; Liebowitz, 2000; Liebowitz and Beckman, 1998) is the process of creating value from an organization's intangible assets. It deals with how best to leverage knowledge internally in the organization and externally to the customers and stakeholders.

KMAI and Systems Involved

The best four components of knowledge management are people, process, content/IT, and strategy. Regardless of the industry, size, or knowledge needs of the organization, it always need people to lead, sponsor, and support knowledge sharing. In addition to this, technology, Insights, Information and Improvement is vital for the development of KMAI system. Artificial intelligence techniques offer powerful tools for the development of knowledge management systems.



Source: Curatti.Com

KM has a significant position to play in facilitating the design and introduction of new business processes, the mapping of knowledge processing practices and corporate memory requirements to business intelligence. There are three prevailing streams of research/applications of Knowledge Management may be identified:

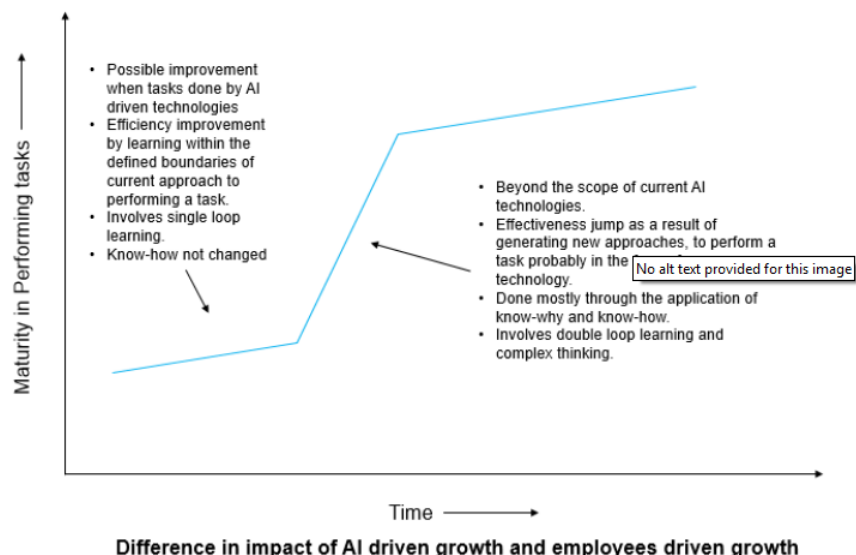
The first stream focuses primarily on research into the theory of knowledge, the knowledge of the firm, organisational culture, measurement of intellectual capital and learning organisations. The second stream is represented by the work on corporate memories (also known as organisational memory or organisational memory information systems) for enhanced decision making. A commercial memory embraces all forms of institutional knowledge, whether formally encoded within the present information systems, or tacit (informal) knowledge used by individuals in professional practice. The third stream, with a strong contribution from computer scientists and artificial intelligence researchers in particular, tackles the areas of intelligent agents. It is interesting to note that researchers from the areas of Artificial Intelligence, Knowledge Management and Organisational Memory dominate above streams of research not because of the terminological definition of these fields, but very much attributed to the underlying common principles and objectives that these researchers sought to achieve. As a result, the systems developed and/or concepts proposed by these researchers focus on (i), organization of knowledge, (ii), formalization of knowledge, and, (iii), contexts of knowledge. That is the importance of KMAI.

To produce intelligence alone, is possible with the processes of management of the knowledge or, still, to produce strategical information (knowledge) the rude information (data) must be organized. The catalytic element of the reaction of this fusing of references is Artificial Intelligence, which adds value to the pre analyses and the discovery of occult knowledge (knowledge discovery), through its capacity of mathematical processing, computational and simulation of analytical human functions. The researches in IA opened a true fan of systems that use its techniques, that are since



games, systems specialists, neural nets, recognition of hand writing, graphic computation, multi agents systems, translator and Chatter Bots (robots of software for conversation) among others. With advent of AI, the relationship between input, processing and output for machines started changing. AI has enabled machines to create their own know-how to transform input to output. As a result AI can take up a wider range of inputs for a task, create their own know how and give output. Through learning they improve their know how and as a result provide better outputs as they learn. Here do note that, the input range does not change much, but for the given set of inputs, output created improves as a result of learning.

Certainly there is a gap of the technological inferences which was there previously and by the influence of KMAI. The involving people often recall things incorrectly while feeling confident that they're remembering clearly. AI-powered knowledge management tool like atSpoke lets track metrics that show the exact, definitive impact that knowledge management program that is done. If we calculate the average support employee's salary for three weeks of work and multiply that the number of auto-resolved requests then we get a good measure of how much money the system has saved our organisation.



Conclusion

The success or competitiveness of any organization depends on maturity in performing tasks and how they improve upon it. There is a journey towards efficiency and effectiveness that all organizations are forced to undertake, as a result of market dynamics. Underlying this journey is a continuous decrease in complexity with respect to tasks performed, where more and more variables are identified, their relationships are understood. There are some Positive impacts. One is about the Improved efficiency of tasks: Due to their ability to learn and improve, AI driven technology can help an organization improve its task on a regular basis. Given an approach to performing a task, the AI tools can help reach the most efficient approach must faster. Another is Expediting learning: AI based technologies if used prudently can help in fast tracking the learning cycle. This is enabled through generating new data and creating insights from the same in the way tasks are performed. Knowledge findability and Employee productivity: One of the most popular use cases with AI has been the ability to find relevant content faster.

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De-centering privileged positions: A postmodern reading of Anand's *Vyasa and Vigneswara*

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Abstract

This paper argues that although the western theories of culture and literature were conceived primarily from a Eurocentric perspective, one can find strong resonances of these in Indian texts. To illustrate the point, Anand's novel *Vyasa and Vigneswarra* is scrutinized to find instances of resonances as well as dissonances of Postmodernism and Magical Realism in the text. Anand's novels can be called quintessentially Indian in that it follows the Indian worldview and thought processes shaped by the Vedas, the epics as well as the unique Indian social patterning. Yet his text seems to exemplify the tenets of postmodernism as delineated by Peter Barry, Lyotard, Althusser and Baudrillard. It concludes that the text, while dealing with the Indian worldview, lived experiences and knowledge systems, unfolds itself through metafiction, multiplicity of texts, discontinuity, intertextuality, dissolution of characters, aporia, the erasure of boundaries and an ironic revisiting of the past. It celebrates the contingent and the fluid over the fixed stability of totalizing theories, thus consciously or otherwise becoming an embodiment of the postmodern.

Keywords: Postmodernism, magical realism, decentering, metafiction, intertextuality, subversion



A K Ramanujan in his 1988 essay contends that there is no single “Indian way of thinking”. There is the ancient and the modern, the urban and the rural, the classic and the folk ways of thinking. But under this apparent diversity, there is a sort of unity of viewpoint. This is because much Indian thought and literature is drawn from the *Vedas*, and the epics- the *Ramayana* and the *Mahabharata* as recurring motifs, re-readings or counter arguments. Udaya Kumar states that there is a fundamental relationship between the themes of justice, inequality and questions of fairness and legitimacy that pervades all of literature(171). The approach and standpoint from which these themes are built up give the regional or subjective flavour to each. While the *Mahabharata* is interspersed with lofty discourses and recurring debates regarding the conflicting moral positions of ‘doing one’s duty’ as opposed to averting harmful consequences, one is struck by the instances of marginalization and trivialization of certain potentially explosive characters like Ekalavya. This paper argues that although the western theories of culture and literature were conceived primarily from a Eurocentric perspective, one can find strong resonances of these in Indian texts. To illustrate the point, Anand’s novel *Vyasa and Vigneswarra* is scrutinized to find instances of resonances as well as dissonances of Postmodernism and Magical Realism in the text. Anand’s novels can be called quintessentially Indian in that it follows the Indian worldview and thought processes shaped by the *Vedas*, the epics as well as the unique Indian social patterning. Yet his text seems to exemplify the tenets of postmodernism as delineated by Peter Barry, Lyotard, Althusser and Baudrillard. One can convincingly argue that Anand wanted to voice his concerns about justice, fairness, equity, notions of normativity and freedom in his texts and was in no way looking to cater to the western readers.

To start with, the following features are generally regarded as marking postmodernism: self-reflexiveness, metafiction, eclecticism, redundancy, multiplicity, discontinuity, intertextuality, parody, the dissolution of character and narrative instance, the erasure of boundaries, the de-stabilization of the

reader and an ironic revisiting of the past (Barry 67). Additionally, postmodern critics valorize disjunction, heteroglossia, aporia and decentring (D'Haen). Pramod Nayar's encapsulation of the tenets of postmodernism are also pertinent here:

- a preference for fragmentation over unity, dispersion over linear order, the anecdote over the epic;
- an interest in the surface, the image and the copy rather than in the depth, the reality and the original;
- a fascination with the strategies of representation rather than the 'truth' of/behind the representation;
- an emphasis on the discourse, the language and the narrative rather than on the reality these supposedly convey;
- a desire for flows, shifts, multiplicities rather than order, organization and tyrannical coherence. (53)

Magical realism is sometimes used synonymously with postmodernism but is largely considered as a part of it. The notion of speaking from the margins, the voice of the 'other', away from the 'centre', or the 'ex-centric', sums up the essence of magical realism². It manifests itself in narratives which erode boundaries of space and time, break the rules of the rational and logical, and has the elements of the fantastic grounded in commonplace or historical realities.

Moving on to a scrutiny of Anand's novel *Vyasa and Vigneswara*, (henceforth VV) we see that it consists of two seemingly disparate parts titled *Kriti* and *Kalam*, which are strung together by a tenuous thread of having a common narrator. Both are concerned with the modes of textual circulation and have a complex, repetitive structure. *Kriti* deals with an imaginary text called 'Nishadapurana', which is supposedly a discourse from the perspective of a minor, marginalized, character in *The Mahabharata* – Ekalavya. It takes off as an off-shoot of an anecdote mentioned in passing



in the epic Mahabharata. Ekalavya, a tribal man belonging to the Nishada tribe, wanted to learn archery so that he could protect the deer in the forest from the leopards. He requests Dronacharya, (a kshatriya and the royal master of sophisticated military arts) the guru to the Kaurava and the Pandava princes, to teach him the art of weaponry. But Dronacharya, bound by laws and code of conduct, could not accept him as disciple. Ekalavya returns home, makes a statue of Dronacharya as his guru and starts self-training. He becomes a far superior archer than the royal princes and could aim and shoot arrows by hearing a sound. After reaching this level of expertise, he once meets Dronacharya and naively informs him that he is his(Ekalavya's) spiritual guru. A disconcerted Drona is in a quandary as he had promised Arjuna, his favourite pupil that there would be no better archer than Arjuna. He then uses a downright unethical and underhand maneuver of asking for Ekalavya's thumb as 'Gurudakshina'(despite not contributing an iota to Ekalavya's skill). Ekalavya complies with the demand uncomplainingly, cutting off his thumb, forever destroying his skill and expertise- his hard-earned vidya.

The paper argues that the very theme of Anand's novel follows a postmodernist, magical realist tradition as it is the voice of the marginalized. Ekalavya, who is dealt with summarily or even dismissively in the Mahabharata, is given a powerful voice here, albeit a partial one. True to the spirit of postmodernism, fragmentation and incompleteness form a major narrative technique in the novel. *Kriti*, is a series of discursive episodes between the unnamed narrator and his friend Major Dharmadhikari, a brilliant engineer(from IIT Kanpur) in central government, who is conscripted into the Indian Army under a special scheme during the 1962 war. Interestingly, he is also a Sanskrit scholar with extensive knowledge of the epics. The section draws parallels between the 18th century silk weavers of Bengal, who cut off their thumbs to escape oppressive policies and violence of the British as well as the local traders; the tribal boy Ekalavya from *The Mahabharata*, and Dharmadhikari himself, all of whom were

victimized and tortured on account of their *vidya*. This can also be read as a veiled critique of Foucault, who has spoken in terms of knowledge as power. Intertextuality is seen in the intertwining of texts. We also perceive textual multiplicities and an ironic revisiting of the past.

Another character called Sadashiv Joshi, a great learned pundit and a friend of Dharmadhikari's father speaks of the existence of a hitherto undiscovered purana- *Nishadapurana*, which was narrated from Ekalavya's viewpoint. Anand even comes up with an imaginary etymology for the word purana(literally meaning ancient story) as 'puranava', which makes it a blend of the old and the new. *Nishadapurana* was supposed to contain a lengthy discourse in the battlefield between the sixteen year old Abhimanyu(son of Arjuna) and the venerable father-like figure Ekalavya. The conversation is between the former facing certain death and the latter who is already dead. Thus the narrative blurs the boundary between time, space and reality. This is a recurring technique in Magical realism. The subject of discourse is *vidya*(knowledge).

What is pertinent here is that the other eighteen puranas eulogize Brahma, Vishnu and Shiva, and there is no reference to Ekalavya. So a whole purana being dedicated to Ekalavya is a distinct mark of de-centering. Joshi acknowledges that there are incongruities in the text with regard to plot and the feasibility of time-space unities. The fact that Ekalavya gets a voice denotes the voice of the marginalized. It subverts the dominant discourse through imagination. Joshi concedes the possibility of interpolation at a later stage and this episode not being a part of the original plot, which is a saga of Aryan princes. Dharmadhikari and later the narrator ransack every library for years to locate this purana. The narrator finally finds a copy in a mutilated condition. All his subsequent efforts to locate the original or a complete copy prove futile.

In the description of the mutilated *Nishadapurana*, we have the very embodiment of magical realism. The information in the title page states that



it is edited from the posthumous papers of an official of East India Company. And the editing is done by a professor of Staff College, Sandhurst. The publisher's introduction states that the original purana was found from a business family in Thanjavur. But this was not found either. Pustak Mahal, the publisher of the purana based on the professor's handwritten manuscript didn't even have an office copy and thus the full text of the purana was effectively lost forever. We have incompleteness, partial information, historical facts, realistic snippets, publication details, names of individuals, plausible locational details, mystery... but ultimately an unresolved puzzle. Another interesting fact was the underlines and margin notes present in the text indicating other avid readers. Some of the former readers were more interested in the language of the text while others paid more attention to the ideas. This can be indicated as hypertexts. The instance of a dead man conversing with a living one is also a magical realist trait. The actual discussion ranges from philosophical to deontological to existentialist to absurd. It talks about vidya as a source of pain and suffering and not wealth or power. It ruminates on the absurdity of war.

In a strange revelation, Dharmadhikari discloses that Sadashiv Joshi and Nishadapurana were mere figments of his own imagination- they did not exist in reality. Here the full force of fantastic coincidences hits us as the narrator actually finds a copy of a text. This leads us to the postmodernist question- What is truth? If something exists only in someone's imagination, does it become less than real? We are forced to ponder on what exists and what does not; what is possible and what is not, what is credible and what is not. Another twist was that the book was published after the narrator and Dharmadhikari spoke about it. It almost gives the impression that some unknown force within Dharmadhikari impelled the purana into existence. We see a constant intersection of the historical and the personal as in the texts of Salman Rushdie, Amitav Ghosh etc. The narrator concludes the section by musing that the questions and controversies confronting man are deathless. The date, authorship, interpolation and the original text of the purana are insignificant. At the closing for *Kriti*, he

leaves us with the cryptic statement- “Those[missing] pages are not meant to be read, they are meant to be written”(53). Thus a desire for flows, shifts, multiplicities rather than order is evident here.

Moving on to the second part, *Kalam*, there is an entirely unrelated story of Vardhamana expressing what Nayar calls “a preference for fragmentation over unity and dispersion over linear order”. The narrator tells us in a bout of self-reflexivity that he should possibly have mentioned the episode first, as it occurred earlier than the Dharmadhikari episode. He throws a gauntlet to the critics saying that he will be interested in the critics’ responses to his attempts to develop his plots and characters through other people’s texts(VV 59). The plot of the play is based on some historical events that occurred in 500 BC in the kingdom of Magadha and Vaishali, involving Bimbisara the king, Ajatashatru his son and successor and a beautiful courtesan named Ambapali. The basic discourse is about conflicting modes of governance and the impact of corruption. Magadha had a dictatorial, capitalist, developmental model of governance as opposed to the democratic model of Vaishali, which was governed by an Assembly of Elders. Magadha viewed Vaishali’s (also called Vajji) confederacy as the “continuation of a primitive, clannish order that was resisting change” (VV 65). But this did not stop the Magadhs from feeling insecure about Vajji’s socialist principles which pointed at the deep inequalities within Magadh’s nationalized, developmental model. Magadh’s army consisted of mercenaries as opposed to the dedicated army of Vajji. But a rot was setting into Vajji’s system too, “turning their assemblies into exclusive, oligarchic coteries” (68). This was because a “static state like theirs did nothing for intellectuals”. Philosophers, poets and scientists ran away from Vajji. Meanwhile a spy from Magadh, Vassakara, infiltrates Vajji and discovers dilution of ideology and rot within their system. There was hence a progressively willful manipulation of philosophy and ideology leading to the victimization of a brilliant young woman- Ambapali.

Because of her exceptional beauty, grace and intelligence, she had several powerful ardent admirers including the Chief of the army, the chief



judge, the Licchavi leader and an acharya of the art academy. But she wasn't interested in any of them. This hurt their massive egos and they became collectively vindictive. Incidentally, she had noticed a noble man who used to come and watch her performances. But after a while he stopped coming. She realized later that the man was King Bimbisara of Magadh though she had never spoken to him. Little did she know that this occurrence will be twisted and used against her for treason. To assuage the bruised egos of the conceited Vajji nobles, she was summoned in the assembly for enquiry where she speaks against war. This was construed as unpatriotic. Although the President of the assembly tries to defend her against the baseless and absurd allegations of generating mutual malice and hatred among the nobles of Vajji, he couldn't prevent the subversion of justice. She was indicted for defying a sacred institution like marriage and also for sabotaging Vajji's internal security at a crucial juncture. As a "democratically feasible solution to [the] issue", she was condemned to become a *nagaravadhu*(102). Thus, prostitution was dragged from its dark and sinister chambers to the street in the name of social justice and democracy.

In addition to the gripping play, there are some interesting parallels drawn between the protagonist Ambapali and the playwright Vardhamana himself. He had the "socialist mind of a revolutionary fighting for social justice and an intense love for freedom". Because of this he was hounded by the police as a criminal. He was also something of a clairvoyant who could foresee wars and revolutions long before they took place as news items in newspapers. This made him mad in the eyes of the public and he was locked up in a mental asylum and given shock treatments for years till he lost his incredible capacity to foresee the future. Here the postmodern propensity to question the grand narratives on normativity is seen. The narrator sadly muses that "according to the world, fitness means one's ability to live only in the present"(117). When the narrator marvels at Vardhamana's capacity to accurately predict the future like a prophet, his reply is that the future is a great trap which binds the prophet and revolutionary in chains. He adds that

the world usually ignores the prophet and catches the revolutionary. In the 1970s, when the revolution against the emergency was spreading, with dreams of the final deliverance of the oppressed, Vardhamana could see further ahead into the collapse of the Soviet Union and widespread ethnic and linguistic clashes and extensive catastrophe in India and other parts of the world. It was then that he was branded as counter-revolutionary and later as mentally deranged.

In the whole episode of Vardhamana(also that of Dharmadhikari), we find a postmodern proneness to fragmentation, anecdotal narration, and a foregrounding of the liminal and the marginalized. There is also a blurring of lines between the real and the imagined. Metafictional element is seen in the very existence of the texts in each part- *Nishadapurana* in *Kriti* and a discourse on yet another incomplete text – a playwritten by Vardhamana, called *Nagaravadhu* in *Kalam*. We also see a celebration of the decentering of the privileged positions in the voice lent to Ekalavya and to a smaller extent, Ambapali, whose voice is submerged in the conflagration of hatred and bruised egos. The grand narratives of the epic are found to be oppressive and homogenizing, and hence decentered to bring in the voices of small, tribal characters. *Kalam* is a discourse on yet another incomplete text – a playwritten by Vardhamana, called *Nagaravadhu*. We also see the breaking of the time-space barriers as in discourses taking place between the dead and the living. The postmodern liking for revisiting the past is seen in the recurring images from the past and the epics. The weavers of Bengal share an invisible bond with Ekalavya in their skill becoming a bane rather than a boon. Similarly, the beauty, skill and independence of Ambapali results in her unwilling transformation into a courtesan. The resonances with both Dharmadhikari and Vardhamana are not lost here. Dharmadhikari was obliged to do a stint in the Indian army due to his engineering skill, leaving him with little time to pursue his interest in Sanskrit texts. Vardhamana, due to his uncanny capacity to see the future was victimized as mad. There is also an emphasis on discourse, rather than on any ‘truth’. We see magical realist



resonances to stories like Muriel Spark's 'House of a Famous Poet' wherein the character of a soldier breaks the boundaries of time and space as a 'notion', not a person. The appearance and disappearance of Vardhamana and his subsequent death on the railway tracks defies rules of time and space.

Thus the text, while dealing with the Indian worldview, lived experiences and knowledge systems, unfolds itself through metafiction, multiplicity of texts, discontinuity, intertextuality, dissolution of characters, aporia, the erasure of boundaries and an ironic revisiting of the past. Rather than order, organization and tyrannical coherences; flows, decentering and destabilization is the narrative mode. It celebrates the contingent and the fluid over the fixed stability of totalizing theories, thus consciously or otherwise becoming an embodiment of the postmodern.

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