



CHHESHAHU INSTITUTE OF BUSINESS EDUCATION & RESEARCH TRUST'S  
COLLEGE OF NON-CONVENTIONAL VOCATIONAL COURSES FOR WOMEN

University Road, Kolhapur - 416 004

(Affiliated to Shri Chhatrapati Shivaji Maharaj Vastu Sangrahalaya, Kolhapur, Maharashtra, India)

Accredited by NAAC with B++ Grade (2.97 CGPA 4<sup>th</sup> Cycle)

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3.3.2 Number of research papers per teachers in the Journals notified on UGC website during the year 2022-23

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1.	An Empirical Study of Employee Empowerment in Public Sector Bank with Reference to Kolhapur City	Prof. (Dr.) V. S. Dhekale	Principal	World Journal of Engineering Research and Technology	2022-2023	ISSN No 2454-695X
2.	Use and Impact of Social Media and Social Networks in Library: A Review	Mrs. Anuradha A. Kumbhar	Librarian	International Journal of Advanced and Applied Research	2022-2023	ISSN No. 2347-7075
3.	Khelamadhil Mahilanchya Adhani	Mrs. Rameshwari Gunjekar	Physical Director	International Multidisciplinary Research Journal	2022-2023	ISSN No. 2455-1511
4.	Sports and Physical Education in NAAC and NEP -2020	Mrs. Rameshwari Gunjekar	Physical Director	International Interdisciplinary Research Journal Science, Humanities, Social Sciences, Languages, Commerce and Management	2022-2023	ISSN No - 2277-8063
5.	Studies on Formulation of gluten Free Biscuits using Moringa Oleifera Leaf Powder	Mrs. Shweta A. Patil, Dr. Neelam S. Jirage and Mrs. Yogita R. Mirajkar	Food Technology	Bulletin of Environment, Pharmacology and Life Sciences (UGC-Care list)	2022-2023	ISSN No. 2277-1808



  
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12.	Reuse and Upeycle of Denim for Sustainability	Mrs. Pradnya P. Kapadi	Fashion Design	Sanskriti International Multidisciplinar y Research Journal	2022-2023	ISSN No 2455- 1511







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## AN EMPIRICAL STUDY OF EMPLOYEE EMPOWERMENT IN PUBLIC SECTOR BANKS WITH REFERENCE TO KOLHAPUR CITY

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### ABSTRACT

The present research is an empirical study to explore the empowerment systems in public sector banks in Kolhapur city. In the present research work and attempt is made to study various strategies used to empower managerial cadre employees. The parameters used for evaluating empowerment level are, Information, Communication, Feedback, Knowledge, Self Esteem Power and Autonomy. In the present study it

is found that, banks have taken very good steps towards empowering their managers through the organization of induction program, providing required information time to time, deputing the employees for trainings. However, in some areas, it is found that public sector banks still have scope to improve the empowerment. These banks should allow employees for higher studies in the related areas. This will help them to enhance the work system and employees will be empowered. Banks should also provide more autonomy so that they can work efficiently.

**KEYWORDS:** Employee empowerment, employee performance, power, autonomy, self-esteem.

### INTRODUCTION

Employee empowerment plays an important role in achieving the goals of the organization. Empowerment means to empower people. It helps to realize their power and enable people to get suitable capabilities for decision making and self-development. In other words, it is a process to make





Individual to think, to behave or take action or control work by decision making. It is the stage of feeling confident for responsibilities and accountability. (Dictionary.com) Employee means A person who is hired for wages, salary, fees or payment to perform work for employer. Employee Empowerment: Employee empowerment is the process to empower employees in their work area by providing information, training, and work-autonomy, providing compensation on their extraordinary work or achievements. It helps employees to work confidently. Employees become capable to accountability of their decisions and work, it helps the organizations in general and particularly to the top management to get good amount of time to plan for future strategies and skillful implementation thereof aiming towards the achievement of organizational goals.

Commercial banks may be explained as, any banking organization that deals with the procurements of deposits and advancing of different types of loans to individual and organizations. Commercial banks issue bank cheque, drafts, as well as accept money for various types of deposits; Commercial banks also act as money lenders, by way of installment loans overdrafts. Commercial banks accept variety of deposits from the customers on the accounts, such as savings, and time deposit. These institutions are run to make a profit. In case of Private Banks, the major portion of owned capital is held by private individuals. Public Sector Banks are banks where majority (more than 50% shares) of shares is invested by Government. E.g., State Bank of India, Bank of India, and the HDFC Bank, ICICI Bank are the examples of Private Banks.

#### Statement of the Problem

There are three industrial estates viz. Shiroli MIDC, Gokul Shirgaon MIDC, Kagal Five Star MIDC, Shivaji Udyannagar. The major industries such as foundry business, textile, electronic, agro processing industries are located in around Kolhapur city. As a result there is wide scope for the rapid development. Industry requires capital and banking services for which the bank is the most reliable source for the same. Fortunately, there is scope for the development of banking business. Employees from banking sector enjoying fascinating opportunities for the potential development of banking sector. On the other hand the employees of banks have to face the challenges too. To face these challenges they need to be empowered and capable enough to take decisions and accountability. Employee empowerment is an idea associated with factual benefits for any organization. Implementation of employee empowerment strategies provides employees freedom,

flexibility, and power to make decisions and solve problems make an employee feeling energized, capable, and determined to make the achieve their goals. The research is clearly motivated to study empowerment strategies used by the public and private sector banks to empower employees at Kolhapur city. So as the title of the present study is 'A Study of Employee Empowerment in Public Sector Banks with reference to Kolhapur City.

**Objective of the study:** To study the employee empowerment system exists in public sector banks with Reference to Kolhapur city.

### RESEARCH METHODOLOGY

Random sampling method has been used. The researchers have identified total number of public and sector banks in each tehsil from Kolhapur Lead Bank Report. The survey of 33 Managers of Public Sector Banks in Kolhapur has been undertaken.

### Questionnaire, Scaling technique and Scale

The questionnaire consists of some statements and some questions. Respondents have to respond and to each statements. Thus responses collected based on five point Likert Scale as- 1-Strongly Disagree 2- Disagree 3-Neutral 4-Agree 5- Strongly Agree and tabulated and percentage were drawn to arrive at conclusion.

### Data Analysis

Answers of employees on question related to Existing system for employee empowerment in their bank. (Please tick mark (✓) on your preferable answer).

Q. No.	Statement	1.Strongly Disagree %	2.Disagree %	3.Neutral %	4.Agree %	5.Strongly Agree %	Total %	Average
<b>Information/communication/Feedback</b>								
1	Bank organize Induction Session for Employees.	3	0	0	31	66	100	4.3
2	Bank updates me time to time regarding Goals of Bank, upcoming market trends, changes in RBI Rules, Performance of Competitors etc.	3	0	0	51	46	100	4.3
3	Bank provides information about Feedback Of customers, Employees and other stakeholders	3	3	19	39	36	100	3.9
4	Bank gives the target to be achieved Every year.	6	0	0	36	58	100	4.3
5	My superior gives tangible Recommendations on how I can improve.	3	3	9	37	48	100	3.9
<b>KNOWLEDGE</b>								
6	Bank depute me to various Training Programs.	3	3	9	52	33	100	3.9



7	If applied, Bank deputs employees for Higher Studies/External Courses related to their workarea.	3	21	30	33	13	100	3.3
8	Bank offers me good opportunity for acquiring Sufficient skill during Operational work.	3	3	21	54	19	100	3.7
9	Bank use technical tools and technology For sharing knowledge.	3	0	12	54	31	100	4.09
10	My higher authority is knowledgeable person.	3	3	15	45	34	100	4.01
<b>SELFESTEEM</b>							100	
11	Employees allowed to get involved in Decision making process concern to their work area.	3	3	6	54	34	100	3.9
12	Bank arrange meetings to discussion on Projected work and ask for suggestions.	3	3	6	66	22	100	3.7
13	Bank provides me opportunity for Individual Development	3	0	21	54	21	100	3.6
14	I have good working conditions and I am Satisfied with it.	3	18	12	48	18	100	3.6
15	I am treated with respect by my higher Authority and by people I work with.	3	0	15	70	18	100	3.9
<b>POWER</b>								
16	Bank allow me to take sudden decisions On my own risk to complete the task.	0	15	21	48	16	100	3.6
17	I have freedom to implement Own strategies to complete the task.	6	12	12	58	12	100	3.5
18	Bank allows me to handle whole Project on my own responsibility.	3	12	42	36	7	100	3.4
19	I have access to the resources needed for My work	3	3	18	64	12	100	3.8

### FINDINGS

In this study data analyzed with four parameters of empowerment i.e. Information, Knowledge, Self-Esteem and Power. In the above table, as per mean value, it is found that majority of the employees responded positive about information parameter i.e. out of 33 managers, 66% managers agreed strongly agree that there is facility of organizing induction programs. As well as 46 managers agree and 51 are strongly agreed that banks updates them time to time regarding Goals of Bank, upcoming market trends, changes in RBI Rules, Performance of Competitors etc. 39% employees are agree and 36% employees are strongly agree that Bank provides information about feedback of customers, Employees an Bank provides information about feedbacks of customers, Employees and other stakeholders and other stake holders. Likewise 92% employees replied affirmatively on the statement Bank gives the target to be achieved every year. Out of 33 managers 85% are positively agree about their superior gives tangible recommendations for improvement.

With the knowledge parameter perspective, Majority of the employees i.e. 52% employees are

Positive, that their banks depute employees for various training programs. Whereas it is to be highlighted that majority of the employees are disagreeing or neutral about deputation for higher studies. Most of the employees are agree that Bank offers good opportunity for Bank offers me good opportunity for acquiring sufficient skill during Operational work. Acquiring sufficient skill during operational work. 54% employee is positively replied that their banks use technical and technological tools for sharing knowledge. 45% employees mentioned that they are agree about their higher authority is knowledgeable person.

About self-esteem parameter component, it is observed that 88% employees positively responded that Employees allow getting involved in decision making process concern to their work area. 66% employees agreed that Bank arrange meetings to discuss on projected work and ask for suggestions. 54% employees are agreeing that Bank provides the me opportunity for Individual Development. 70% employees out of 33 are satisfied with respect by higher Authority and by coworkers.

In respect to Power, Autonomy, perspective it is found that higher number of the employees are agree that Bank allow them to take sudden decisions on the other hand major part of employees' response is not positive to this statement. There are 58% employees positively responded that they have freedom to implement own strategies to complete the task. There are 42% employees responded negatively and neutrally on the statement. There are 64% employees agree that they can have an access to the resources needed for work.

## CONCLUSION

Empowering employees means make them capable to manage things very efficiently. Therefore, to empower them, it is necessary to provide right information on right time, enable them accessing required material, educate them, communicate and train them, giving feedback, providing autonomy at work these are some important techniques. In the present study it is found that, banks have taken very good steps towards empowering their managers like arranging induction programs, providing required information within time, conducting trainings. However, in areas public sector banks have to focus on the improvement in the areas- such as allowing employees undertake higher education especially concerned with their job, it will help them to enhance the efficiency and productivity. Banks should also provide more autonomy to the managers.





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USE AND IMPACT OF SOCIAL MEDIA AND SOCIAL NETWORKS  
IN LIBRARIES: A REVIEW

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Abstract:

Library in the ICT era having the material other than printed books means in electronic format such as text, excel, sound, music, CD, DVD, Photos, audio, video or in many other format. In this digital era, libraries have to take support of social media and network for the distribution of information to user. Content-sharing, relations, communication, community-based input, and cooperation are collective term for websites and applications that spotlight on Social media. Contact and relation with friends, family and other people are maintained by using Social media and networks [W 2]. For marketing and promoting the products so many businesses are using social applications and also follow customer issues. Social essentials such as remark fields for users are included in Business-to-consumer websites. Businesses follow, calculate and examine brand understanding and customer views are also identified by using variety of tools from social media. Social media has a huge global appeal. These platforms are made easy to use by mobile applications. Twitter, Facebook, and LinkedIn are some well-liked examples of frequently used social media platforms. This paper gives the review of social media and networks used for library for user need and satisfaction of getting information in their respective subject and format.

Keywords: Social Media, Social Networks, Library Use, Library Services

Introduction:

Events and images, educate the public about services, highlight their collections, and support other libraries are shared by libraries using social media. It is challenge for libraries to support user's needs, followers and gaining staff support by using social media

The use of social media helps create instant interaction with library users and more importantly converts non-users into library users. Social media allows the presentation of news, exhibits, etc. and reduces the information load on the library's home page.

Social Media:

"Social media is Tools for sharing and discussing information in humans mostly based on the internet." - Wikipedia [W 7]

"Various initiatives that integrate technology, social interaction, and structure of words and Pictures commonly come under social media." - Evil Media [W 8]





Figure 1 [W 6]

For sharing of ideas, thoughts, and information through virtual networks and communities,

computer-based technologies that facilitate is social media. Internet-based and quickly electronic correspondence such as personal information documents, videos, and photos is been supported by social media. With the help of computers, tablets or smart phones through web-based software or applications, Users connect with social media. [P 3]

Users can share information, ideas, personal messages, and other content (such as videos) using Social media and also communications on the Internet (such as on websites for social networking and micro-blogging) easy for users. The concepts of social networking and social media be related, but users build communities among themselves using social networking while social media is more about using social networking sites and associated platforms to put together an viewers. [W 2]

For exchange of ideas, thoughts, and information through the creation of virtual networks and communities Social Media is useful that based on computer technology. More than 4 billion users are using social media worldwide. [W 9] Facebook, Instagram, Twitter, LinkedIn, Pinterest, Fliker and YouTube are the most commonly used social networks. User-generated content and personalized profiles are generally content of Social media. [P 3]

A dedicated web app or site that enables end users to exchange ideas and information with each other over the Internet by sharing mixed forms of information and data. Data includes images, videos, blogs, files, comments, etc. Participation in and access to online social networks is possible using a computer or mobile technology such as a phone or tablet. According to this definition the term social networking can be used to describe two, somewhat different things: a social network as a social structure (social relationship) or an online social network web site or web application (web app). [W 3]

Considering that media is the plural for media, social media is a combination of web sites and web or computer software that allows individuals to exchange ideas and various information, including but not limited to opinions and observations, notes, news, digital videos and photos and many others. End users can participate in these collaborations and use social media services if they use a mobile device, such as a phone or tablet or computer. Social media enables people to share information, communicate with others, and participate in online social networking over the Internet using their mobile devices or computers. [W 3]

Social media is used as a communication tool by libraries around the world. Reach out to library users and provide them with information at their own time and place. This gives information of social media, explored the reasons why libraries adopt social media. Libraries must create content consistent with user preferences. Content posted on social media and user interaction should always be moderated, regularly measured. In the near future, if used correctly, social media can be the primary means of



bringing libraries and their users closer together.

#### Advantages of using Social Media in Libraries:

- To help libraries to be closer to the users and create a joint platform for these users. Social media is a great way to be a focus for the attention of new users marketing of library resources and services. So social media creates prospective Users of the library.
- Registration is very easy for any user. Users can update their profile via their mobile phones through text messaging and downloaded apps for some smart phones and tablets. A user can create as many accounts as he wants another.
- Users can get answers to specific questions by using social media as well useful for helpful ideas and suggestions. Thus it enhances referral services.
- Friends and neighbors are using applications for rating, reviewing and sharing Application has been made for this new method Amazon and the same can be applied for libraries.
- Messages can be sent to or from other individuals by using social media. Users can easily see the message. This is a great effort supporting the concept of reading lists generated by librarians and in some cases user-generated reading list that is more beneficial than librarians
- Social media helps students choose and access library resources To add content to the library's website.

- It is not very expensive. User can avail social media by paying Phone service provider charges.
- Users are willing to use social media in the library and have shown their insistence For the benefits of social media in library resources and services.

A library is considered as a repository of knowledge, which stores, preserves and disseminate information. Success and efficiency of any library service Supporting research and education is defined by accurate and timely information provided to its users. Thus such information is disseminated through various means Its access is convenient for users. This millennial century that allows people to share and Share their ideas, thoughts and information. The advent of social media and its rapid growth It has now affected almost all sectors and libraries are no exception. Libraries and the role of librarians in this contemporary era is challenging, providing information Requirements of gadget freaks and tech savvy users. Social media tools play an important role in every domain especially libranes Information Science. It is a vibrant tool for promoting library products and services these days. In the current era, users are in a hands-off mode of accessing information Devices for communicating, managing and sharing information. This paper focuses on to understand the various marketing activities undertaken by libraries to promote products and Services, user participation in these social media tools used by the library. The results of this the study clearly, highlights factors such as age and gender of LIS professionals On using social media tools for marketing library products and services. To meet outside Social media



over time has a huge impact on the expectations of the user community

accessing the current requirements of the user community. [P 6]

### Social Networking:



Figure 2 [W 4]

Online social networks and blogs are two leading Web 2.0 technologies that can be adopted as part of online services in libraries. The basic structure, additional features and new emerging trends in the field of social networking services had been highlighted with impact on society. Different types of domains are working for social networking. It can also be used for network information distribution. New generation users can access library services at their own place and time through library profiles on these networks. To improve the position of library and LIS professionals in society in today's busy digital age, social networking is one of the best mediums, as most of the internet users are frequenting social networking sites. And this is the best way to strengthen the marketing of library services as well as the library and LIS profession and professionals. Many libraries are using it for marketing of library services, promoting events, book review, user support, CAS, SDI, reference desk, library consortia etc. Advantages and

disadvantages of these social networking tools are also mentioned.[P 4]

Academia.edu is a similar source that allows users to create, upload personal profiles documents, request feedback, follow researchers, send personal messages to other researchers and view analyzes on your papers. Users on Academia.edu can bring in contacts from Facebook, Twitter, Yahoo and Google to find colleagues who already have an Academia.edu profile connecting several different networking devices described. Academic.edu is a professional social networking site for researchers. A researcher can create a profile, upload and select their work Areas of interest to find a network of users with similar interests. Analytics related to engagement Available with uploaded research.

Google Scholar provides a search engine that can be used to identify hyperlinks Articles that are freely available or can be obtained through institutional libraries. Users who choose to create a personal Google Scholar profile to access citation

metrics per year. Articles uploaded to ResearchGate, Academia.edu or other databases may be linked to you. Google Scholar Profile so readers can find hyperlinks to all scholarly work.

ResearchGate is a professional social networking site for researchers. is a researcher Able to create profiles, share documents, engage in discussions and find collaborators. There are also some metrics available specifically for this platform

**Mendeley:** Academics may be familiar with Mendeley as a reference manager, but it functions as an educational social network. Researcher can develop profile, share Research papers, and contact researchers. Mendeley was acquired by Elsevier in 2013. [P 5]



Figure 3 [W 4]

**Face Book:** Different types of information can be provided to the library users with the help of Face Book such as share information about upcoming events and their new arrivals and book releases. Facebook mainly helps in marketing of services and products. It is also used for tagging photographs. It can be availed by using Ask-A - Librarian service.

**Twitter:** Twitter is a free social networking used for sending and reading messages Tweets currently share all kinds of library news from end to end librarians twitter. Librarians can highlight new materials, new groups, meetings, and some of these suggestions via twitter.

**LinkedIn:** It is a professional networking site. Librarians use it to prepare professional relations among other library professionals and to market library

services spread across the globe and can also share their ideas and business experiences.

**Web 2.0:** The term was coined by Darcy DiNuccio in 1999 and popularized by Tim O'Reilly 4. Weblogs, wikis, and syndication are the included terms. It is almost identical including social media.

**Blogs:** Blogs can be used by libraries to keep their users aware of the latest developments in related areas. Blogs can be subscribed to via RSS feed. Blogger and Word Press are examples of blogs.

**Benefits of social networking while sitting in the library:**

- a) To captures prospective users of the library
- b) To offers more than conventional ways of marketing library services



- c) To help users to use the library effectively.
- d) To allow the user to create, connect, converse, contribute, choose and share information.
- e) It helps libraries to be closer to users.
- f) It helps libraries to build collaborative networks with users.
- g) To grab the interest of new users.
- h) It helps students find library resources.
- i) It facilitates knowledge sharing.
- j) To inform users. [P 10]

Libraries are service centers that aim to make available focused, present and proper services to their users. Achieving the goals of libraries, technology has emerged as a key aspect. Libraries are always at the forefront of incorporating emerging technologies into their setups. With the rise of Web 2.0, libraries also moved towards the concept of Library 2.0. Library 2.0 incorporates Web 2.0 tools, thus facilitating an environment that is user-centered and connects diverse academic communities, eventually progressing to a critical institution designed to meet user needs and the current information culture (Scott, 2013). The latest in trend is social media. Libraries are already in the race to adopt this new technology. Smart screens packed with features and social media apps have already reached billions of people around the world. Social media are cheap and cost-effective tools for library services with increasing needs and shrinking budgets. These tools are used by libraries for customer service, news and updates, content/collection promotion, dissemination of the institution's research output, provision of educational tools and resources, and building relationships within and outside the institution. The use

of social media in libraries has grown speedily. This service is used by libraries to disseminate and promote services, programs and new resources, as well as to provide general information. Distance learning and knowledge sharing may include additional profit. [P 7]

#### Conclusion:

Social media helps library professionals increase their ability to build better relationships between library staff and library users for themselves and their readers. Social media like Facebook help library professionals create accounts to promote their library resources and services. Facebook provides a platform to market their resources and services effectively and efficiently. In the present age of information explosion, human frame of mind and thoughts have been changed. Everyone is in a row after information, but they do not know how to collect information and share information one to one and one to many at a time. Apart from these facts, ICT and its interconnected aids have changed the role of information professionals in the current information age. Social media has produced surroundings where everyone can access, exchange and disseminate information. In addition, many social networks have been launched and some of them are very popular worldwide like Facebook, Twitter, YouTube, WeChat, Instagram, Twitter, Telegram, Lankedūn, Snapchat, Pinterest, Viber etc. People reach out to and share their information with others across long distances with help of Social media. In the 21st century there is an explosion of information and data is available in different formats. Users looking for information related to content in their field of study. There are best practices support aspects for the library to

provide more relevant services to the user. In this paper, social media and social networks useful for academics Libraries are explained and followed to meet user needs and expectations.

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## खेळांमधील महिलांच्या अडचणी

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### प्रस्तावना :

खेळाचा इतिहास अभ्यासताना वैदिक काळापासून ते आधुनिक काळापर्यंत भारतीय खेळ परंपरेत कसे बदल होत गेले ते लक्षात घेतले पाहिजे. वैदिक काळापासून भारतामध्ये विविध खेळ व क्रिडा परंपरांचा उगम व विकास झाल्याचे दिसून येते. मानवी जीवनामध्ये खेळांना अनन्य साधारण महत्त्व आहे. खेळामुळे मनोरंजन व उद्बोधन ही घडते. क्रिडा स्पर्धा आनंदासाठी आयोजित केल्या जातात. नित्याच्या रूत जीवनापेक्षा थोडे वेगळे उपक्रम आयोजित करून खेळाची सहज प्रवृत्ती मानवी जीवनात रुजवी म्हणून वेगवेगळ्या स्पर्धा आयोजित करण्यात येतात. खेळांमध्ये रमनियता व आनंदाचा महत्त्व असते. गाव पातळीपासून ते जागतिक पातळी पर्यंत खेळांचे उपक्रम आखले जातात. असे उपक्रम राबवत असताना महिलांना होत असलेला फायदा किंवा त्यांच्या अडचणींवर लक्ष्य केंद्रित करण्यात आले आहे.

२१ व्या शतकात शिक्षणाचे वारे वाहत असताना आजही ग्रामीण भागातील स्त्री शिक्षणापासून काही प्रमाणात वंचित आहे. शिक्षण व विकासाचा अविभाज्य भाग असणाऱ्या तरी शिक्षणाची जोड असल्याशिवाय महिलांचा बौद्धिक व सामाजिक विकास होऊ शकत नाही आणि महिलांचा शारीरिक विकास जर जसेल तर बाल मृत्यूचे प्रमाण वाढते. शारीरिकदृष्ट्या अधिक निरोगी समाज बनविणे याची पहिली पायरी महिलांकडे जाते.

आरोग्य व शरीर सामर्थ्य मिळविण्यासाठी स्त्री असो अथवा पुरुष असो दोघांसाठी नियमाने घरगुती कामाखेरीज योग्य असा पुरेसा व्यायाम करण्याची आवश्यकता आहे. इतकेच नव्हे, तर आपल्या भारत उपखंडामधील सामाजिक स्थितीचा विचार केला तर पुरुषांपेक्षाही स्त्रियांना स्वतंत्र व्यायाम करण्याची जास्त आवश्यकता आहे. स्त्रीया भक्ती पिढीचा आधार समजल्या जातात त्यांची दुर्बल स्थिती झाली ती देशावर व समाजावर एक मोठी आपत्ती आली असे म्हणावे लागेल अशी आपत्ती टाळण्यासाठी महिलांचा क्रिडा सहभाग वाढविणे आवश्यक आहे. त्यांच्या अडचणींवर मात करून भावी पिढीच्या कुटुंबाच्या समाजाच्या व राष्ट्राच्या हिताच्या दृष्टीने स्त्री ने आपले आरोग्य व शरीर सामर्थ्य उत्तम प्रकारे मिळविणे ही आपल्या हातची सहज गोष्ट आहे. याची जाणीव ही आजच्या महिला वर्गास होणे आगत्याचे आहे. स्त्रीने आपल्या दिनचर्यात अजन्म योग्य व पुरेसा व्यायामाचा समावेश केला पाहिजे तरच प्रगती होऊ शकते.



क्रिडेमधील महिला खेळाडूंच्या समस्या, उपाय व निष्कर्ष

खेळामधील महिलांच्या अडचणी खालील घटकावर अवलंबून आहेत.

1) आर्थिक घटक :

पालकांची आर्थिक परिस्थिती हा घटक शैक्षणिक प्रगतीवर प्रभाव टाकतो. पालकांची आर्थिक परिस्थिती विकट असली की महिला खेळामध्ये पुढाकार घेण्यास इंगमगतात. बऱ्याच वेळा पैसेही नसताना या अनुषंगाने पालकांची दुर्बल आर्थिक परिस्थिती मुलींच्या खेळामध्ये अडचणीचे कारण ठरते. त्यांना बऱ्याचदा क्रिडा सहभाग नोंदविता येत नाही. नोंदविता आल्यास योग्य व साहित्य न मिळाल्याने ते मागे पडतात. योग्य ते ध्येय गाठू शकत नाहीत.

2) सामाजिक घटक :

शिक्षणाचे प्रमाण कमी असल्यामुळे अजून ही महिलांच्या बाबतीत इष्टीकोन घुल व मुल एवढेच मर्यादित असल्याने जाणवते. सामान्य शिक्षणाच्या बाबतीत हळुहळू प्रगती होत आहे. शारीरिक शिक्षणाच्या बाबतीत महिलांचा प्रतिसाद कमी आहे. समाजामध्ये आजही महिला खेळाडूंच्या सहभागाचे फारसे उत्साहवर्धक वातावरण नाही. पारंपारिक समाजात सनातनी मानसिकता व खेळाचा इष्टीकोन नसल्यामुळे महिलांच्या क्रिडा प्रगतीत अडचणी निर्माण होतात.

संयुक्त कुटुंबाचे आज विघटन झालेले आहे. म्हणजे एकेकाळी आडव्या किंवा उभ्या विस्ताराने संयुक्त बनलेली कुटुंबे फुटून अनेक कुटुंबे लहान आकाराची कमी विस्ताराची संयुक्त कुटुंबे बनत आहे असे म्हटले जाते की, संयुक्त कुटुंबांचे विघटन होणे आजचीच घटना नव्हे पूर्वी सुद्धा विघटन होतच असले पाहिजे नाही तर एक कुटुंबाचे अनेक कुटुंबे झाल्याचे दिसते नसते. थोडक्यात त्यामुळे केंद्रीय वातावरणाचा त्यांच्यावर प्रभाव पडणे साहजिकच आहे. जोपर्यंत आपण लोकांचे सामाजिक वर्तन बदलणार नाही तोपर्यंत महिलांच्या अडचणी कमी होणार नाहीत. इंग्लंडमध्ये चार्लस बूथ व त्यांच्या सहकार्यांनी सामाजिक सर्वेक्षण करून समाजशास्त्रीय संशोधनाचा पाया घातला. क्रिडा हे आधुनिक समाज जीवनातील एक प्रभावी माध्यम आहे. कुटुंब, भाषा, आचार विचार तसेच शाळा, महाविद्यालयातून होणारे उपक्रम या सर्वांचा महिलांवर प्रभाव पडतो. कुटुंबातील वातावरण तसेच सहभक्तीचे सामाजिक वातावरण यातून महिलांची जीवनक्रिडा घडत असते. महिलांच्या क्रिडा अडचणीवर या घटकांचा प्रभाव पडत असतो.

3) मानसशास्त्रीय घटक :

आर्थिक घटकाप्रमाणे मानसिक घटक हा सुद्धा क्रिडा सहभाग व व्यक्तिमत्त्व विकासात महत्त्वाचा ठरतो. खेळासारख्या प्रकारातून मुलींच्या व्यक्तिमत्त्वाचा अधिक चांगल्या प्रकारे विकास होवू शकतो. त्यांचे आरोग्य सुधारते. तसेच जीवनातील समस्या सोडवण्यासाठी अनेक अडचणीवर त्या निर्भयपणे समोर जाऊ शकतात. पण त्यांची सगळ्यात मोठी अडचण म्हणजे दारिद्र्य, सनातनी मानसिकता हे घटक सुद्धा कारणीभूत ठरतात.





**समस्या :**

- १) पालकांची निम्न दर्जाची आर्थिक स्थिती
- २) महिला खेळाडूंच्या सुरक्षिततेचा प्रश्न
- ३) मानसिक तयारीचा प्रभाव
- ४) प्रशिक्षणाचा अभाव
- ५) मुलभूत क्रिडा सोईसुविधांचा अभाव
- ६) क्रिडा शिक्षण विषयाची अनास्था
- ७) वातावरणाचा अभाव
- ८) पालकांचा पूर्वानुभव
- ९) संकुचित मनोवृत्ती
- १०) रुढी व परंपरा
- ११) सकस आहाराकडे दुर्लक्ष

**उपाय :**

- १) महिलांसाठी प्राथमिक शिक्षणापासून ते उच्च शिक्षणापर्यंत शारीरिक शिक्षण उ खेळ अनिवार्य करण्यात यावे.
- २) महिलांसाठी स्वतंत्र क्रिडा विद्यापीठ स्थापन करावे.
- ३) शासनाचे क्रिडा धोरण प्रादेशिक, सामाजिक व आर्थिक विकासावर अवलंबून असावे.
- ४) महिलांसाठी स्वतंत्र क्रिडा शिक्षकांची नेमणूक करावी.
- ५) तालुका, जिल्हा विभागीय पातळीवर सहभाग नांदविणाऱ्या ग्रामीण खेळाडूंना प्रोत्साहनपर मानधन देण्यात यावे.
- ६) महिला खेळाडूंना केंद्र व राज्य शासनाने १५ टक्के आरक्षण देण्यात यावे.
- ७) महिला क्रिडा विकासासाठी स्वतंत्र आर्थिक तरतुद करावी.
- ८) कुशल निष्णात महिला खेळाडूंना शिष्यवृत्ती देण्यात यावी.
- ९) महिला क्रिडा मंडळास अनुदान द्यावे.
- १०) महिलांसाठी ग्रामीण भागात सुसज्ज क्रीडांगणे असावीत.
- ११) ग्रामीण भागात क्रिडा शिबिरे आयोजित करावी.

**निष्कर्ष :**

- १) पालकांमध्ये महिलांच्या सुरक्षिततेबाबत शक्य असते.
- २) आवश्यक पोषक आहाराच्या अभावी महिला खेळाडूंची शारीरिक क्षमता तुलनात्मकदृष्ट्या कमी पडते.







- 3) महिलांचे मानसिक दौर्बल्य आणि नकारात्मक दृष्टी यामुळे महिला खेळाडू कमाळीच्या निराश व उदास असतात. या प्रकाराच्या नकारात्मक मानसिकतेतून प्रतिकूल वातावरणातून महिला खेळाडूंना बाहेर काढण्याची गरज आहे.
- 4) कॉलेजमध्ये स्वतंत्र महिला प्रशिक्षक नसतात. त्यामुळे पालक महिलांना स्पर्धासाठी पाठविण्यास कारसे उत्सुक नसतात.
- 5) मुलभूत पायाभूत सोई सुविधा नसतील तर खेळाचा विकास शक्य नसतो. पालकांची आर्थिक स्थिती कमकुवत असल्यामुळे महिलांना विविध स्पर्धांची तयारी करण्यासाठी आवश्यक साधणे उपलब्ध होत नाही. पाश्चात्य देशांमध्ये क्रीडांगणावर सर्वत्र खेळाचे साहित्य उपलब्ध असते.

**संदर्भ सूची:**

- 1) शारीरिक शिक्षण - छडेकर मोहन
- 2) शारीरिक शिक्षणाच्या शेवळकर
- 3) Development of Women - Ghate Smite
- 4) महिलांचा क्रिडा सहभाग- डॉ. वसंत पाटील



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## Sports and Physical Education In NAAC and NEP-2020

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### Abstract

The main function of the National Assessment and Accreditation Council (NAAC), an autonomous body funded by the University Grants Commission (UGC), is to assess and accredits Higher Education Institutions (HEI) in India. NAAC was created considering the widespread concern on the quality and relevance of higher education. Thus, the National Policy on Education (NPE, 1986) and the Programme of Action (PoA 1992) spelt out strategic plans for the policies, advocated the establishment of an independent national accreditation agency. Thus, NAAC was established to assess and accredit the Higher Education Institutions based on their performance. The assessment and accreditation process of performance evaluation is objective in nature. Therefore, the HEIs irrespective of the location get proper recognition for their performance. The entire process of NAAC accreditation proves that "work speaks rather an individual".

Sports are considered an extra-curricular activity in schools and activities either happen once or twice a week or after academic hours. What we are all failing to understand is that the basis of sports education starts in school. Such a curriculum is designed to impart physical education programmes at the upper elementary, middle and high school level. This sports curriculum is not robbing any child from holistic education. It only aims to provide children and youth with authentic sports experience. This education complements training of a candidate as it develops the overall personality of the students. A good sportsman is the one who learns to obey the rules of the game.

### Introduction

India is growing rapidly as a global super-power. To face the challenges of the century and to keep up with the pace of the world, maintaining health is of prime importance. Giving thrust to healthy society, Physical Education, Sports and Yoga are of great significance in today's world. The Government of India insists on Physical Fitness, Mental Health and Overall Development of Personality for every citizen. In these lines, the Government has launched Fit India Movement, Khelo India, TOPS and National Sports Day, International Day of Yoga etc. These initiatives have given impetus and awareness among general public, professional and academicians. However, creating efficient and skilled human resource in the field of Physical Education, Sports and Yoga is identified as the need of the hour. The similar focus has also be given in the NEP 2020.

### New Education Policy (NEP)-2020

New Education Policy (NEP)-2020 gives special attention to sports-integrated learning for students to adopt fitness as a lifelong attitude as envisaged in the Fit India Movement. It is good news for school-going sports enthusiasts. As part of the National Education Policy (NEP) 2020 implementation, sports education will soon be made part of school curriculum. NEP 2020 aims to bring out a system of holistic education. Currently, sports are considered an extra-curricular activity in schools and activities either happen once or twice a week or after academic hours. What we are all failing to understand is that the basis of sports education starts in school. Such a curriculum is designed to impart physical education programmes at the upper elementary, middle and high school level. This sports curriculum is not robbing any child from holistic education. It only aims to provide children and youth with authentic sports experience. This education complements training of a candidate as it develops the overall



personality of the students. A good sportsman is the one who learns to obey the rules of the game. Sports inculcate qualities like leadership, discipline, sharing, team work, honesty, team spirit, tolerance and many more among the students. Most schools are aware that education is not just academics, but extends to a holistic development of a child, and sports plays a vital role in it. Formal sports curriculum is need of the hour. Schools in India are beginning to realise the importance of sports in the overall development of children, and how vital it is to encourage them to take up some or the other sport. The growing awareness of how sports contribute to the growth of children in terms of life skills, has led parents and school authorities to encourage children to take up sports, whereas previously the focus was entirely on academics.

The realization that sports help in the development of team work, trust, sharing responsibilities and working together towards a common goal has led to a spurt in the sports activities in schools. If schools do not embed this as a part of the formal curriculum, no student will ever take sport education seriously. What is wrong in grading it if it leads to more and more students be interested in sports and physical activities. By adding sports into the formal school curriculum, we are also in a way ensuring that the school equips itself to offer other outlets to students who may not be interested in pursuing higher education. The sports curriculum if designed well could make access to universities easier for students who are good at sports.

#### **National Assessment and Accreditation Council (NAAC)**

The main function of the National Assessment and Accreditation Council (NAAC), an autonomous body funded by the University Grants Commission (UGC), is to assess and accredits Higher Education Institutions (HEI) in India. NAAC was created considering the widespread concern on the quality and relevance of higher education. Thus, the National Policy on Education (NPE, 1986) and the Programme of Action (PoA 1992) spell out strategic plans for the policies, advocated the establishment of an independent national accreditation agency. Thus, NAAC was established to assess and accredit the Higher Education Institutions based on their performance. The assessment and accreditation process of performance evaluation is objective in nature. Therefore, the HEIs irrespective of the location get proper recognition for their performance. The entire process of NAAC accreditation proves that "work speaks rather an individual". NAAC - SSR has given a total of seven criteria for the evaluation. It may be seen that a faculty or a teacher is having a scope to highlight his or her best practices pertaining to the teaching and research skills in criterion 2 and 3 out of 7 criteria of SSR. The remaining criterion is relating to the system including curriculum, governance and best practices of the Institute. The Criterion 5 deals majorly with the students' progress. Criterion 3 is about Research and Innovation. It has a total 120 marks/points out of 1000 marks/points. In the present article, the author would like to deal with criterion 3 in the background of New Education Policy 2020. The author would like to find out if at present the parameters involved in criterion 3 are in tune with NEP 2020 aspirations about the research and innovations in the field of Physical Education.

#### **Research and Innovations under NEP 2020**

NEP has covered many aspects. Of those, the author would like focus on the research and innovations covered under NEP. To address 'lack of research at most universities and colleges, and transparent and competitive peer-reviewed research funding across disciplines' the NEP brings significant focus on the multidisciplinary approach to education and as well as in physical education and sports. It provides greater leverage and academic freedom to researchers in higher institutions at different levels of research, including Masters and PhD. These institutions would work to build





strong educational communities, providing teachers and researchers the freedom to choose across all disciplines and fields

This is a very significant step considering the existing system which restricted choices both for the researchers and faculty and forced them to work in a closed-centric academic space.

The National Education Policy 2020 envisions a new entity called the 'National Research Foundation'. The objective of this body is to promote and expand research and innovation along with funding and seeding research in universities and colleges across the country. Furthermore, the NEP also talks about developing active research communities across disciplines including physical education and sports to increase resource efficiency, both material and human.

This National Research Foundation (NRF) is established by an Act of Parliament, providing it greater credibility and legal authority to promote research within the country. The institution would be given an annual grant of Rs 20,000 crores, which is approximately 0.1 per cent of the GDP and is expected to be increased progressively over the years considering the level of development in research.

Thus, NEP brings in ambitious changes that could transform the education system, with the help of good implementation and execution.

#### NAAC: Criterion 3 -Research and Innovations

NAAC Criterion III seeks information on the policies, practices and achievements of the institution, with reference to research, innovation and outreach. It deals with the facilities provided and efforts made by the institution to promote 'research culture'. The institution has the responsibility to enable faculty to undertake research projects useful to the society as well as Institution. In NAAC- SSR research and innovations is mentioned under criterion 3. The major difference between expectations seen under NEP 2020 and criterion 3 is about the approach. NEP 2020 has given institutionalized approach however SSR Criterion 3 has emphasized an individual faculty approach towards research and innovations. NEP 2020 speaks about strengthening the institutes for research and innovations, while SSR Criterion 3 speaks about strengthening about the faculty. Conducting research projects is as difficult and important as framing its proposal. Faculty members from whom research is expected are required to be trained. NEP 2020 has covered the training part throughout from framing research proposal while in criterion 3 points are awarded if research projects have been received by a faculty member as also for organizing a research methodology workshop/event marks/points are awarded. Thus, in this, the aim of both NEP 2020 and SSR Criterion 3 seem to be similar. However, the approach is different.

\*With Reference to details mentioned in the National Education Policy, from page no 38, Point No 11.10 regarding to have the flexibility to offer different designs of Master's programmes. It should also be a part of physical education that There may be a 2-year programme with the second year devoted entirely to research for those who have completed the 2-year Bachelor 's programme (BPED 2 yr)

\*With Reference details mentioned in the NEP-2020, page no 38, Point No 11.10 regarding to have the flexibility to offer different designs of Master's programmes, in relation to similar context a Certification of Post Graduate Diploma in Physical Education after one year may be awarded to those students, which are unable to complete two year master degree programme due to numbers of reason. But that students should earned 10 additional credits which should be completely based upon skill oriented.

\*With Reference to details mentioned in the National Education Policy, (Sub heading-Teacher Education) from page no 57, Point No 15.5 regarding The 4-year integrated B.Ed/ BPED offered by such multidisciplinary HEIs





The 4-year integrated B.P.Ed. offered by such multidisciplinary HEIs will, by 2030, become the minimal degree qualification for school teachers. In regards to similar context 4-year integrated B.P.Ed. programme should be started in each and every teacher education institution whose aims to produce quality level physical education teachers.

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## Studies on formulation of Gluten-free biscuits using *Moringa oleifera* leaf powder

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### ABSTRACT.

Biscuit is a ready-to-eat, convenient and most popular baked product often made with wheat flour. Since people with gluten sensitivity (celiac disease) cannot consume wheat flour, the present study aimed to manufacture gluten free biscuits. Considering the medicinal properties and high nutritional value of *Moringa oleifera*, the gluten-free biscuits were fortified with *Moringa* dehydrated leaf powder. Gluten free biscuits were prepared using various flours such as oat flour, rice flour, soy flour, butter, powdered sugar and milk. The four different formulations of MGPB were formulated using different concentrations of *Moringa* leaf powder i.e. 1.0% in MGPB1, 1.5% in MGPB2, 2.0% in MGPB3 and 2.5% in MGPB4. The sensory analysis of different formulated biscuits showed that sample MGPB2 fortified with 2.0% *Moringa* leaf powder was rated as good and acceptable. Proximate analysis of same sample revealed that the fortified biscuit contains 5.70%, 2.43%, 12.4%, 14.5%, 60.72% and 2.45% percentages of moisture, ash, protein, fat, carbohydrates and fibre respectively. It was also found to contain good amount of calcium (13.7%) and Iron (26.2%). Oats and soybeans are rich sources of dietary fibre, calcium, iron, proteins, carbohydrates and also have low glycaemic index. *Moringa* is rich in vitamin C, vitamin B6 and fibre. The fortification of Gluten-free biscuits with various flours and *Moringa* leaf powder showed considerable changes in physicochemical properties of biscuits and resulted in enhanced nutritional quality. Such formulated product can function as the best option for the patients suffering from celiac disease.

**Keywords:** Gluten-free, Biscuits, *Moringa*, Glycaemic index, Physico-chemical, Sensory, medicinal value.

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### 1. INTRODUCTION

Biscuit is one of the wheat flour-based products and is widely consumed due to low manufacturing cost and convenience [1]. However, the gluten in wheat flour limits its consumption, especially for people who suffer from gluten intolerance. Furthermore, wheat flour also has low fibre content. The recent trend has shown an increase in dietary fibre consumption and gluten-free products [2].

Celiac disease is a genetically predisposed autoimmune disorder resulting in damage to the small intestine lining due to consumption of gluten-containing product. Nowadays, there is a high demand for the development of food products that increase the availability of gluten-free food in order to attend an increasing demand. This constitutes an actual technological challenge with a wide possibility for investigation.

The *Moringa* leaf powder is rich in protein, vitamins A, B and C, and a whole range of minerals. A 100g portion of fresh *Moringa* leaf has 9.3g protein, 434mg calcium, 404mg potassium, 738µg vitamin A, and 164mg vitamin C [3]. The leaves have bioactive molecules which include carbohydrates, phenolic compounds, oils and fatty acids, proteins and functional peptides and have great potential to be used in several formulations of food products [4]. The leaves of the *Moringa* plant contain all amino acids, uncommon among plant sources, and a very high amount of unsaturated fatty acids including linoleic acid. Additionally, *Moringa* leaves are abundant in almost all vitamins, including vitamin A, vitamin B1 including folic acid, pyridoxine, and nicotinic acid, vitamin C, vitamin D, and vitamin E [5]. A study by Hasaballa et al. also reported that *Moringa* leaf contained the highest amount of calcium and iron compared to other parts. In addition, polyphenols present in *Moringa* also contribute to sensory qualities of natural foods derived from it. The purpose of this study is to develop value added gluten-free biscuits using oat flour, rice flour, soy flour, butter, powdered sugar and milk and their fortification with *Moringa* leaves.



## II. MATERIALS AND METHODS:

The ingredients such as oat flour, rice flour, soy flour, butter, powdered sugar, milk and Moringa leaves were purchased from local market. The entire process was carried in Department of Food Technology at CNCVCW, Kolhapur.

### A. Preparation of Moringa Leaf Powder:

Moringa leaves were purchased from the local market. They are cleaned well using distilled water and are separated from the stalks. Briefly explained, the freshly harvested moringa leaves were detached from the stalks, washed, slightly blanched and dehydrated in a tray drier at a temperature of 60°C, 3 hours. The dried leaves were reduced to powder in a grinder and sifted through a fine mesh to remove extraneous matters. The powder was packaged in air-tight HDPE bags and stored under room temperature for further use.

### B. Production of Moringa gluten-free biscuits (MGFB):

Various flourlike oat flour, rice flour and soy flour were sieved together using a proper mesh sieve to obtain flour mix. Later flour mix is blended with moringa leaf extract and was subdivided into various proportions. Other ingredients like butter, powdered sugar and milk were measured carefully and mixed well with the flour mixture to obtain required consistency. The dough was further kneaded for 5-10 mins to obtain a soft dough. The dough was divided into small portions and were flattened using rolling pin. The flattened sheets were cut into desired shapes were using cookie cutter. Biscuits were baked at 180°C for 20-25 minutes, allowed to cool and packed well in air-tight containers. The different formulations made were as follows:

Table: 1 Composition of ingredients-

Ingredients	Control	MGFB1	MGFB2	MGFB3	MGFB4
Refined Wheat flour (g)	100	-	-	-	-
Oat flour (g)	-	50	40	30	20
Rice flour (g)	-	30	30	30	30
Soy flour (g)	-	20	30	40	50
Moringa leaf powder (g)	-	1.5	2.0	2.5	3.0
Butter (g)	15	25	25	25	25
Powdered sugar (g)	25	30	30	30	30
Salt (g)	1	1	1	1	1
Milk (ml)	5	10	10	10	10

\*MGFB1, MGFB2, MGFB3 and MGFB4 are gluten-free biscuits with different composition of ingredients.

### C. Sensory Evaluation:

The sensory evaluation of formulated gluten-free biscuits was performed by evaluating five major sensory attributes such as colour, flavour, taste, texture, and overall acceptability using nine-point hedonic rating scale (9 = like extremely, 1 = dislike extremely). Twenty-five members including staff members and students from the department were included in the panel of sensory evaluation of this study.

### D. Proximate Analysis:

The formulated gluten-free biscuits were subjected for proximate analysis and the nutrient content was determined by the standard AOAC methods. The analysis was performed for the estimation of nutrient content in terms of carbohydrates, moisture, protein, crude fat, crude fibre, ash and energy.

Physical Properties. The weight (g), diameter(mm) and thickness(mm) of the formulated biscuits were evaluated. The spread ratio of biscuits was calculated as follows-

Spread ratio = Diameter (mm) of the biscuits / Thickness (mm) of the biscuits

## III. RESULTS AND DISCUSSION

The prime objective of incorporation of Moringa leaves in gluten-free biscuit preparation was to enhance the nutritional value of biscuits. Considering the perishability of the fresh Moringa leaves, the moisture content of both fresh and dehydrated Moringa leaves were analysed. The use of fresh leaves in formulating gluten-free biscuits, due to their high moisture percentage would have decreased the shelf-life of the biscuits. Hence, dehydrated Moringa leaf powder was used for the formulation of same.



### Comparison between Fresh and Dehydrated Moringa Leaves



**Figure 1: Graphical representation of Comparison between Fresh and Dehydrated Moringa Leaves**

The high nutritional content found in the dried leaves are important nutritional indicators indicating significant use of such plant in formulating many value-added products. The dehydration technology used in preparing the Moringa leaf powder aids in concentrating the important nutrients and also helps to conserve and consume through one or the other form of food. Similarly, the dried leaf powder can be stored for longer duration and the same being made available throughout the year.

#### A) Proximate analysis of dehydrated *Moringa oleifera* leaves

The proximate analysis of *Moringa oleifera* leaves showed that the leaves are rich source of protein, sugars, energy and minerals. The high ash content directly indicates high mineral content contained in the leaves. Along with the high protein content, Moringa leaves also shows significant amount of lipids (i.e. 5.85%), which helps in increasing the palatability of foods prepared from Moringa by absorbing and retaining flavours.

**Table 2: Proximate composition of the petroleum ether extract of Moringa leaves**

Sr. No.	Nutrient	Estimated Values
1	Moisture (g/100g)	16.5 ± 0.10
2	Carbohydrate (g/100g)	41.20 ± 0.04
3	Protein (g/100g)	14.82 ± 0.15
4	Crude fat (g/100g)	5.85 ± 0.24
5	Crude fibre (g/100g)	10.97 ± 0.12
6	Ash (g/100g)	12.86 ± 0.11
7	Energy (kcal/100g)	275.52 ± 1.05

[Mean ± SD of three determinations]

#### B) Sensory evaluation of Moringa fortified Gluten-free Biscuits

The organoleptic evaluation of the Refined wheat flour Biscuit (control) and Moringa leaf enriched Gluten-free Biscuit (MGFB) have been evaluated colour, flavour, taste, texture, and overall acceptability using nine-point hedonic rating scale (9 = like extremely, 1 = dislike extremely). The graph of sensory evaluation clearly indicates that the formulation MGFB2 was highly rated for acceptance than the control sample and the other formulations. The biscuits of MGFB2 formulation were good in terms of texture and colour, but slightly showed the bitter taste which was acceptable. The study also showed that increasing the percentage of Moringa leaf powder in the gluten-free biscuits decreases its consumer acceptance due to strong leafy flavor and bitterness in formulations.

#### C) Proximate analysis of Moringa fortified Gluten-free Biscuits

The Refined wheat flour Biscuit (control) and Gluten-free Biscuit formulated with Moringa leaf powder were analysed for proximate composition and the results are included below.





Table No 3: Proximate analysis of Moringa fortified Gluten-free Biscuits

Nutrients	Control	MGFB1	MGFB2	MGFB3	MGFB4
Moisture (%)	12.12	8.25	5.70	7.42	9.29
Carbohydrates (%)	56.43	65.38	60.72	59.23	60.11
Protein (%)	10.87	11.65	12.48	12.89	11.42
Crude fat (%)	12.24	13.02	14.59	13.69	13.42
Crude fibre (%)	1.48	1.62	2.45	2.36	2.05
Ash (%)	1.06	1.50	2.43	2.37	2.41
Energy (kcal/100 gm)	420 kcal	425.3 kcal	424.11 kcal	411.69 kcal	406.9 kcal
Calcium (%)	6.24	8.32	13.7	11.56	10.51
Iron (%)	8.62	15.11	16.2	15.42	15.78
Magnesium (%)	2.63	1.53	1.63	1.89	1.76

## Sensory Evaluation of MGFB

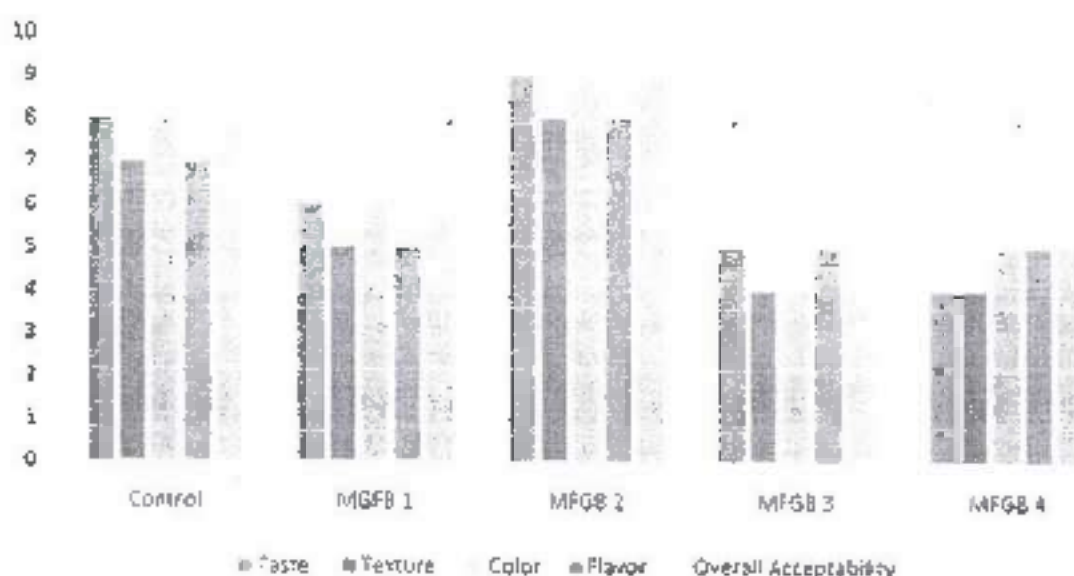


Figure 2: Graphical Representation of Sensory evaluation of MGFB

The Gluten-free Biscuit formulated with Moringa leaf powder showed high percentage of carbohydrate, protein, fat and energy. The study showed that MGFB contains 5.7%, 2.43%, 12.48%, 14.5%, 60.72% and 2.45 % percentages of moisture, ash, protein, fat, carbohydrates and fibre respectively. It was also found to contain good amount of calcium (13.7 %) and iron (16.2 %). The results indicate that the formulated biscuits are highly nutritious and can form a good option for the celiac patients.

## D) Physical analysis of MGFB

The physical characteristics (Weight, Thickness, Diameter and Spread ratio) of five biscuits are shown in Table 4. Results showed that there was significant difference between each sample. From the results it was noticed that the thickness of the composite biscuits displayed an increasing substitution level of soy flour.

Table No 4: Physical analysis of MGFB

Samples	Weight (g)	Thickness (mm)	Diameter (mm)	Spread Ratio
Control	10.11	5.7	40.2	7.02
MGFB 1	10.45	5.5	40.3	7.32
MGFB 2	10.26	5.6	40.1	7.16
MGFB 3	10.23	5.6	40.2	7.17
MGFB 4	10.36	5.7	40.2	7.05

#### IV. CONCLUSION

In the present study concluded that the development of gluten free biscuits has high acceptances. The formulation Gluten-free Biscuit with moringa leaf powder showed enhanced nutrition content, texture, color and flavor. The incorporation of oat flour, rice flour, soy flour and dehydrated Moringa leaves powder into biscuits had considerable changes in the physicochemical and sensorial properties of the biscuits. It is concluded from this study that flour mix (oat flour, rice flour, soy flour) and dehydrated Moringa leaves powder can be successfully incorporated in gluten-free biscuits to yield biscuits of enhanced nutritional quality with acceptable sensory attributes. Moringa has been reported to possess many medicinal properties and hence its inclusion in the value-added products as nutritional supplements or in the process of fortification of foods is highly promising.

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## FAT REPLACERS-AN OVERVIEW

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### ABSTRACT

Fat plays a key role in a majority of food products. It is an important constituent of food and serves as a rich source of energy and contributes to various sensory and rheological characteristics. It provides a creamy texture and a flowing mouth feel to foods. These attributes contribute to richness of the food resulting in better market value. The consumption of diet, high in fat is associated with excess calorie intake resulting in overweight and obesity which is cause for increased risk of cardiovascular disease, type 2 diabetes mellitus and some cancers. Hence there is demand for low fat and low energy foods. Snack foods, is one of the key contributors to excess calorie intake and therefore weight. Consumers are looking for healthy snacks, low in fat or free from fat. Therefore, great effort has been made to reduce the fat from food formulations without affecting their flavour and texture. Fat replacers are substances that can be used in different foods to mimic the textural and sensory attributes provided by fat, but give considerably lower amount of calories and may be used to replace some or all of the fat in food products. In this review we summarize the effect of fat replacers on quality of food products and their effects on health.

**Key Words.** Fat, Snack foods, overweight, fat replacers  
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### INTRODUCTION

According to the Academy of Nutrition and Dietetics, Fat replacers are ingredients that can be used to provide partial or complete functions of the fat yielding fewer calories than fat.

Fat replacers are the substances, which chemically resemble fats, proteins or carbohydrates and possess certain desirable physical or organoleptic properties of fat. Fat replacers serve two purposes. They reduce the amount of fat in food, and they usually reduce the calorie content of the food with no change in texture and taste of food (1,4).

Fat replacers are categorized in two groups, i.e., Fat substitutes and Fat mimetic. Fat substitutes can directly replace conventional fat molecules in foods on a weight-for-weight basis. They are generally heat stable and suitable for high temperature cooking and frying applications and fat mimetics are substances which can mimic some of the organoleptic and physical properties of conventional fat molecules.

However, they cannot replace fat molecules in food on a weight-for-weight basis (4,10).

The consumption of diet, high in fat is associated with excess calorie intake resulting in overweight and obesity which is cause for increased risk of cardiovascular disease, type 2 diabetes mellitus and some cancers (1,8).

Fat Replacers are grouped based on their chemical nature as Protein based, Carbohydrate based and Fat based/Synthetic fat replacers (3,4).

#### 1. CLASSIFICATION OF FAT REPLACERS

##### 1.1 Protein-Based Fat Replacers

Protein-based FR is derived from Milk (whey protein), egg protein and other foods. These proteins are produced by microparticulation process which involves heating and blending protein at high temperature to develop microscopic particles that are said to float over tongue to provide creamy mouth feel of fat (3).

1.1.1 Simplex (NutraSweet Kelco Co) is a microparticulated protein-based fat mimetic. Microparticulated protein (marketed under the brand names Simplex and Trailblazer) is made from microparticulated milk or egg-white proteins, sugar, pectin, and citric acid. process, which involves heating and blending protein at high temperature to develop microscopic particles that are said to float over tongue to provide creamy mouth feel of fat, but lack in fat-type flavour. As microparticulated protein fat replacers are not heat-stable, they are used chiefly in cold products such as ice cream, butter, margarine, sour cream, and salad dressings. The protein-based microparticulated protein fat replacers





provide 1.33 calories per gram, as compared with the nine calories per gram of regular fats. when used in ice cream, a single gram of simplese can replace three grams of fat, thus saving 23 calories. Simplese was given GRAS status in 1990 for use in frozen desserts and in 1994 for use in yogurt, cheese spreads, frozen desserts, cream cheese, and sour cream. Simplese cannot be used in high-temperature food applications, which could easily denature the proteins. On a dry basis Simplese provides 4kcal/g, whereas a hydrated gel provides 1 kcal/g (1,10).

**1.1.2 Modified whey protein** (marketed as Dairy-Lo) is made from high quality whey (or milk) protein concentrate. Modified whey protein improves the texture, flavor, and stability of low-fat foods. It replaces fat at four calories per gram and is typically used in frozen dairy desserts, cheeses, yogurts, sauces in baked goods. It has ability to prevent iciness in frozen foods (10).

**1.1.3 Isolated soy protein** (marketed as Supro, ProPlus, and Supro Plus) are used by the manufacturers to reduce the fat content of foods—primarily meat products. Isolated soy protein is also used in some beverages and in weight-loss products (10).

## 1.2 Carbohydrate-Based Fat Replacers

These fat replacers incorporate water into a gel-type structure, resulting in lubrication and flow properties similar to that of fat. Carbohydrate-based Fat replacers are categorized into starch-derived, cellulose-based, fiber-based, gum-based, and others (3).

### 1.2.1 Starch-derived Fat Replacers

Starch based fat replacers are used either as modified starch or maltodextrins. These are made from starchy foods such as maize, rice, wheat, potato and others. Resistant Starch is generally used as a fat replacer in baked goods, extruded snacks, pasta, breakfast cereals and beverages.

**1.2.2 Maltodextrin** is obtained by the hydrolysis of starch into glucose syrup. It is the percentage of total solids that have been converted into reducing sugars. Maltodextrins are used as a fat replacers in dairy products, confectionary, frozen desserts, cereal baked goods and meat products due to their ability to form soft, spreadable, thermoreversible gels with melt-in-the-mouth properties (3,10).

### 1.2.3 Polydextrose

Polydextrose is a synthetic low-calorie carbohydrate, a polysaccharide composed of D-glucose (dextrose) and sorbitol, which are derived from corn-starch and citric or phosphoric acid. Polydextrose is a soluble fiber. Polydextrose exists in powder form. Polydextrose is used as a low-calorie bulking agent that can replace all or part of the sugars and some of the fats in foods while maintaining a pleasant texture and mouth feel (3,10).

### 1.2.4 Cellulose derivatives

The most widely available cellulose-based FR are microcrystalline cellulose (MCC) and methylcellulose (MC). These are used to stabilize foams and emulsions, modify texture, increase viscosity, and add dietary fiber, as an insoluble, non-digestible fiber. It is often used in fried foods and bakery products. Like most carbohydrate-based fat replacers, powdered cellulose binds water tightly. Thus, when powdered cellulose is used in the batter of foods to be fried, the cellulose preferentially binds to water instead of to the oil used in frying. The end result is that less of the oil is absorbed by the food as it is fried (10).

### 1.2.5 Gums

Hydrophilic colloids include xanthan gum, guar gum, locust bean gum, gum Arabic and carrageenan. They provide thickening effect, creamy texture and also useful

as a protective agent against cardiovascular diseases, diverticulitis, constipation, irritable colon, colon cancer, and diabetes (3).

### 1.2.6 Dietary fibre based Fat replacers

#### Z-trim

It is made from the processed hulls of oats, soybeans, peas, and rice or from the bran of corn or wheat. The hulls or bran are processed into microscopic fragments, which are then purified, dried, and milled into a powder. The fragments absorb water, they swell thus provide the smooth mouthfeel of fat. Z-trim passes virtually unmetabolized through the human body, so it contributes no calories. No adverse gastrointestinal side effects have been noted from the consumption of Z-trim containing products (3,10).

#### Oatrim

Oatrim is enzymatically modified (hydrolyzed) oat flour containing amylopectins and approximately 5 % of  $\beta$ -glucan as soluble fibers used as fat replacers in many of food products (3,8)

#### Inulin

Inulin is a soluble fiber containing oligosaccharides found in chicory roots. Due to high water capacity it forms a creamy gel, and can easily be used as a fat substitute in food products (3,8).

## 1.3 Fat-Based Fat replacers / Synthetic Fat Replacers

Generally structured lipids are triacylglycerols (TAGs) that have been modified to change the fatty acid composition and/or their positional distribution in glycerol backbone by chemically and/or enzymatically



catalyzed reactions and/or genetic engineering. These are produced by replacing the fatty acids in the triglycerides. Other fat replacers are based on the fact that level of 9 kcal per gm does not apply when short chain fatty acids are present and also long chain stearic acid are incompletely metabolized and yield caloric value less than 9 kcal/g. By combining these two types of fatty acids into glycerides fats are obtained that have energy values of 5 kcal per gm. Structured lipids thus provide an effective means for producing tailor-made lipids with desired physical characteristics, chemical properties, and/or nutritional benefits.

Fat-like substances, which are resistant to hydrolysis by digestive enzymes, comprise another major category of fat replacers. These can be used as partial or full replacements for oils and fats in bakery and other food products (3.7).

**1.3.1 Olestra** (marketed under the name Olean), is the first calorie free fat substitute approved by the U.S. Food and Drug Administration. Olestra is a sucrose polyester with 6 to 8 acyl groups derived from soybean, corn, cottonseed or sunflower fatty acids. It is not absorbed in the digestive system because it is not hydrolyzed by pancreatic lipase and yields no calories. (3.5,10).

**1.3.2 Salatrim** is the name for a family of reduced-calorie fats typically made from soybean or canola oil. (The name "salatrim" stands for short and long chain acid triglyceride molecules) Salatrim provides just five calories per gram, rather than the typical nine of regular fats. Salatrim can be used to reduce the fat in a variety of products such as baked goods, confections and dairy products. Unlike olestra, salatrim cannot be used for frying. (3.10)

**1.3.3 EPG** (Esterified propoxylated glycerol) has appearance, tastes and functions like fat because it is made from plant based oil. It contains 0.7 calories per gram and allows for up to 45% caloric reduction in applications. EPG has GRAS approval include snack foods; plant-based protein products, beverages such as coffee and tea and dairy product analogs (3.12).

## 2.0 EFFECT OF FAT REPLACERS ON QUALITY OF PRODUCTS

**2.1** The fat replacers significantly influenced the meltability of low-fat 6 percent fat Mozzarella cheese. Cheese made with Stellar (carbohydrate based) and Simplese (protein based) had greater overall meltability than those made with Dairy-Lo (protein based) or the control (without fat replacer) (9).

**2.2** Carragennan is used as gelling agent used in the food industry. The gel strengthening properties of carragennan are as a result of strong bonds formation with casein protein. However, carragennan-casein interaction is dependent on pH. The correct concentration of carragennan and temperature treatment can improve cheese yield and whey protein recovery, which is desirable for cheese producers. A small amounts of this carragennans found to increase cheese firmness and maintain cheese structure after cheese curd heating. Carragennan improves other properties, such as ease of grabing or slicing. Carragennan can be a good replacement for emulsifying salts, to stabilize cheese fat without disturbing the Ca:P ratio. The replacement of emulsifying salts with carragennan (as little as 1%) results in a homogenous cheese product. For that reason, carragennan is a useful additive for maintaining the organoleptic and structural values of fat-free cheese (2).

**2.3** Inulin as a fat replacer at different levels (2, 3, and 4%) in low-fat ice cream containing 2% fat decreased the hardness compared with the low-fat ice cream. Inulin improves the consistency of low fat ice-creams mix due to its gelling properties, which consequently can reduce rate of ice crystallization (11).

**2.4** Oatrim was the most successful fat replacer in biscuits which was able to retain most sensory properties of a traditional biscuit and cakes even at 50-100% FR, although there was a significant changes in physical properties.

Inulin was found to be the most successful fat replacer in legume crackers, reaching an acceptable level of FR at 75%. The additional benefits of using inulin is high fibre content that increases the market value of it (8).

## 3.0 SAFETY OF FAT REPLACERS

The use of fat replacers to reduce the fat content in food products also raises the concern of consumers safety. The safety of the currently used fat replacers is ensured by the GRAS status by the FDA.

Many of the carbohydrate-based, protein-based, and fat-based fat replacers have not shown major health concerns except for Polydextrose and Olestra. Polydextrose can have a laxative effect and Olestra may cause leaky and fatty stools and loss of fat soluble vitamins. As a part of healthy dietary pattern, fat substitutes, when used judiciously, may provide some flexibility in diet planning, although additional research is needed to study the safe use of these products by children and adults, to fully understand the longer-term health effects, and the potential interaction with food ingredients and drugs. A fat replacer can provide all attributes of fat. So solution to this is combination of fat replacers for their





cumulative effect. There is a need to develop fat replacer, which can be used in a number of food products with no effect on sensory quality and health(3,6).

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# JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

## Air Pollution Control Device: Air Pollution to Ink

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### Abstract –

Pollution became as dangerous as disease, so pollution traps and smoke absorbers were developed to control it. Advanced pollution control devices are also being invented. So that we can control pollution and keep it safe. In the future, it will be mandatory to have a smoke absorber in every house. A pollution trap not only keeps your surroundings pollution-free, but can also prevent diseases. Advanced pollution catcher equipment makes it easy to get rid of pollution without wasting human energy.

**Key words:** Pollution Control, Smoke Absorber, Air Ink.

### Introduction

Air Ink is a device that filters the air in the interior and removes vapours and particles in the air created during metal soldering. This helps maintain better indoor air quality. Removes solder fumes, heat, noxious odours and other airborne particles that could have adverse health effects.

Air Ink comes with a mechanical fan that extracts all toxic fumes, bacteria, gases and particles through a carbon filter. A smoke absorber plays a key role in removing fumes and harmful gases.

Using a smoke absorber with a built-in fume extractor is important because of the hazards & health effects of solder fumes. It is necessary to have one in areas reserved for industrial/mechanical tasks that create hazardous fumes and smoke.

Air Ink is recycling environmental air pollution and convert it to paints/ pigments and printing ink. Firstly, AIR INK products were used in August 2016 in association with Tiger Beer to create art. Founded by Graviky Labs, a spin-off group of MIT Media Lab. Kaalink is a contraption retrofitted to the exhaust pipe of vehicle to capture the outgoing pollutants. This does not affect vehicle performance. [1]

Breathing fumes while soldering can lead to dangerous health consequences due to toxic metal particles in the fumes. Unfortunately, few people are aware of this risk because most believe that opening the windows or turning on the fan will solve the problem. Unfortunately, fans will only circulate the smoke to other areas, increasing the risk of exposure to harmful toxins.

When opening the windows does not help, because the outside air pressure is greater than the air pressure created by the fan. As a result, some smoke returns to the room. Fortunately, new inventions in workplace safety are making it easier to absorb smoke to improve indoor air quality. Smoke absorbers are a great example of an efficient solution with a carbon filter and smoke exhaust fan.

A smoke absorber is a mechanical device that absorbs smoke from a closed environment. Where a smoke absorber is used are kitchens, factories, laboratories, etc... Smoke absorbers are used to extract



Smoke, odour, hot air and other toxic air from an enclosed environment. This article is written with a vision of utilizing resources that have been ignored until now. Air pollution can be harvested and made into a substance as useful as ink. The Smoke Absorber is a device that smartly detoxifies heavy metals and carcinogen particles from soot or carbon. Pollutants that can damage our lungs can reach our eyes in the form of art.

Unburned carbon particles from industries, chimneys are more than just smelly and unsightly. They can adversely affect health leading to shortness of breath, asthma, stroke, cancer, heart attack, bronchitis and premature death.[2] Over time, technology has proven that substances that cannot be touched can also be recycled and reused in the form of ink. It is an extension of technology to create an environmentally friendly environment. This developed idea combines science, technology and art. Polluted air is rich in carbon due to the burning of fossil fuels. The proposed device is designed as a smart and smart combination of electronic sensors, collection system and mechanical actuators.

### Current Scenario

The past few decades have seen massive production of ink by burning large amounts of fossil fuels. This article aims to preserve our reserved resources and thereby protect nature. In addition, a large number of harmful gases are released into the atmosphere. Soot is even thinner than the diameter of a human hair and can easily enter our bloodstream and lungs. Vehicles, chimneys and ships serve as the main source of soot formation. In addition, affecting the environment, it can also deform human organs. Research has claimed that carbon black can be cleaned and used for a variety of purposes. One of the main applications where this unburned carbon can be used is the production of air ink.

During the last 150 years, humanity has been dependent directly or indirectly on burning fossil fuels for its energy needs.

Particulate matter exposure leads to approximately 20,000 premature deaths in America each year. The data also shows that soot causes nearly 300,000 asthma attacks and 2 million lost work days due to respiratory problems each year.

The production process of Air-ink not only eliminates the soot that pollutes the air, but also does not burn additional fossil fuels than in the production of conventional ink.

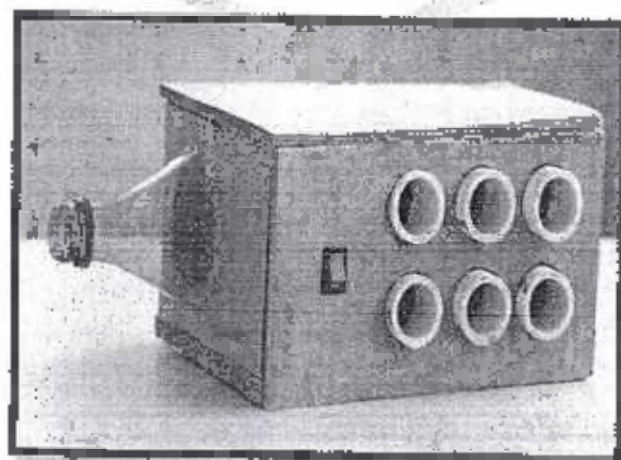
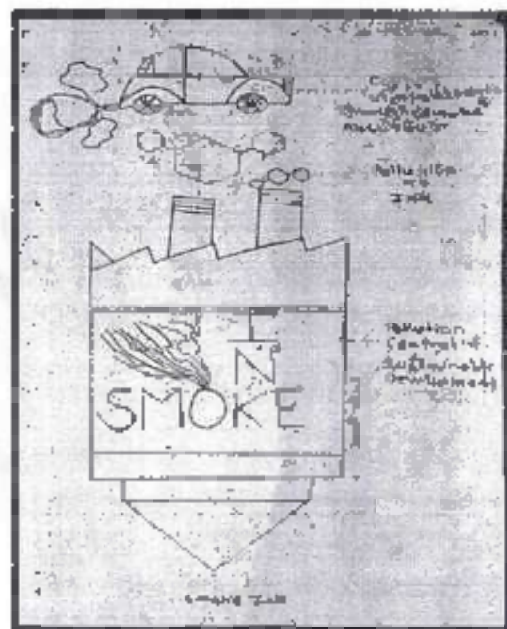
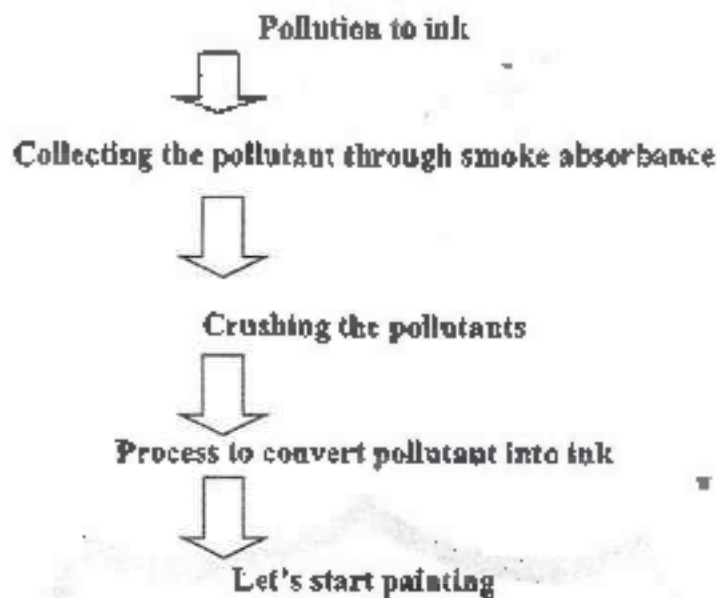


Fig-1: Smoke Absorber



## Materials and Methods

The present study was conducted at CSIBER Trusts CNCVCW, Kolhapur during the year 2022-23.



### Device Description and Ink Preparation

- The waste plastic bottle is used for this project. The plastic bottle is connected with the exhaust fan for the working of exhaust fan DC motor is connected to the fan. The below part is applied with the petroleum jelly.
- The exhaust fan placed at the front of bottle. When the unit is started the harmful air pollutants/smoke is absorbed through the exhaust fan and passed towards the petroleum jelly wall. The collected sample is crushed into mortar pestal to get fine powder of it.
- The fine powder is then mixed with alcohol and mixed well. This mixture can be used as a primary ink.

### Device Performance

The whole process of manufacturing the smoke ink and absorbing the soot from polluted air makes it environmental friendly and carbon-neutral. It captures more carbon emissions than usually required to produce ink. Smoke ink is better than regular black ink since it doesn't burn extra fossil fuels. The developed ink is better,



thicker and darker than the traditional ink. Carbon dioxide will still reside in the air but the proposed device will try to reduce the level of carbon soot which is the reason for pollution called PM 2.5. Smoke ink is used to capture soot which is then processed to make air ink. The unit captures 75% of particulate matter without inducing back pressure. [2]

### Smoke Absorber Use:

1. Harmful chemical gases will be removed from the air
2. The environment is kept safe and clean thanks to a smoke absorber that removes harmful chemical gases.
3. Different types of filtrations
4. There are various filter devices available in the market, we have the best filter device which is the most effective activated carbon filter that absorbs fumes, harmful smoke and strange odours.
5. Protect the respiratory system
6. A smoke absorber can be a very effective and useful device to help prevent respiratory problems. It extracts harmful fumes far from the surrounding environment and keeps the air clean and breathable.

### Observation:

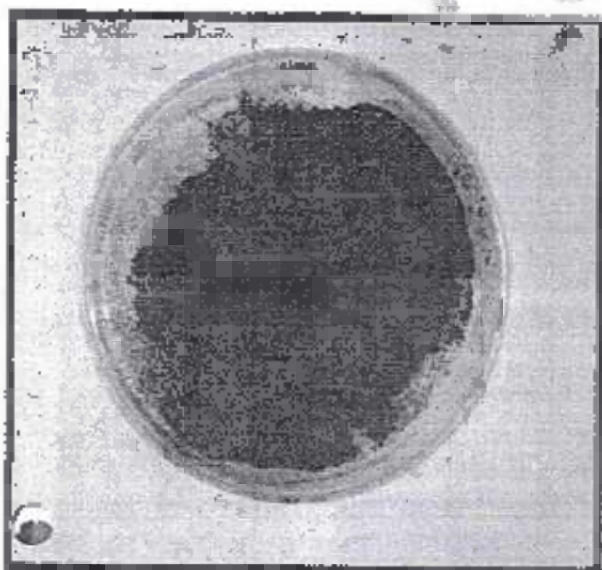


Fig: 2 Sample collected from Smoke

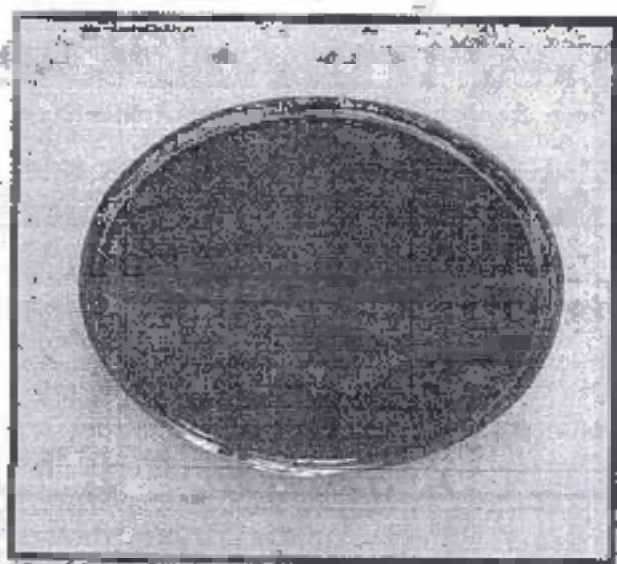


Fig: 3 Primary Ink Preparation in Laboratory

### Result and Conclusion:

smoke absorption machine is a type of machine that has its own function to save the environment by reducing the air pollution that comes from the open combustion process. while for open burning process it means that the smoke that comes from open burning process does not have heavy particles in the smoke compared to industrial smoke

If this idea gets the recognition and recognition it needs, it can work its way to releasing oil paints, textile paints and other outdoor paints and many more. Even if a replacement for fuels such as gasoline and diesel can be found, it will certainly take several years. The ink produced is not edible and has not yet been determined to be safe for children.

In conclusion, the goals of this machine can reduce air pollution and smoke absorption machine have been achieved, and they can be used especially in personal home.

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# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## Dairy Waste Management

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### Abstract:

The dairy industry contains a large number of organic components. So that it is necessary to ensure the required treatment before release into the environment. Treatment is usually divided into aerobic and anaerobic. Due to rapid industrial growth, the world economy is improving with rapid growth, but it also has an impact in terms of environmental pollution. A large concentration of pollutants in terms of quantity and quality of liquid, solid and gaseous pollutants show harmful effects on flora and fauna as well as on many areas of the environment. An industrial wastewater treatment plant installed to meet regulatory standards governed by the Pollution Control Board. Every industry has a wastewater treatment plant that helps reduce the pollution level of wastewater discharged into the environment from industrial sites. According to the pollution board standards, the industry has to comply with the standards of discharge of waste water from land and streams. For effective treatment, industry should study wastewater characterization, treatability effects and planning of suitable units. In this study, an effort was made to evaluate one of the ETPs provided for the treatment of wastewater produced by the dairy industry. The study was limited to evaluating the performance of an ETP plant in the dairy industry.

In this research, it is briefly discussed what are the units involved in the dairy industry, what are the processes involved in it; the work done in these processes; from which processes we can get waste water and what are the sources of waste water in these units and the effect of this waste water on the environment. These industries discharge wastewater characterized by high chemical oxygen demand, biological oxygen demand, nutrients, and organic and inorganic content. Such effluents, if discharged without proper treatment, seriously pollute the receiving water bodies and disrupt the entire ecosystem. Moreover, the Government of India has put in place very strict rules and regulations for the discharge of sewage to protect the environment.





## Characteristics of the Effluent Dairy Effluent:

Contains soluble organic substances, suspended solids, trace organic substances. All these components contribute greatly to their high biological oxygen demand (BODS) and chemical oxygen demand (COD). Milk wastes are white in color and usually slightly alkaline in nature and acidify relatively quickly due to the fermentation of milk sugar to lactic acid. The content of suspended substances in dairy waste is considerable mainly due to the fine curd found in cheese waste. The polluting effect of dairy waste is attributed to the immediate and high consumption of oxygen. Decomposition of casein leading to the formation of heavy black sludge and a strong butyric acid odor characterizes dairy waste pollution. Dairy waste properties include temperature, color, PH (6.5-12.0), DO, BOD, COD, dissolved solids, suspended solids, chlorides, sulfates, oil, and grease. It depends to a large extent on the amount of milk processed and the type of product produced. In addition to detergents and disinfectants used for washing, dairy waste water contains a large amount of milk components such as casein, inorganic salts. It has a high sodium content from using lye for cleaning.

## Effects of Waste: Effects on The Environment:

The dairy industry is one of the most polluting industries, not only in terms of the volume of wastewater produced, but also in terms of its properties. It produces about 0.2-10 liters of wastewater per liter of milk processed with an average generation of about 2.5 liters of wastewater per liter of milk processed. Dairy wastewater is generated intermittently and the flow rates of these wastewaters vary significantly.

The concentration and composition of wastewater generated in the dairy industry depend on the type of processed product, the production program, operating methods, the design of the processing plant, the level of water management used and, consequently, the amount of water saved. This dairy industry produces various types of waste.

Production line wastewater (equipment and pipe cleaning), cooling water, domestic wastewater, sour whey and sweet. Thanks to this, with the application of the next technological cycle in the processing line, the quality and quantity of the product content in the dairy wastewater changes at a given time. With its biochemical composition rich in organic substances (lactose, proteins, phosphorus, nitrates, nitrogen), sweet whey forms the most polluting wastewater and is 60 to 80 times more polluting than domestic wastewater. In addition to detergents and disinfectants used for washing, dairy waste water contains a large amount of milk components such as casein, inorganic salts. All these components contribute greatly to their high biological oxygen demand (BODS) and chemical oxygen demand (COD). Which is much higher than the limits set by the Indian Standards Institute (ISI), now the Bureau of Indian Standard (BIS), for the discharge of industrial effluents; Since these wastes are generally discharged into a nearby stream or soil without any prior treatment, they are said to cause serious pollution problems. Dairy wastes rapidly decompose and deplete the

- Wastewater from processing is highly biodegradable. In waterways, bacteria consume the organic components of the waste. The biodegradation process in waterways consumes oxygen according to the following equation:



#### Sewage molds:

Low molecular weight organic compounds promote the growth of certain filamentous slimes in waterways. These bacterial colonies are collectively known as scum fungi. The most common bacterial species in this category is *Sphaerotilus natans*. One of the main components of dairy wastewater is lactose, a low molecular weight sugar known to promote mold growth in wastewater. Fungal growth in wastewater is related to lactose concentrations in rivers using the equation:  $\text{Growth/g/m}^2 = 0.333 + 2.479 \ln(\text{lactose/g/m}^3)$  and this equation can be used to predict the extent of fungal growth in receiving wastewater.

#### Color and turbidity:

Wastewater that is highly colored is likely to discolor the receiving water. Dairy waste is likely to contain a slightly soluble dye, although true coloration may occur after various forms of treatment. The colloidal and particulate components in the waste reflect light back to the observer. This is known as apparent color. The concept of turbidity is closely related to this phenomenon. Dairy waste contains a significant amount of material that will result in cloudy discharges.

#### Inorganic components (mainly nitrogen and phosphorus):

One of the main goals of this industry is to recover protein (a component of organic nitrogen) from waste and convert it into salable products. Nitrogen is therefore a very important component of wastewater from dairy plants. Some of the protein is lost to waste streams. Bacteria convert the nitrogen in proteins into inorganic forms including ammonia and ammonium, nitrite and nitrate ions. Each of these inorganic forms of nitrogen has different effects on the environment. Nitrate ions are toxic to both humans and livestock in high concentrations.

Nitrates can be converted to the nitrite form, absorbed into the bloodstream, and convert hemoglobin to methemoglobin. Nitrogen status has various environmental effects. Nitrate ions are toxic to both humans and livestock in high concentrations. In young infants, nitrate can be converted to the nitrite form, absorbed into the bloodstream, and converted into hemoglobin. Methemoglobin cannot carry oxygen. Methemoglobinemia affects infants younger than six months of age because they lack the enzyme necessary to convert methemoglobin back to hemoglobin. For the protection of people, the usual limit for drinking water supplies is 10 g m<sup>-3</sup> of nitrate nitrogen. Livestock can also suffer from methemoglobinemia. Because ruminants have a more neutral stomach pH and bacteria in the rumen reduce nitrates to nitrites, death from methemoglobinemia can occur. This usually results from consumption of nitrate-rich feed, although a limit of 30 g/m<sup>3</sup> nitrate nitrogen has been proposed for stock drinking water. Inorganic forms of nitrogen include nitrate,



dissolved oxygen levels of the receiving streams, immediately leading to anaerobic conditions and the release of strong odors due to nuisance conditions. The receiving water becomes a breeding ground for flies and mosquitoes carrying malaria and other dangerous diseases like dengue fever, yellow fever, guinea fowl. Higher concentrations of dairy waste are also reported to be toxic to certain species of fish and algae.

The precipitation of casein from the waste, which further decomposes into a highly odorous black sludge, has been found to be toxic even to fish at certain dilutions. Dairy waste contains soluble organics, suspended solids and trace amounts of organics. They reduce formation, promote the release of gases, cause taste and smell, add color or turbidity, promote eutrophication. The main environmental problems related to milk production affect water pollution, air pollution and biodiversity. They often cause the growth of algae and bacteria, which use up the oxygen in the water and eventually choke the rivers, leading to the gradual disappearance of fish. This results in the need to process dairy waste through various processes.

## Effects of Effluents on Water:

### Organic components:

The organic components of wastewater from dairy operations can be classified as proteins, lactose and fat. These will affect the environment in different ways depending on their biodegradability and their solubility.

### River oxygen and BOD5 levels:

The concentration of oxygen in the river depends both on the rate at which oxygen is consumed by microorganisms and on the rate of reaeration from the atmosphere. It is customary to conduct a series of river surveys to obtain the best fit of the oxygen depletion/reaeration equations to actual river conditions. Oxygen is very important in rivers mainly because it supports fish and other aquatic organisms. The usual lower limit for oxygen concentrations in rivers is usually about 6 g/m<sup>3</sup>. This level is based on the ability of sensitive fish species (usually trout and salmon) to survive. Fully aerated rivers at temperatures of 15 to 25°C contain an oxygen concentration of at least 8 g/m<sup>3</sup>. It is therefore essential that river discharges maintain an oxygen concentration of at least 6 g/m<sup>3</sup>. For this to be the case, the inflow into the river must not increase the BOD<sub>5</sub> of the river by more than about 3 g/m<sup>3</sup> (depending on the reaeration characteristics of the river). Measures of the amount of oxygen consumed by bacteria are biochemical oxygen demand (BOD<sub>5</sub>) and chemical oxygen demand (COD). BOD<sub>5</sub> is measured as the amount of oxygen that is consumed by bacteria during the decomposition of waste over a period of 5 days at 20°C. The COD is measured by decomposing the waste with boiling sulfuric acid and potassium dichromate in the presence of a catalyst and the result is expressed as oxygen equivalents. In both cases, the organic material is converted into carbon dioxide and water, but in the BOD<sub>5</sub> test, some of the organic matter is converted into new bacterial cells. Organic components in dairy products.

## 2. Dust/odor:

Particulate materials can be emitted from boiler stacks, powder dryers, etc. Particulate material losses can also occur from other manufacturing processes. If particulate matter emissions are high, then surrounding buildings are covered in dust and powder, which is not only undesirable, but can also be corrosive. Smoke and fumes from factories can also be considered a form of visual pollution. In places of industrial processing, it is necessary to take into account the emission of undesirable odors. Many waste treatment facilities can produce undesirable odors.

## Need to treat the Wastewater:

Wastewater from dairies and the cheese industry mainly contains organic and biodegradable materials that can disrupt aquatic and terrestrial ecosystems. Due to the high pollution of dairy effluents, the milk processing industry discharging untreated/partially treated effluents causes serious environmental problems. Therefore, it is important to make whey treatment as a starting point to optimize a simple and economical way to treat all dairy wastewater, moreover, the Indian government has introduced very strict rules and regulations for the discharge of wastewater to protect the environment. Therefore, appropriate treatment methods are required to meet effluent discharge standards. Wastewater treatment, which does not bring any financial benefits to the owners of the dairy industry, discharges it directly into nearby waterways or onto land (ie nature) by providing only part of the primary treatment; due to lack of awareness in this regard and lack of funds. In my research work, I wish to minimize the cost of a treatment plant using coir as a medium in a fixed film fixed bed reactor that develops an anaerobic digestion process that releases methane gas. I will use the standard methods given in APHA to characterize the wastewater at different stages.

## 2.1.1. Treatments

### Treatment Plant Process Description:

On the basis of the characteristics of effluent, location of the milk Processing plant, climatic factors for treatment and performance of similar treatment system, adoption in dairy industry the following treatment scheme based upon Combination of anaerobic followed by aerobic treatment system is described.

### Primary treatment:

The line wastewater generated in the dairy will be led from the last manhole to the entrance to the wastewater treatment plant. The waste water will be piped into the existing waste water collection pit. From this unit, the waste water will be pumped to the degreasing unit to remove the free-floating oil grease and fatty material





nitrite and ammonium ions) and inorganic phosphates act as plant nutrients in waterways. To protect receiving waters from unwanted growth, it has been suggested that total inorganic nitrogen concentrations in receivers be limited to less than about 30-100 mg m<sup>-3</sup> or that dissolved reactive phosphorus (inorganic phosphorus) concentrations be less than about 15-30 mg.

## Effects of Effluents on Land:

Land application of wastewater is a common method of waste management in the dairy industry.

### 1. Nutrients (nitrogen and phosphorus):

The main mechanisms of nutrient removal in tillage systems are: - uptake by plants and incorporation into animal products adsorption and immobilization in the soil losses to the atmosphere - losses to groundwater (leaching) Nitrogen uptake by plants reaches up to 500 kg ha<sup>-1</sup> year<sup>-1</sup>. For phosphorus, the amount is about 30 phosphorus. If the animal subsequently consumes the pasture, up to 90% of the nitrogen and phosphorus is recycled to the pasture. Nitrogen is lost to the atmosphere through volatilization of ammonia from urine and faeces and through the process of denitrification. Denitrification is the process by which microorganisms reduce nitrates to either nitrous oxide or nitrogen gas. This occurs under anoxic conditions (i.e., lack of oxygen) and when a suitable supply of organic carbon is available.

Denitrification rates can be quite high at wastewater irrigation sites. At some irrigation sites, losses of nitrogen (mainly in the form of nitrates) to groundwater may occur, depending on the amount of nitrogen removed by other means. A factor usually limiting the disposal of nitrogen-containing wastes into soils is the contamination of groundwater with nitrates, which are subsequently used as a water supply for people or supplies. In these circumstances it is usual to use normal drinking water guidelines. Phosphorus does not usually cause a leaching problem into groundwater due to the high retention and immobilization of phosphates in soils.

### 2. Sodium and other minerals:

Sodium, potassium, calcium and magnesium are immobilized by soils and occupy cation exchange sites on colloids and clays.

## Effects on the atmosphere:

### 1. Gaseous emissions:

Manufacturing operations can lead to a number of emissions into the atmosphere. Boiler plants release carbon dioxide, sulfur oxides and nitrogen oxides into the atmosphere. Methane can be emitted from anaerobic waste treatment systems and nitrous oxide (N<sub>2</sub>O) is emitted from soil at wastewater irrigation sites.

**EFFLUENT CHARACTERISTICS:****• Raw effluent characteristics:**

Flow	500-1800 m <sup>3</sup> /day
pH	7-11
BOD	700-2500 mg/lit
COD	1000-1500 mg/lit
TDS	800-2100 mg/lit
TSS	50-450 mg/lit
Oil and Grease	100-900 mg/lit

**• Treated Effluent Characteristics:**

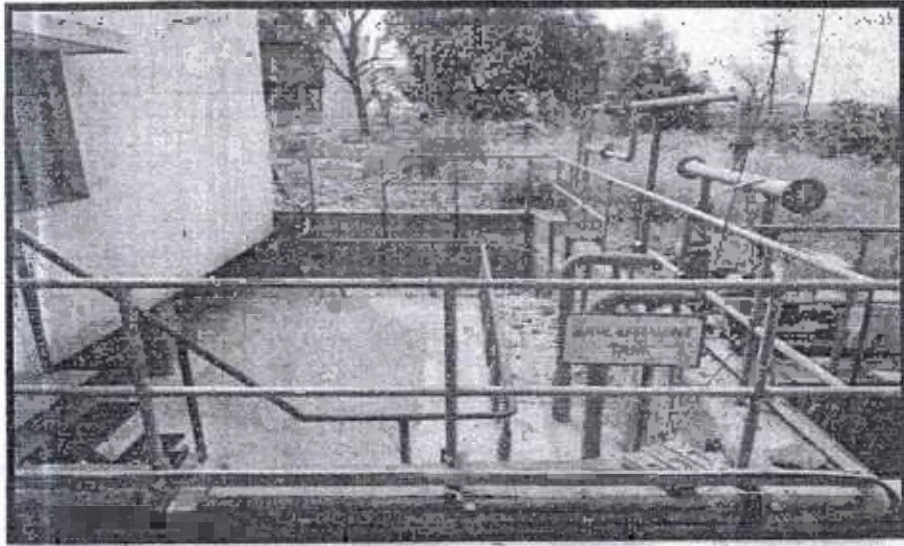
Flow	500-1800 m <sup>3</sup> /day
pH	5-7.9
BOD	0-100 mg/lit
COD	0-50 mg/lit
TDS	0-800 mg/lit
TSS	0-120 mg/lit
Oil and Grease	0-110 mg/lit





The figure is built in RCC. A bar screen made of SS 304 is installed in the chamber to clean the screens as needed.

#### COLLECTION SUMP:



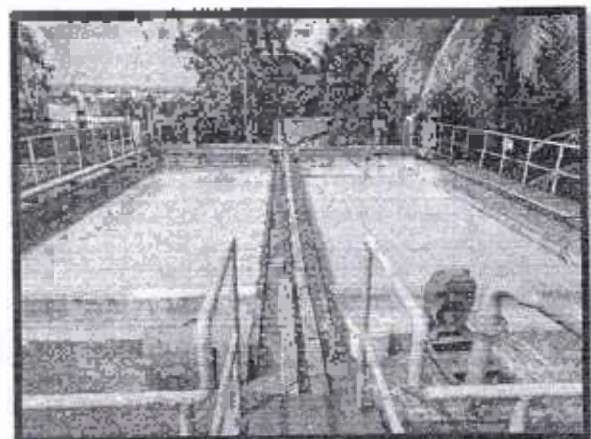
#### Objective:

The tank is provided to receive the effluent from bar screen chamber.

#### Unit description:

The effluent from bar screen chamber is collected in this tank. The tank is provided with raw effluent transfer pump to pump the effluent from tank to fat removal unit.

#### B) FAT REMOVAL UNIT:



#### Objective:

To remove floating fat from raw effluent.



#### • Unit description:

The unit is constructed in RCC. It is provided with baffle walls, fat collection launder, drain connection and all-around walk way platform. The air is purged in the unit by providing separate blowers. A travelling bridge oil skimmer is provided on the unit for removing the fat collected on the top of effluent surface. The fat collected in the launder which is floating will be sent to a collection chamber nearby.

#### ➤ The air blower specifications are as below

Machine Model	R-160 (air)
Capacity	100 m <sup>3</sup> /hr
Quantity	NO.5

#### Procedure for normal operation

1. Switch on the raw effluent pump provided near raw effluent collection sump.
2. Ensure the effluent flows at the inlet point in the oil skimmer baffle wall.
3. When the unit is filled with effluent up to the top of launder the fats starts collecting.
4. Switch on the travelling bridge oil skimmer. Observe and adjust the speed of the movement of arm. Ensure that all the fat is removed and sent into the collection launder.

#### Procedure for shut down

1. Switch of the raw effluent pump.
2. Operate the fat seal skimmer for Few more minutes so that all the fat collected on the top are removed.
3. Drain out the effluent from the unit so that cleaning and maintenance can be taken up.
4. Clean the arm of the oil skimmer properly. Clean the rail provided on the top of tank, trolley and the wheels.
5. Grease and oil as required for the oil skimmer shall be applied for smooth operation.



## Factors Affecting Anaerobic Digestion:

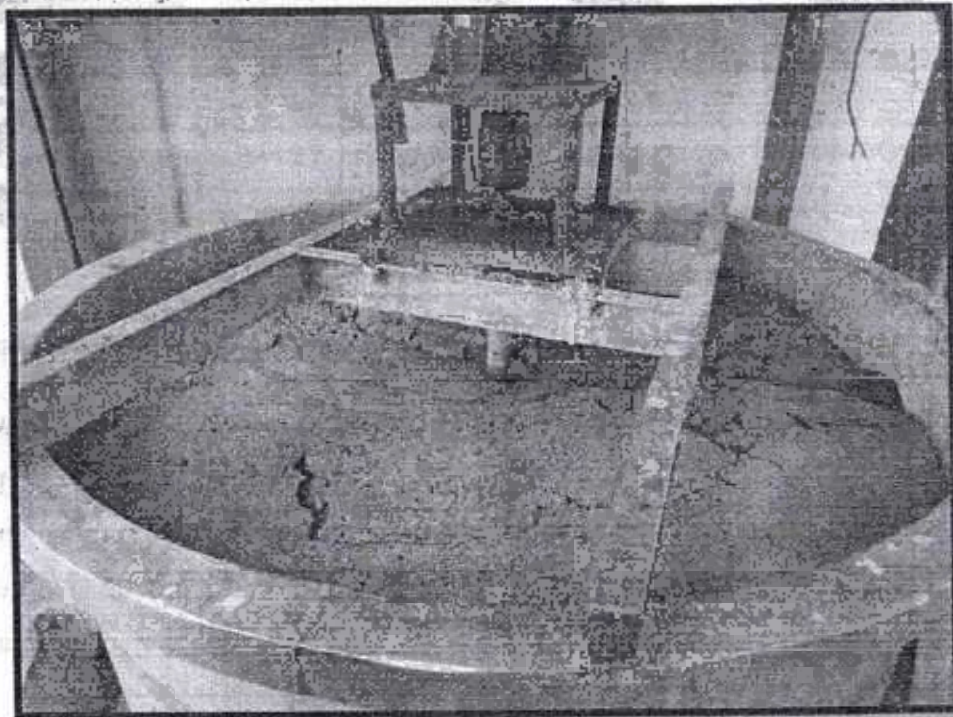
### A. Environmental factors:

1. PH & Alkalinity
2. Volatile acid concentration
3. Temperature
4. Nutrient Availability
5. Toxic materials

### B. Basic Factors:

1. Bacteria
2. Food
3. Contact
- Time

### E) FLOCCULATOR TANK:

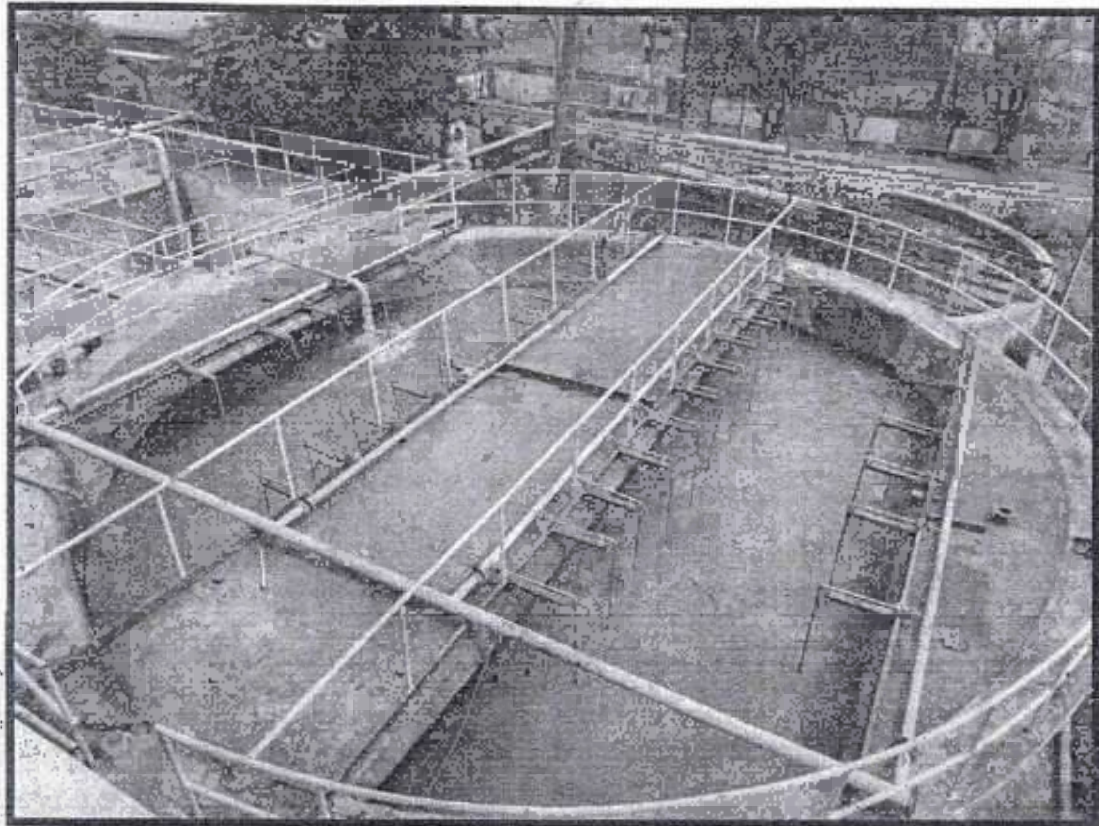


#### • Objective:

To promote the agglomeration of fine particles, present in a solution, creating a floc, which then floats to the surface or settles to the bottom.



G)

**AERATION TANK:****• Objectives:**

This unit is provided to remove majority of biodegradable organics balanced after anaerobic treatment, contributed by soluble BOD & COD.

**• Unit description:**

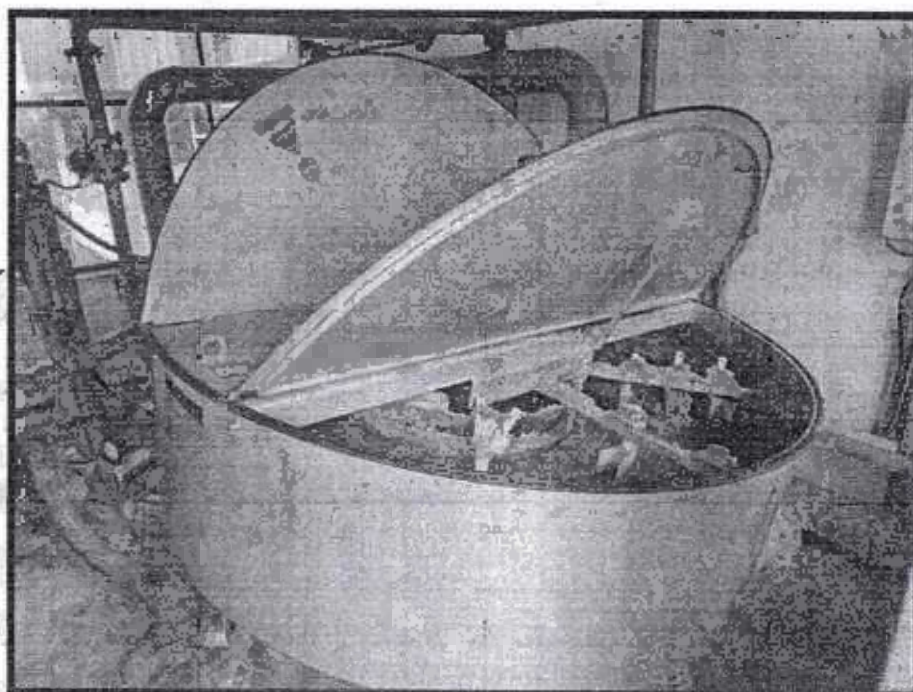
The aeration system is extended aeration. The aeration tank is provided fine bubble type of aeration system. The aeration tank is in RCC construction. The unit is provided with an RCC inlet and outlet launders. The tank is provided with staircase and hand rail.





**• Unit description:**

The process generally takes place in a tank equipped with a mixer that provides mixing. This shaking should be thorough enough to promote particle-to-particle contact, but gentle enough to prevent disintegration of existing flocculated particles. Particles grow by colliding with other particles and sticking together. Detention time is essential for floc formation. The longer the residence time, the larger the floc. Temperature and pH also affect the flocculation process.

**F) DISC THICKNER:****• Objective:**

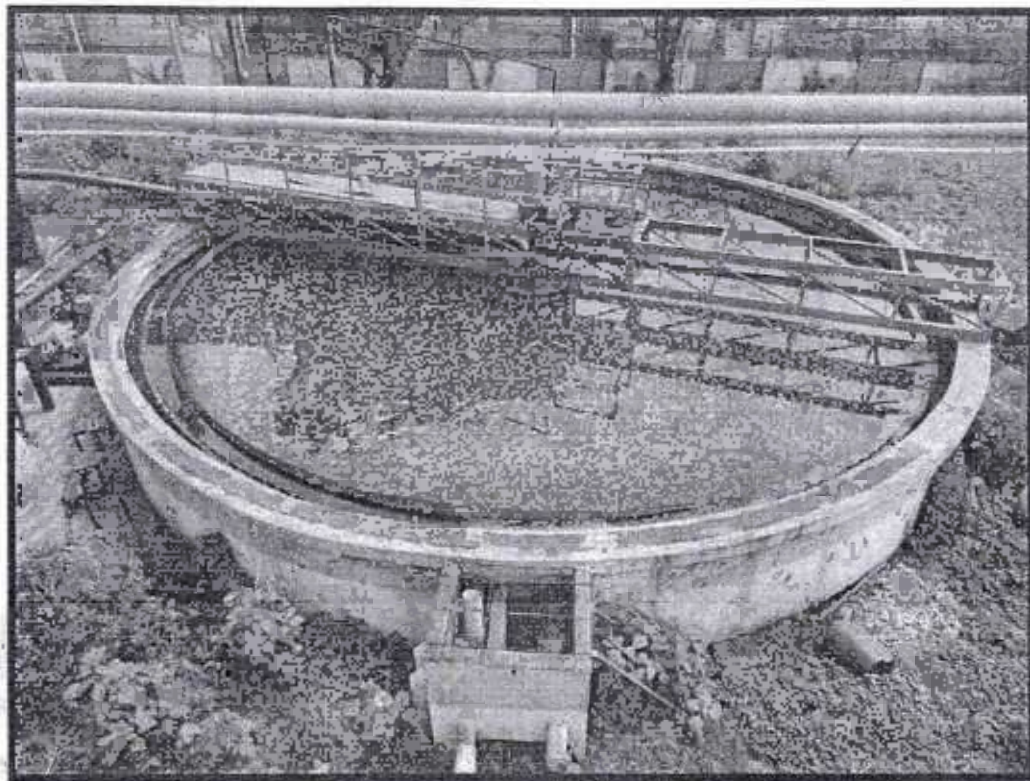
To increase the solids concentration and decrease the free water. This step minimizes the load on the downstream processes, such as sludge dewatering and digestion.

**Unit description:**

There are various processes used in sludge thickening. Each depends on the downstream process, the size of the wastewater plant, and the physical limitations associated with it.

Thickening tanks have slow-moving vertical paddles. Sludge flows into the thickening tank, and eventually, it removes excess water from the solids collecting at the bottom.

H)

**CLARIFIER:****• Objective:**

The secondary clarifier unit is provided for the purpose of separating the bio sludge solids from the effluent.

The recirculation pumps are provided to recirculate bio-sludge from the bottom of the unit to the aeration tank such that, the desired MLSS in the aeration tank is maintained.

Excess sludge is sent to the sludge sump. The clarified effluent shall be discharged into the collection sump via V notch.

**• Unit description:**

The unit is circular in shape and made of RCC. Wastewater enters from above through the inlet shaft. The drain is allowed to flow slowly and continuously through the tank radially from the center to the periphery. Clean waste is discharged through the RCC peripheral outlet chute. The slope of the bottom is 1:12 for efficient sludge removal and scraping. Sludge is scrapped into a central sludge collection channel. From the bottom of the tank by rotating the scraping arm. The scraper moves using a central driven mechanism. The superstructure consists of a steel structural bridge up to half the length of the tank diameter. The gathering arms are carried from the bridge and are made of M.S.E.P. The arms of the rakes are equipped with neoprene troughs for efficient raking of solids. Bio sludge from the underflow of the unit is directly pumped via horizontal/centrifugal pumps into the aeration tank.



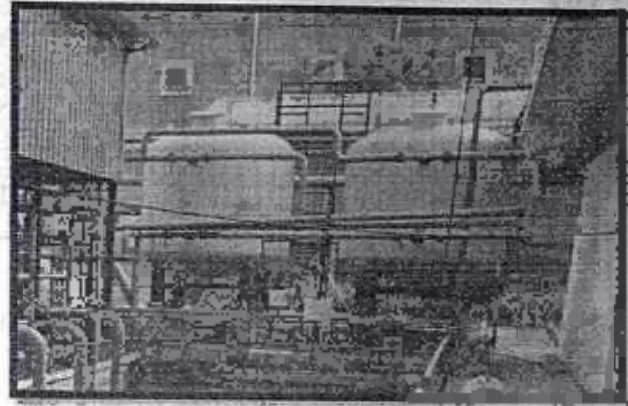
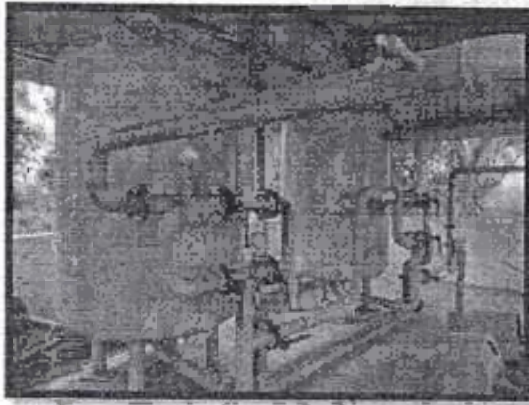


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## J) FILTERS (PSF & ACF):



### 1. Pressure Sand Filter (PSF):

• **Objective:**

To remove the excess suspended solid from treated effluent.

• **Unit description:**

PSF is provided with inlet, outlet, backwash and air vent connections. There is a man hole on the top of PSF is filled with graded filter media of sand, gravel and grit. Butter fly valves are provided for operation of the PSF. The PSF is painted with 2 coats of epoxy from inside.

### 2. Activated Carbon Filter (ACF):

• **Objective:**

To remove the odour from treated effluent.

• **Unit Description:**

The filter is fabricated in MS and coated epoxy. The ACF tank receives the effluent from the top. The ACF is filled with activated carbon with 900 iodine valves. This will remove the odor from the effluent. A backwash provision is provided to clean the carbon so that removal efficiency is maintained. After ACF the treated effluent is collected in final treated water tank.

**Result & Conclusion:**

This study deals with ETP performance evaluation for the dairy industry. It can be stated that the overall performance of the wastewater treatment plant was satisfactory. The individual units also work well and their removal efficiency is satisfactory. The treated wastewater meets the MPCB standard for discharge into inland surface water, so it can be said that the facility is operating efficiently. This treatment plant has a high potential for reducing PH, temperature, TDS and COD. Thus, this treatment technology can be considered as a potential device for the treatment of dairy wastewater.





# A Review on Role of MSME in Employment Generation in India

Ms. Shamal Arvind Pawar

Date of Submission: 01-02-2023

Date of Acceptance: 10-02-2023

## ABSTRACT:

India is a developing country and MSME (Micro, Small and Medium Enterprises) are considered as catalyst in generating employment opportunities for educated unemployed as well as for rural unskilled population. They acts as pillars for sustainable development by creating employment opportunities, reduces poverty ratio and therefore tries to achieves balance regional growth. They are heterogeneous in terms of the size, offers variety of products and services and make use of different levels of technologies. These industries are characterized by low capital investment, high employment generation, decentralization of industrial activity, utilizes locally available resources and thus widens the scope of entrepreneurial base. The study aims to analyze the performance of MSMEs and its role in employment generation in India.

Keywords : MSME's, Employment generation, MSME performance

## I. INTRODUCTION:

Worldwide, MSME's are considered to be the growth engines of developing nations and this sector has emerged as dynamic sector helping Indian economy to minimize its macro economic problems like unemployment, poverty etc. It has helped in developing entrepreneurial base and has emerged as second largest employment provider. MSME complements large scale industries as ancillary units, thereby contributes enormously to the socio-economic development of the country.

Outside the agriculture sector, MSMEs, are believed to use labour-intensive methods of production of goods and services and thereby generates more employment opportunities for the unemployed youths of India. According to various economic surveys, MSMEs provide a good backward and forward linkage that invites more investments in this sector. Over the years, Government of India has also taken various policy initiatives to encourage/support MSMEs by providing subsidized credit, technical assistance, excise tax exemptions, and preference in government procurement.

Nirmala Sitharaman (Finance Minister of India) in budget 2019-20, has revealed many new initiatives and provision for the MSMEs promotion in the country. She has extended 25% corporate tax to companies with an annual turnover Rs 400 crore, under the Interest Subvention Scheme Rs 350 crore has been allotted for the financial year 2019-20. In August 2015 Prime Minister of India had announced the Start-up/stand-up India scheme, intending to promote bank financing for new business and many new initiatives to boost entrepreneurship and job creation. The goal of this initiative is to make India not job seekers but job makers.

In accordance with the provision of MSME's development act 2006, and the revised classification of MSME 2019-20.

**Classification of MSME:** An Enterprise shall be classified as Micro, Small and Medium enterprise on the basis of following criteria.



Existing MSME Classification			
Criteria : Investment in Plant & Machinery or Equipment			
Classification	Micro	Small	Medium
Manufacturing Enterprises	Investment <Rs. 25 lac	Investment <Rs. 5 cr.	Investment <Rs. 10 cr.
Services Enterprises	Investment <Rs. 10 lac	Investment <Rs. 2 cr.	Investment <Rs. 5 cr.

Revised MSME Classification			
Composite Criteria : Investment and Annual Turnover			
Classification	Micro	Small	Medium
Manufacturing & Services	Investment <Rs. 1 cr. and Turnover < Rs. 5 cr.	Investment <Rs. 10 cr. and Turnover < Rs. 50 cr.	Investment <Rs. 20 cr. and Turnover < Rs. 100 cr.

Source : [https://msme.gov.in/sites/default/files/MSME\\_gazette\\_of\\_india\\_6.pdf](https://msme.gov.in/sites/default/files/MSME_gazette_of_india_6.pdf)

## II. LITERATURE REVIEW:

The comprehensive literature demonstrates that, MSMEs are necessary for sustained economic growth and development of any economy including employment generation in India. To justify the need of present study, following literature has been reviewed:

(Dr.K.Venivel, 2013) : The labour intensity of the MSME sector is much higher than that of the enormous enterprises. In most of the economies, three fourth of the total employment is generated by MSME and also contribute to the major share of industrial production and exports.

(Ahmed, 2019) : MSMEs are the important pillar of sustainable development and creates economic growth, employment prospects, poverty elevation and reduces inequality, as they act as engines of economic growth, promotes balance growth and achieve sustainable development . They has achieved the highest employment growth rate and therefore fosters for more industrial development and high exports.

(Srivastava, 2020) : The Micro, Small and Medium enterprises (MSME) sector is considered to be the most dynamic sector of Indian economy and acts as driving force for development. MSME helps in generation of Entrepreneurship and contributes to the second largest employment opportunities . MSME generates employment for about one hundred eleven million people and contributes in a significant way to the development of the Indian economy

(Anas Ali, 2014): The MSME'S sector also attracts foreign investment and technology .The employment is more possible through the development of MSME'S. When the MSME are encouraged in the rural area , it reduces the migration of rural youth to the urban areas which helps in achieving balance growth of the economies and this helps in employment prospects. In turn customer expectations can also be satisfied.

(Kumar, 2017): MSMEs provide employment opportunities and also helps in the process of industrialization in rural areas, simultaneously reducing the unequal income distribution among the residents. The MSMEs has significantly contributed to developing the Indian economy through Low investment , use of domestic raw material, flexible operational process and technology oriented enterprises

### Objectives Of The Study :

1. To study employment opportunities in MSMEs sector in Indian economy.
2. To study the current status & growth of MSMEs in India.
3. To study the impact of establishment of MSMEs in India and employment opportunities

### Research Methodology:

The study is based on secondary data, which has been collected from various secondary sources such as annual reports of MSME, publication of Ministry of Micro, Small and Medium Enterprises, journals, Government of



India. Collected data has been presented in a tabular form and interpretation has been made on the basic objective cited above

**Overview of MSME Activities and Employment status in the MSME Sector**

As per the National Sample Survey (NSS) 73rd round, conducted by National Sample Survey Office, Ministry of Statistics & Programme

Implementation, below is the tabular form of data collected and interpretation on the basis of MSME activity wise, category wise, employment sector wise and, State-wise Analysis of Estimated Number of Enterprises and Employment provided by MSME.

Given below table indicates distribution of MSMEs activity wise

**Table No.1 : The distribution of MSMEs activity wise**  
Source: MSME Annual Report 2017-18

Activity Category	Estimated Number of Enterprises (in lakh)			Share %
	Rural	Urban	Total	
Manufacturing	114.14	82.50	196.65	31
Trade	108.71	121.64	230.35	36
Other Services	102.00	104.85	206.85	33
Electricity	0.03	0.01	0.03	0
All	324.88	309.00	633.88	100

Above table shows estimate number of MSMEs in Manufacturing, Electricity, Trade and Other Services. Manufacturing activities in rural area was highest with 114.14 and lowest in Urban areas with 82.50 with the total of 196.65 and the share was of 31 percentage. Similarly, in the Trade, rural area contribution was 108.71 and urban was

121.64 with the highest share of 36 percentage as compared to other categories. In Other Services, Rural area shows 102 and urban area shows 104.85 with a share of 33 percentages. Electricity shows a declined level.

Given below table indicates Distribution of Enterprises Category Wise

**Table No. 2: Distribution of Enterprises Category Wise (Numbers in lakh)**

Sector	Micro	Small	Medium	Total	Share %
Rural	324.09	0.78	0.01	324.88	51
Urban	306.43	2.53	0.04	309.00	49
All	630.52	3.31	0.05	633.88	100

Source: Annual Report 2017-18

Table 2 shows the distribution of Enterprises Category Wise (Numbers in lakh). It is revealed that Rural area have the highest 51 percentage share of enterprise in Micro 324.09, Small 0.78 and Medium 0.01 enterprise with the total of 324.88 out of 633.88 enterprises. Urban areas has the total share of 49 percentage of enterprises, which comprises of Micro 306.43, Small 2.53 and little higher of Medium 0.04 with the total of 309 out of 633.88 enterprises, as compared with other areas.

**Employment Generation MSME Sector (Activity Wise)**

As per the National Sample Survey (NSS) 73rd round conducted during the period 2015-16, MSME sector has been creating 11.10 crore jobs in the rural and the urban areas across the country.

Given below table indicates Distribution of Employment in MSME Sector (Broad Activity Category wise)



**Table No. 3: The distribution of Employment in MSME Sector (Broad Activity Category wise)**

Activity Category	Employment (in lakh)			Share (%)
	Rural	Urban	Total	
Manufacturing	186.56	173.86	360.41	32
Trade	160.64	226.54	387.18	35
Other Services	150.53	211.69	362.22	33
Electricity	0.06	0.02	0.07	0
All	497.78	612.10	1109.89	100

Source: Annual Report 2017-18

Above table shows estimate number of employments in MSMEs (manufacturing, Electricity, Trade, and Other Services). Employment generation in the Trade was the highest with total of 387.18 which comprised of Rural 160.64 and highest level of Urban 226.54 with a share of 35 percentages. Other Services generated total employment of 362.22, which comprised of rural 150.53 and urban 211.69 with

the share of 33 percentage which is the second highest level as compared to Manufacturing which generated about 360.41 employment ( rural 186.56 and urban 173.86 ) with share of 32 percentage. Electricity shows the lowest level of employment generation as compared with others.

Given below table indicates Distribution of Employment in MSME Sector (Broad Activity Category wise)

**Table No. 4 : Distribution of Employment in Rural and Urban Areas (Number in Lakhs)**

Sector	Micro	Small	Medium	Total	Share (%)
Rural	489.3	7.88	0.6	497.78	45
Urban	586.88	24.06	1.16	612.1	55
All	1076.19	31.95	1.75	1109.89	100

Source : Annual Report 2017-18

The above table Reveals the distribution of employment in Micro, Small and Medium sector. Micro Enterprises provided highest employment of 1076.19 lakh persons (Rural area 489.30 and Urban areas with 586.88) that in turn accounts for around 96.96% of total employment in this sector. Small Enterprises provides employment of 31.95 lakh persons ( Rural sector 7.88 and urban sector with

24.06) and has a shares of 2.88% . Medium enterprises provides employment of 1.75 lakh persons (Rural Sector 0.60 and Urban with 1.16) and has a shares of 0.16% persons of total employment in MSME sector, respectively.

Given below table indicates Sector wise distribution of workers (Gender wise)

**Table No. 5 : Sector wise distribution of workers in Male and Female Category (Number in Lakhs)**

Sector	Female	Male	Total	Share (%)
Rural	137.50	360.15	497.78	45
Urban	127.42	484.54	612.10	55
Total	264.92	844.68	1109.89	100
Share (%)	24	76	100	

Source : Annual Report 2017-18

The above table shows the sector wise distribution of workers in male and female category ,which reveals that out of 1109.89 lakh employees in MSME sector, male employees are the highest

with 844.68 (76%) and remaining 264.92 lakh (24%) are females.

Given below table indicates State-wise Analysis of Estimated Number of Enterprises and Employment provided by MSME



Table No. 6 : State-wise Analysis of Estimated Number of Enterprises and Employment provided by MSME

Sr. No.	State / Union Territory (U.T.)	Number of MSMEs (in lakh)	Employment (in lakh)
1	Andhra Pradesh	33.87	55.99
2	Arunachal Pradesh	0.23	0.41
3	Assam	12.14	18.15
4	Bihar	34.46	53.07
5	Chhattisgarh	8.48	16.86
6	Delhi	9.36	23
7	Goa	0.7	1.6
8	Gujarat	33.16	61.16
9	Haryana	9.7	19.06
10	Himachal Pradesh	3.92	6.43
11	Jammu and Kashmir	7.09	10.88
12	Jharkhand	15.88	24.91
13	Karnataka	38.34	70.84
14	Kerala	23.79	44.64
15	Madhya Pradesh	26.74	48.8
16	Maharashtra	47.78	90.77
17	Manipur	1.8	2.92
18	Meghalaya	1.12	1.91
19	Mizoram	0.35	0.62
20	Nagaland	0.91	1.77
21	Odisha	19.84	33.26
22	Punjab	14.65	24.8
23	Rajasthan	26.87	46.33
24	Sikkim	0.26	0.45
25	Tamil Nadu	49.48	96.73
26	Telangana	26.05	40.16
27	Tripura	2.11	2.95
28	Uttar Pradesh	89.99	165.26
29	Uttarakhand	4.17	6.6
30	West Bengal	88.67	135.52
31	Andaman and Nicobar Islands	0.19	0.39
32	Chandigarh	0.56	1.29
33	Dadra and Nagar Haveli	0.16	0.36
34	Daman and Diu	0.08	0.14
35	Lakshadweep	0.02	0.03
36	Pondicherry	0.96	1.84
Total		433.88	1109.89

Source: MSME Annual Report 2017-18 & NSS 73rd Round



In the above Table State/U.T. wise analysis of MSMEs is shown which reveals that out of 36 States/U.T, Uttar Pradesh has the highest number of Enterprises 89.99 lakh as well as Employment of 165.26 lakh people. Whereas West Bengal is the second highest number with 88.67 lakh Units and provides 135.52 lakh employments. While other States/U.T shows less numbers of MSMEs as well employment status.

### III. CONCLUSION:

1. The available literature and data shows that, MSME sector has grown continuously with the passage of time and has helped in promoting employment opportunities for the youth of rural and urban India.
2. MSME's has ultimately encouraged entrepreneurship and has tried to bring in sustainable development of the economy as a whole.
3. Most of the MSME's utilize domestic available natural resources, which assist Indian economy to achieve its regional balanced growth.
4. As per available data, MSME's are creating more employments per unit and requires more attention, which will help India to become more powerful economic nation.
5. The future of MSME sector in India is bright as it generating more employment opportunities and also helps Government to minimize other macro economic problems like poverty, unequal growth, inflation, large budget deficits and balance of payment.

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# E-RUPI: New Digital Payment Platform

Radhika Ramesh Desai

Date of Submission: 08-12-2022

Date of Acceptance: 16-12-2022

## ABSTRACT

e-RUPI is the central bank's digital currency (CBDC), a digital solution launched in India by the Prime Minister Narendra Modi to allow cashless payment solutions. The digital payment solution has been developed with the support of DFS (Department of Financial Services) and NHA (National Health Authority) and is powered by the National Payments Corporation of India (NPCI). This digital payment solution is said to be "leak-proof" and aims to reach out to millions of unbanked citizens in the long term. e-RUPI is an e-voucher where beneficiaries can complete transactions through a SMS or QR code. It will make users transfer funds through an SMS connected voucher directly to their bank accounts. Currently, some of the leading banks are associated with e-RUPI. It has been seen that the e-RUPI initiative of the government will be advantageous for the beneficiaries as they will be able to collect a direct benefit. It will be trustworthy and safe for both businesses and customers.

**Keywords:** Digital Currency, Voucher, Digital Payment System, e-RUPI.

## 1. INTRODUCTION

India has seen a massive shift in its digital payment ecosystem. The drastic change in different payment channels and streams has demanded for cashless payment options in the country. The government linked various services with initiatives such as IMPS, e-KYC, UPI, and the use of Aadhaar as an authentication mechanism to support the growth of Financial Technology. Financial Technology initiatives like Paytm, Google pay, etc. have overhauled India's digital payment market.

Customer friendly e-Wallets offer affordable digital transaction services via mobile phones to both the urban and the rural population. As we all know the rural population of India lacks of internet connectivity, and it still has a long way to go before transforming completely into a cashless economy. On 2nd August 2021, Prime Minister Narendra Modi launched e-RUPI, a contactless and cashless e-payment service to bridge the digital gap among the unbanked population of India.

The effortless one-time payment mechanism gives users the benefit to redeem the voucher without a card, digital payments app, or internet banking access, at the merchants accepting UPI e-Prepaid Vouchers. The e-RUPI will only be shared with those with specific purposes or activity by organizations via SMS or QR code. This contactless e-RUPI is easy, safe, and secure as it keeps the data of the users completely confidential. The entire transaction process through a voucher is relatively faster and more reliable, as the required amount is already stored in the voucher.

Not only private organizations but ordinary people can also use the e-RUPI platform without necessarily having mobile phones. Users with simple phones can safely get the advantages of the e-RUPI system for government schemes. Even though the NPCI has made the e-RUPI system highly advanced and secure, the same benefits account for the limitations.

## II. REVIEW OF LITERATURE

(Preeth Garg, 2017) examined Delhi's population on the cashless economy within the country. The study used a structured form and used the percentage method to analyze the data. From the collected data researcher found that the new era of a cashless economy has many advantages such as a substantial reduction in robbery, a down surge in black money, and an improvement in economy and development of the nation. On the other hand, there were many challenges also such as cybercrimes, lack of efficiency in online disbursements, lack of transparency, etc.

(Narayanan, 2020) emphasized the concept of digital currency, and how forms of money had changed every time from earlier times. The changes in digitalization have molded the concept of digital currency. The application of digital currency has a global impact, and the future for digital currency is very bright.

(Shah, 2017) deliberate to give an overview of digital currency. The study explained the processing, working of digital currency and factors impacting the application of digital currencies. Lack of efficiency, cyber fraud, lack of transparency and the attitude of people, etc. these



various risks related to digital currency are highlighted.

### OBJECTIVES OF THE STUDY

1. To study the advanced digital payment system in the Indian economy e-RUPI.
2. To study the merits and demerits of the e-RUPI new digital payment platform.

### RESEARCH METHODOLOGY

The data collected for this study has been taken from reliable sources and secondary data collection including past studies and articles. The study is a descriptive analysis of the new digital currency e-RUPI launched in India. The paper highlights the merits and demerits of the e-RUPI recently launched payment mechanism to ensure security and integrity in the phase of digital transformation.

### DIGITAL CURRENCY E- RUPI

e-RUPI is a cashless, contactless, and one-time payment mechanism launched on 2<sup>nd</sup> August 2021. It is a digital platform that will be used for making digital payments and to strengthen the Direct Benefit Transfer (DBT) scheme and digital transactions business to business (B2B) among Micro, Small, and Medium Enterprises (MSMEs). It is like the first step towards Central Bank Digital Currency (CBDC). National Payments Corporation of India (NPCI) in association with the Department of Financial Services (DFS), Ministry of Health and Family Welfare (MoHFW), National Health Authority (NHA), and partner banks, together associated in the development of the 'e-RUPI'. e-RUPI is basically a digital voucher that a beneficiary gets on his mobile phone through an SMS or QR code. It is a pre-paid voucher, which

he/she can go ahead and redeem at any center that accepts it.

The users of this one-time payment mechanism will be able to redeem the voucher without a card, digital payments app or internet banking access at the merchants accepting e-RUPI. e-RUPI would be shared with the beneficiaries for a specific purpose or activity by organizations or the Government via SMS or QR code. This contactless e-RUPI is easy, safe, and secure as it keeps the details of the beneficiaries completely confidential. The entire transaction process through this voucher is relatively faster and at the same time reliable, as the required amount is already stored in the voucher. (NPCT, 2021).

### FEATURES OF E-RUPI

1. e-RUPI is a one-time payment mechanism.
2. Users can redeem the voucher without a card, digital payments App, or internet banking to receive or send money.
3. e-RUPI can be used for specific purposes only for that work via SMS or Quick Response (QR) Code.
4. The e-RUPI makes contactless and hassle-free payments anywhere in India instantly.
5. The digital voucher would be sent through mobile only to the recipient who should receive it.

### VOUCHER ISSUANCE AND REDEMPTION PROCEDURE

The e-RUPI application is available on the Google play store or Apple App Store. It can be easily downloaded from there. The process for issuance and redemption of vouchers is given below for an easy understanding for the reader. (Verma, 2021)

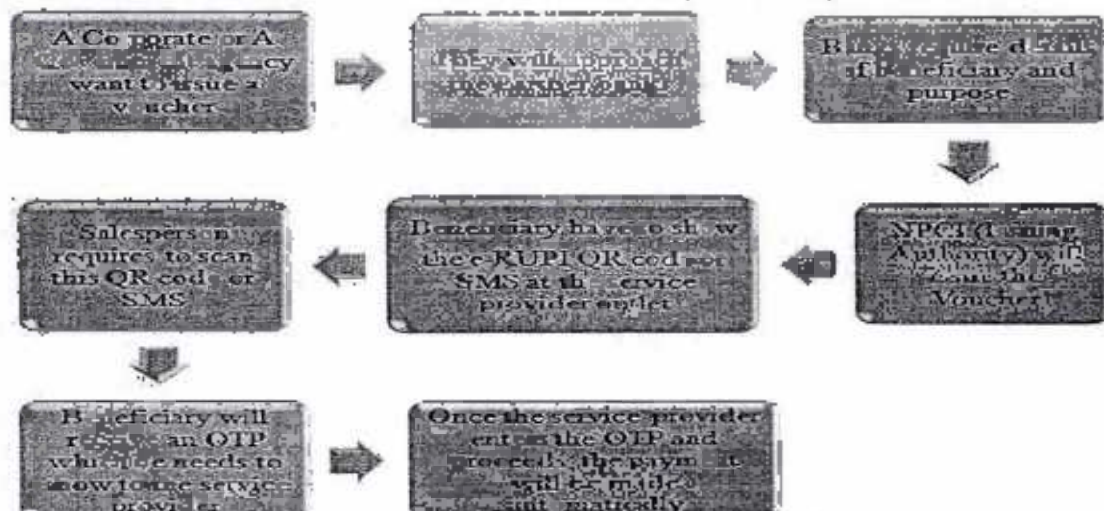


Figure: 1 Voucher Issuance and Redemption Procedure





### Benefits of e-RUPI:

The e-RUPI voucher is directly delivered to the beneficiary's mobile phones, it eliminates the need for a digital payment app, card, or internet banking service. Following are some points that highlight the benefits of e-RUPI to corporates, consumers, etc.

- Corporate companies can think about enabling the well-being of their employees.
- Transactions are end-to-end digitalized and don't require any physical issuance hence leading to cost reduction.
- The issuer can easily track the redemption of the voucher.
- Quick, contactless and safe voucher distribution.
- Contactless payment and collection beneficiary should not carry a printout of the voucher even handling of cash or cards are not required.
- An easy redemption two-step process.
- Quick redemption process the voucher can be redeemed in a few steps and with a less period of time due to the pre-blocked amount.
- Safe and Secure because the voucher is authorized via a verification code beneficiary doesn't need to share personal details while redemption hence privacy is maintained.
- No digital or bank presence is required consumers redeeming the voucher need not have a digital payment app or a bank account.

### MERITS OF E-RUPI

#### 1. Government Schemes and Subsidies

The government of India launches various schemes for Indian citizens. Also gives subsidies for the welfare of the farmers, women, and children. The e-RUPI system is not only helpful for women and children but also for farmers. This platform is a safe and secure way to receive a number of schemes and subsidies.

#### 2. Advantages of e-RUPI in the Private Sector

Employees can get benefits from e-RUPI as they can get their medical and corporate social services. The distribution of services will be safe, contactless, and fast as compared to a normal timeline. The issuer can track the voucher redemption process whenever the employees use it.

#### 3. e-RUPI system is Exclusive

The e-RUPI voucher system is exclusive because it will work for specific purposes only. For instance, if you receive an e-RUPI voucher for medical bills, you can use it to pay medical bills only and not for shopping. QR Code for e-RUPI voucher will be issued by NPCI and it can work only once. This system, therefore, ensures safe use of funds and subsidies.

#### 4. Easy Monitoring

With the e-RUPI system, private and public organizations can track how employees use their funds and services. As easy monitoring is possible no other ordinary people or government employees misuse the government funds because they will get restricted from using such funds.

#### 5. No need to Register

One of the greatest advantages of the e-RUPI system is that you don't need for registration or a KYC process to get the facilities. To redeem the e-voucher, you just need to take it to the concerned service provider. The provider then matches it with their QR codes, and if it gets matched or valid then, you will get the service.

### DEMERITS OF E-RUPI

#### 1. Limited Number of Banks

At present, the system is associated with 11 Banks only, which means that other regional banks would have to wait until the platform succeeds nationwide. So for this many users may face the same issue while using this payment system.

#### 2. Many users still don't have mobile phones

Many government schemes are meant for economically weaker sections of the economy. Most of them don't have knowledge of using mobile phones. This means those who are illiterate or unaware of using mobile phones won't be able to redeem the e-voucher as it requires pairing it with the QR code at the merchant's or service provider's end.

#### 3. Voucher Expiry of e-RUPI

e-RUPI is a voucher-based prepaid service, if a user doesn't redeem it within a stipulated period, the voucher will get expired. The beneficiary would have to face problems of e-RUPI as they don't know how to receive it again. The voucher won't be misused by the service provider but is also believed to be useless for the beneficiaries if they don't redeem the voucher in time.

#### 4. Misuse of e-RUPI

As the users don't need to link their bank account or register anywhere to redeem the voucher, the system works entirely through mobile phones. The government still don't have provisions to check consumer with a registered mobile number exists or not. In this case, anyone in possession of a consumer's mobile can go to the service providers to redeem the voucher.



### 5. Technical Limitations

The e-RUPI system needs to be constantly connected to the system. Technological issues are unpredictable and may arise at any time. There may cause various cyber-attacks as still many people are not aware of it. The government and the issuers of e-RUPI vouchers need to make sure there are no technical causes of the e-RUPI platform before working with the payment system process.

### III. CONCLUSION

1. It is an innovative initiative from the government towards user privacy and providing services to deserving consumers only. But, the pros and cons of the e-RUPI platform clearly pinpoint the areas where rectification is required. Given that the system is in its infancy, e-RUPI is expected to bring more security features in the future.
2. The e-RUPI has significant merits such as security and reliability for the users and the issuing companies, no need to carry cash or cards, easy redemption, no need for issuance of physical vouchers, the safety of personal data, no internet connection required, use of the smartphone is no bar, feature phone can be used, real-time transactions, direct benefit to individuals and no need of bank account.
3. Sometimes it suffers from shortcomings such as the beneficiary of the voucher to some other person and helps him in executing the transaction by sharing the SMS or QR code, in consideration of immediate monetary benefit.
4. United States of America, South Korea, and several other countries have used similar voucher-based initiatives for welfare services. Apart from fast-tracking digital payments, e-RUPI will also accelerate direct benefit disbursements at the last mile and help bring the unbanked and under-banked into the financial inclusion fold.

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**EDUCATING THE FASHION DESIGN STUDENTS ABOUT  
SUSTAINABILITY THROUGH "UP CYCLING BASED PROJECTS"**

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**Abstract:**

*The sustainability in fashion design is seen as a social responsibility, environmental concerns, and economic effects in ways that sustain and care for the earth through good design and is defined by those characteristics and this can be achieved by educating the upcoming fashion designers about sustainability and its importance. The curriculum of fashion design is to educate our girl students about the sustainability through various projects and assignments on up cycling and reusing of used and unused garments / fabrics for creating new patterns in apparel design, accessories or products.*

*This study focuses on sustainability consciousness and awareness of students towards creating new design products using the used apparels/ fabrics and increasing the value of these products through their creativity.*

*Key words: Sustainability, up cycling, creativity, reusing, Fashion, products.*

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**Introduction**

Fashion industry is the major contributor of environment pollution. In past few years it was observed that there is a steady and consistent growth in consumption of fiber and also significant rise in post-production and post-consumer fiber waste. It was noted that total fiber production globally has crossed about 64 million tons per annum in last few years. Most of the produced fiber was used in apparel and textile industry (1) Fashion designers have a major role to play in creating sustainability in fashion. In the recent year there is tremendous impact of



fashion industry on the environment basically because of the fast fashion. Clothing and textile industry alone has consumption estimated to produce 2 million tonnes of clothing waste (a value of £38 billion) per annum in the UK; of this, 63% (1.2 million tonnes) ends up in landfills (DEFRA, 2007). Recent research from the Waste & Resources Action Programme (WRAP, 2017) shows that in spite of implementation of several strategies for sustainability in the fashion and textile sectors, clothing and textile wastes increased from 24 million tonnes in 2012 to 26.2 million tonnes in 2016 in the UK (WRAP, 2017). It is important to identify the root cause and barriers to incorporating sustainability in the fashion industry. In this fast fashion the consumer demand for new products is at peak and this in turn increases the garment waste leading to the landfills. The main reason for this fast fashion is that, consumer always wants something new each time and for this they go for buying apparels and dispose off the earlier ones adding to the wastage of garments. Over the time understanding the concept of sustainability in fashion has widened including social and ethical issues. The sustainability principles in the fashion field are already implemented by the stakeholder to some extent but the basic need is to educate the students of fashion design to know the importance of developing sustainability designing concept in their upcoming career to contribute for the positive impact on environment. Along with increasing awareness of environmental problems and social issues, introducing sustainability practices in various fashion merchandising and design courses has been explored in a number of studies (Fletcher & Williams, 2013; Gam & Banning, 2011; Kennedy & Terpstra, 2013; Leerberg et al., 2010)

As designers are by definition involved in the initial conceptual phase of design development and product development, hence, impact all subsequent phases of fashion production and use, it has been noted that they can play a key role in making fashion more sustainable. They are able to contribute, in both positive and negative ways, to fashion's impact on the environment. The approach to the specificity and range of possible tasks faced by or undertaken by designers



in this respect has likewise evolved and become more complex in the last two decades. Two main approaches to the sustainability of fashion design can be distinguished.(2)

#### Theory:

Apparel design, manufacturing and recycling are not yet sufficiently developed to achieve the aim, and less than only 1% of raw materials used within the industry are thought to be fully recycled (ECAP, 2019). However, the concept of circularity is now much discussed in the fashion industry as the existing approach to achieve sustainability using more commercially achievable methods based on three key principles to guide design strategy and practice (Global Fashion Agenda, 2019). They are to 'design out waste and pollution, keep products and materials in use and regenerate natural systems' (Ellen MacArthur Foundation, 2017:48). These principles can be applied at different stages of the product lifecycle to mitigate environmental impacts and address resource depletion. Materials selection has become a highly significant topic in the fashion.

For the successful adoption of sustainable design practices within mainstream fashion companies, it is important that design and product development knowledge has to be provided at the learning period itself. A budding designer should have the full information about the three R's Reduce- Recycle-Reuse. Our being a design college we teach students about all these three R's through project based assignments. We have it in the curriculum where they have to exhibit their creativity and talent in designing products using the used fabric or garments

#### Objectives:

- To encourage the sustainability of fabric.
- To create awareness among the fashion design students about sustainability in fashion
- To explore and create potential of various methods used in Recycling and up cycling.

#### Methods:

The final year students are given a project on Recycling/ up cycling in which they have to select any used garment or fabric out of which they have to make a new garment or up cycle the garment. The usual garments chosen for this project are Denim, Synthetic sarees, Shirts, fabric waste from tailors etc

1. The garment/ Fabric is first collected and sorted and cleaned according to the colour and prints.



2. The Inspiration, Mood and Colour boards are prepared considering the garment selected
3. After this the various garment designs and product designed are designed.
4. The patterns for these designs are made and stitched to get the final product.
5. These final products are then displayed as per their theme.

**Review of Literature:**

Many researchers have been conducted on the recycling and reusing of Textile waste. These studies and research conducted in this area have been presented according to the objectives of the studies.

Hae Jin Gam et. al. in his study on Teaching Sustainability in Fashion Design Courses Through a Zero-Waste Design that fashion design courses need to teach skills to create and construct garments educating them about sustainability in Fashion. By learning about zero-waste design, students' interest in sustainable living and fashion and consciousness about generating fabric waste was increased. With this project on Zero Waste Design the students gained knowledge on how the fabric consumption can be reduced. In conclusion to this research it was clear that, developing a new sustainable fashion design course could be an ideal solution of teaching sustainability to current fashion design students. However, including one more course in the current curriculum may not be realistic for many programs. Therefore, we developed zero-waste design projects in existing fashion design courses and concluded that the projects encouraged students to be aware of generating fabric waste while teaching the original objectives of courses

Anika Kozlowski et. al. he reported that Many of the existing tools for design in a sustainable fashion context are too complex, overly conceptual, require experts to apply, have a high cost, were created for large corporations, or fall short in holistically supporting sustainable fashion design entrepreneurial practices. Micro-sized enterprises represent a significant portion of the fashion industry and can meaningfully contribute to the transition to a more sustainable apparel and textile industry. Here he stressed on the importance of design thing and product



development. The study highlighted on the original design tool, the reDesign canvas, to support design entrepreneurs in developing sustainable fashion enterprises. This research shows the academic perspective, where the reDesign canvas fills an identified gap in the literature on the need for design-focused tools targeted to entrepreneurs.

Marques A D et. al. reported in his study in From waste to fashion – a Fashion up cycling contest suggested that circular economy can be guideline for fashion industry. More exposure and information is must for fashion consumers about these topics from the fashion brands. 10

Lewis et. al. reported in their study that, almost 40% of used apparel waste can be reused a new clothing and remaining apparel waste can be processed for diversified use in non-apparel applications. The study suggests new product manufacturing, divert textile waste and additional income from recycled or upcycled garment. 11

Han, in his study stated that, upcycling enables a sustainable design option for reuse techniques to be employed for better economic and environmental benefit. Here, the used garments and textiles are used for manufacturing of newly designed fashion goods. The study clearly differentiates between standard fashion design and production processes and upcycled fashion design and production processes, in order to support development of large-scale fashion upcycling. 12

#### Conclusion:

Fashion designers can have a key role to play in making fashion more sustainable. Fashion design education should be seen as a chance to make aspiring designers aware of the challenges and potential of design for sustainability and equip them with the knowledge and skills necessary to implement sustainable fashion approaches. Starting from this college, the approach to various sustainability theories was examined. This particular initiative is one which so far has not been researched in any depth. The increasing recognition of the need for the integration of different skills in fashion education is also a good reflection of the desired



evolution in the students' educational process. At the start, they are usually motivated by and focused mainly on developing their creative and artistic skills. With time, they are made aware of and introduced to technical and organisational issues crucial to the designer's work at all stages of the fashion production process and are also provided with economic and managerial knowledge necessary for success in the fashion market. It is likewise important to stress that the different aspects of introducing sustainability in fashion design and production identified by the authors and present in the activities of fashion schools

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**Reuse and Up-cycle of Denim for Sustainability**

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**ABSTRACT -**

Nowadays, the fashion and textile industry is one of the most optimistic industries, striving for development, change, and innovation. The big problem of the huge denim industry is the enormous amounts of second-hand waste, unsaleable goods, and denim waste that has to be reprocessed anyway. If we look at the production and consumption in the world in this field, it shows that there is a huge amount of waste products at the national and international levels. Scientific research, newspaper news, TV shows, online meetings, and similar studies show that the reuse of denim waste into fashionable items is part of the sustainability process only in some cases.

This study aims to minimize the environmental damage caused by the denim fashion industry and reduce textile waste. The goal is to recycle or reintroduce all or part of the waste. In this study, instead of unused, worn out, or outdated denim pants that had gone out of fashion, designs in a different, modern style were created. New designs were created based on unused, waste denim pants and returned to the cycle. A qualitative review was conducted through an online survey or opinion.

**Keywords:** Clothing industry, design world, eco-friendly, recycling, waste.

**INTRODUCTION -**

The environmental problems related to the textile and clothing sector are examined, which causes environmental problems in almost every process, starting with emissions from the production of natural fibers and synthetic fibers. These liquid wastes used in the textile industry are typically hot, alkaline, and pungent smelling and can reduce dissolved oxygen levels in water bodies, threaten aquatic life and affect overall water quality. Synthetic fibers are considered the group of raw materials that cause the most environmental problems in the textile industry, but natural fibers also pose various environmental problems: Environmental



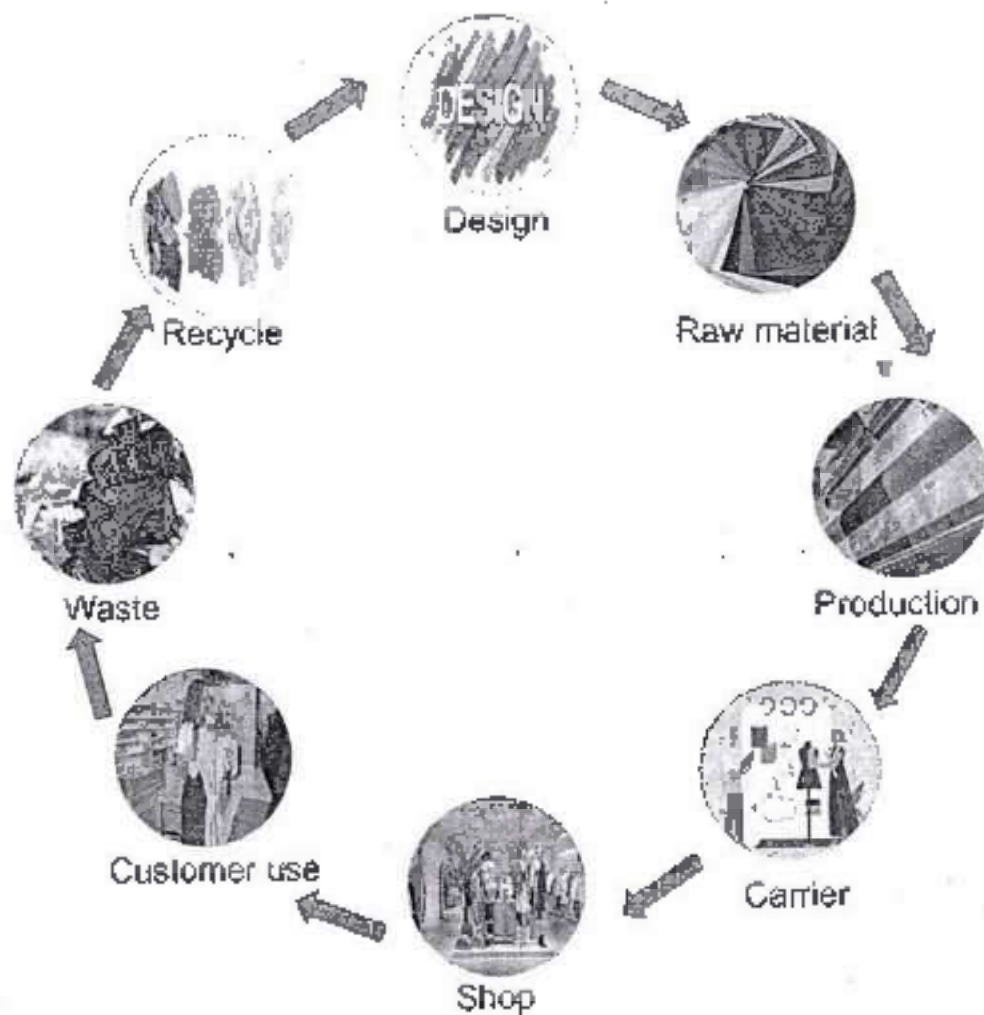


damage from the use of pesticides in the production of cotton, the most produced and consumed natural fiber, in combination with polyester, a synthetic fiber group. To solve this growing problem in the textile industry, sustainable materials and production methods must be used. For this purpose, instead of conventional materials and methods, preference should be given to materials obtained through recycling. The concept of "textile ecology" is an important place for sustainability in the textile industry, which now offers denim lovers many options: advanced and organic types of denim, less polluting dyeing and washing methods, anhydrous technologies, oxygen and ozone washing, recycling methods, eco-denim projects, and so on. The raw material to be used in environmentally friendly conditions lies in the selection of chemicals used in the processes of products that do not harm the environment, as well as in the production of clothing that does not harm human health, in the waste generated during production and in the recycling processes of used clothing.

In terms of fashion trends, designers, lingerie R&D departments, fabric suppliers, and sales teams at major markets, trade shows, and exhibitions around the world are targeting innovation, continuous development, and recycling in the apparel industry, and retailers in the apparel industry have begun to develop partnerships with various organizations in recent years to collect end-of-life garments, develop recycling strategies, and implement measures to support post-consumer recycled products. Recycling in the apparel sector can be done in two ways: Pre-consumer and post-consumer recycling. Reuse, recycling, composting, incineration, etc. are options for waiting for expired clothing. If the consumer chooses the option of giving the old garment a new look to wear again with minor changes, the garment can be worn again, it is considered recycling. Depending on the criteria, such as whether a recycling facility is available, the current condition of the garment, the fiber content of the garment, the extent to which the garment has been used by the consumer, etc., the applicable option will vary. For customers who want sustainable garments, applications that attract consumer attention by using the term recycled on the garment label are a decision that is important to companies. Some designer brands are presented that deal with these new technologies and advanced options for recycling.

Also, the garment production cycle applied for recycling is seen.

Design



The main purpose of sustainability is to get the most benefit from products by extending their life. Economists and environmentalists have shown in their work the technical and economic requirements of sustainability, as well as the need to reduce waste and recycling, to prevent this, fashion designers should design innovative products that curb consumption with environmental awareness and social responsibility, leading to the concept of sustainability. At this time when resources are over-consumed and the natural balance in the fashion and textile sector is disturbed, recycling projects have become very important in all fields. Ready-to-wear clothing and fashion occupy an important place in sustainability: recycling is an option for these products, which are reused and given new designs. Denim pants that are used in recycled designs are converted back into a new product. Thus, the way fashion is produced and consumed eventually becomes an endless cycle that never ends. New designs are introduced to reduce the environmental impact of denim pants that end up as waste after intensive use. The concept of sustainability has been discussed and based on this concept,



aging denim pants have been combined with other fabrics to transform them into new and modern designs. Intensive work is being done to recycle almost all textile products. Recycling denim products involves breaking down unused denim products until they become fibers. These fibers are used as insulation material, and the rest is mixed with unused fibers to make new fabrics.

Fashion changes, but denim is still here. It is a popular field of fashion design despite the periodical crises in the field of fashion. Consumers have an undying love for jeans and fashion has huge publicity; there are dozens of articles, forecasts, books, and trend publications introduced at fabric exhibitions and trade shows. Due to publicity and comfort, denim has been considered a premium product, but the blue revolution continues

#### **Types of washes given to Denim Fabrics:**

Denim washing is a technology that is used to soften raw material and to give it used look. It is done to produce effects like color fading, crinkles, seam puckering, hairiness, de-pilling or softened hand, feel, etc., as well as to stabilize the dimensions of the product because of the shrinkage of the fabric.

- **Stone Washing:** It is the most common method used to give the denim an 'old look', to abrade the surface of the fabric, for which pumice stone is used. To achieve the desired stone-washing effect for the garments, the stone should be of proper hardness, shape, and size. It should be mentioned that, for heavyweight garments, large and hard stones are suitable. For lightweight garments, small and soft stones are suitable. It is a popular garment washing.

- **Enzyme Washing:** Heavy enzyme or vintage wash is used to get the old or used appearance. Garments are washed inside a washing machine with enzymes. Fleece sweatshirts are washed with a heavy enzyme. Enzyme wash is performed with a kind of live cell, which can break some of the fibers of the fabric and can give the fabric a special effect, desired on the garment. Enzyme wash provides the fabric with a soft, sanded, or 'peached' effect that is very desirable on many garments. Enzyme wash is also useful for indigo denim. In this case, the enzyme can replace stone but gives the denim a stone-wash look, with a better and nicer blue and white contrast on the fabric. Enzyme wash is, however, costlier than stone wash.

- **Bleach Washing:** Bleach washing is one of the precise garment washing techniques that is used to fade a higher degree of color. We can define bleach wash in the following way, the



wash which is done to cut more color and bring light shade to denim garments is called bleach wash. Bleach washing is normally carried out with a strong oxidative bleaching agent such as sodium hypochlorite ( $\text{NaOCl}$ ) or potassium permanganate ( $\text{KMnO}_4$ ). Bleach washing may be carried out with or without the addition of stone. The bleach-washing effect and discoloration usually depend on strength of the bleach liquor, liquor quantity, temperature, and treatment time.

- **Ice or Snow Washing:** Ice wash gives indigo jeans sharp contrasts. The process was created in Italy and was patented in 1986. This finish provides jeans with sharp contrasts in tonal color. This is also known as an acid wash or snow wash. This is achieved by dry tumbling with pumice stones soaked with bleaching agents to produce a 'snow' pattern effect on denim. Stones are used to depositing a chemical on garments to strip off the color. This chemical deposit removes color only from the outer surface of the garments and produces a frosted appearance. Indigo and selected sulfur dyes are the most popular candidates for this procedure.

- **Sandblasting:** Sandblasting, sometimes known as abrasive blasting, is the operation of forcibly propelling a stream of abrasive material against a surface under high pressure to smooth a rough surface, roughen a smooth surface, shape a surface or remove surface contaminants.

- **Laser wash:** With efficiency and sustainability driving the apparel industry, the process of denim and jeans finishing is taking a drastic change from its traditional method. Alternative methods of garment finishing, washing, and the chemical process which will have minimum impact on the environment from the denim industry have become a top priority.

#### Their Advantages and Disadvantages:

##### Advantages-

#### 1. AVAILABLE GLOBALLY:

You can shop physically or online depending on your ease and convenience. Denim jeans are available in almost every corner of the world!

#### 2. LOOKS TERRIFIC:

These jeans look great with anything. You will look bright with just any t-shirt, shirt, or any outfits. You can have numerous alternatives to wear. You can define your fashion!



### **3. DURABILITY:**

The jeans will last longer because of the weight of the denim. You can expect from a year to a decade, depending upon the fabric and quality of the jeans.

### **4. VALUE FOR MONEY:**

As I said about durability, it means definitely you're investing money in the right wear. You have to check out and give some time to shop for premium denim jeans.

#### **Disadvantages-**

#### **1. THE DYE CAN RUB OFF:**

The denim jeans haven't been pre-washed there's still a lot of dye in the fabric. This can rub off on everything like seats, shoes, and even your skin. After a few weeks of wearing and washing it should stop bleeding.

Be careful washing these jeans because the dye might spoil your other outfits. In short, you must wash it separately.

#### **2. SIZING :**

Most commercial jeans don't have the same size as you need. The commercial jeans are of standard size. You will have to measure yourself, meaning your waist, rise, hips, thigh, ankles, inseam, and out seam to find the right size.

#### **3. PRICEY:**

Selvage and premium denim jeans are expensive. They can range from the lower end of 40 dollars to 500 dollars! You can get different kinds of wear from different countries. Sometimes, you might get low quality at high prices. These high prices don't necessarily mean good quality either, so you have to be careful.

#### **4. ADAFT:**

Most of the time, when we buy new shoes, chances are very high that you might get a shoe bite, depending on your precautions. Similarly, most jeans you find in stores are already soft, when you put on selvage jeans for the first time they will be hard. You might feel to bend and feel very heavy for a few weeks.

The above factors keeping in mind, it states that we need to research and give our valuable time before spending on denim jeans. The rule of marketing says, "Always hire a professional for your services in which you are not specialized". We Tailored jeans are into customized jeans since 1996, and we really know the taste, choice, and preference of the buyer. The Denim jeans are customized with high-quality professionals and expertise. We assist our customers entirely and get them the ease and comfort that they expect. We deliver and provide our services on all 7 continents.

Even the commonly used technologies are more environmentally friendly nowadays, and if modern and less polluting chemicals and techniques are used along with relevant sewage plants. Disadvantages like high energy and water consumption, multi-part production process, and lots of waste support efforts of denim professionals to invent new, more environment-friendly ones. According to National Geographic magazine, a single pair of jeans needs 11,000 liters of water between the production of the raw material and the finished jeans. This staggering figure indicates that there is an urgent need for the denim industry to change the negative water footprint. Also, conventional indigo dyeing for denim results in a large amount of cotton wastewater is a potential threat in impeding the growth of eco-friendly denim. Consumer behavior also largely remains unchanged, as many consumers tend to overlook the green aspect of denim.

**Conclusion:**

Denim products within the scope of recycling have been converted into new and modern designs by re-using them for reasons such as deformation, dismantling, and aging due to any reason. Thus, stunning clothes are designed in an environmentally friendly, economical, different style.

Saving the planet and sustainable fashion became a Megatrend. As we've seen the giant denim industry produces enormous quantities of second-hand trash, waste, and unsalable stock that cause huge environmental pollution in itself. Repurposing- enormous quantities of textiles produced each season becomes a great challenge for fashion professionals. New sources of inspiration, different ideas, and creative products have been created for designers, which are inspired by nature, deformed clothing has become difficult to use or outdated, making it possible to redesign and make wearables. As a result of the project, the raw material expense was eliminated in the washing phase, which is the most time and critical part of denim production, so eco-friendly denim designs emerged and designers were directed to different issues like sustainability and recycling.

Denim Club India has also developed a range of garments made out of handloom denim. This collection is designed to ensure minimum wastage of fabric and the complete garment requires minimal stitching. Many independent designers endorse green denim. Indian designer Deepika Govind launched an organic denim collection for men and women of the trash into "so-called Recycling fashionable" items, that are lacking purposefull and tangibly useful end products, and cannot be considered sustainable.





Consumers can also play a role by choosing to buy denim from sustainable brands and taking care of their denim clothing to extend its lifespan. As the denim industry continues to evolve and find new ways to become more sustainable, we can look forward to a future where denim is not only a beloved fashion staple but also a responsible choice for the environment.

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**Sustainable benefits of upcycling the Sarees**

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**Abstract-**

Clothing plays an important role in human life clothing communicates various factors such as a person's life, age, gender, lifestyle, religious beliefs, etc. clothing also conveys emotions and feelings towards a particular group and builds up self-images well. Every person must be having a variety of clothes for different purposes and occasions. The production rate of the fashion industry is very high and it requires excessive usage of water, energy and raw material, and lots of chemicals for the dyeing and processing of fabric. That is the main reason that the fashion industry is one of the main contributors to environmental pollution. Saree is the traditional garment of India. In India, the saree is one of the important garments that every woman has in her closet in large quantities. That is the real issue of overconsumption of garments. But there is a way to breathe new life into those old sarees. Recycling and upcycling are one of the most sustainable ways to keep your wardrobe fresh and spin or repurposed clothing. Upcycling reduces textile waste and minimizes the consumption of new production as well as the raw material required for production. So automatically consumption of water, energy, and other valuable resources will save. It also reduces air pollution as well as water pollution.

**KEYWORDS-** Upcycling, Textile waste, sustainability, Recycle.

**Introduction-**

Food, shelter, and clothes are the three basic and important needs of human life. Clothing is one of the very important factors in human life. The need for clothing helps to maintain modesty as well as gives protection to the human body it is in harmony with personality as well as surroundings and also it shows human behavior and the image of the person in society. clothing communicates various factors such as a person's life, age, gender, lifestyle, religious beliefs, etc. clothing also conveys emotions and feelings towards a particular group and builds up self-image as well.



An individual clothing style is influenced by aspects of self-concept such as identity, value, attitude, and mood. Every person must be having a variety of clothes for different purposes and occasions like formal wear, office wear, party wear, uniforms, and clothing for casual wear, etc. The production rate of the fashion industry is very high and that is the main reason that the fashion industry is one of the main contributors to environmental pollution. It requires excessive usage of water, energy, raw material, and lots of chemicals for dyeing and processing of fabric. It is a cause of environmental pollution.

Sustainability consists of fulfilling the need of the current generation without compromising the needs of future generations. While ensuring a balance between economic growth, environmental care, and social well-being. In the fashion industry, there are constantly changing trends. It is a major cause of textile wastage. When a new trend comes into the market people purchase the clothes without thinking the need for clothing. It can be easy to forget about clothing that already has in the closet.

Saree is the traditional garment of India. In India, the saree is one of the important garments that every woman has in her closet in large quantities. That is the real issue of overconsumption of garments. But there is a way to breathe new life into those old sarees.

Recycling and upcycling are one of the most sustainable ways to keep your wardrobe fresh and spin or repurposed clothing.

#### **Sustainable benefits of upcycling the Sarees.**

Clothing is one of the basic needs of human beings. Clothing is also known as clothes, garments, dresses, apparel, and attire, or in simple words any garments worn on the body. Clothing is made up of fabric or textiles in ancient days clothing has made up of animal skins, leaves, grass, and stems to cover their body of purely vegetable origin and is easily available in natural resources. There are three basic needs to wear clothes and that is as physical needs, social needs, and psychological needs

The physical need to wear the clothes is the protection the body from changing weather conditions and other living things such as insects and animal bites.

The social need behind wearing clothes is the rules of modesty accepted by different societies.



The psychological needs include self-adornment for increasing self-esteem, enhancing attractiveness, and maintaining social status.

From ancient times to the middle of the 18th century spinning and weaving were done by hand. People began to look around for the natural resources of fibers to make the fabric and they could use to make yarns from cotton, wool, and silk. This is easily available in nature. Manmade fabrics are only introduced at the beginning of the 20<sup>th</sup> century. Progress in this area culminated in the industrial revolution which was the start of the factory system and mass production.

Clothing has significant social factors as well. Wearing clothes is an important social norm. Many factors influence our clothing styles. The attire also includes accessories, footwear, jewelry, etc. An individual clothing style is influenced by aspects of self-concept, identity, value, attitude, and mood. Everyone is having a variety of clothes for different purposes and occasions.

#### **Information about saree-**

Saree is the traditional garment of India. Sarees are worn by women. It is a draped garment. A saree is a women's garment from the Indian subcontinent that consists of an unstitched stretch of woven fabric arranged over the body as a robe with one end tied to the waist while the other end rests over the shoulder as a stole.

The draping styles of the sarees may be varying in different states. There are different names and styles of sarees. But the word saree is originally derived from the Sanskrit word "Satika or Shari".

The saree is worn with a combination of another garment which is called a choli or blouse. It is an upper garment. And also with a lower garment which is known as a petticoat or lehenga.

Because of the extremes in temperature on the Indian subcontinent, the saree plays a practical role as well as a decorative one. In every changing season, the saree is the most suitable garment for women.

Saree is a draped type of garment that is loose as well as comfortable in fitting. So in the olden days, women preferred to wear sarees to feel free for their daily activities. Nowadays, the



professionals like teaching, air hostess, News readers, Anchors, Hotel hospitality staff, etc. wear a saree as their dress code and draped it in a particular style.

In the olden day, sarees were woven of silk or cotton. Which are natural fibers. All sarees are hand woven and require an ample amount of investment of time and money. In modern times sarees are increasingly woven on mechanical looms which are called power looms. Manmade fibers like Polyester, Nylon, or rayon are used for weaving the sarees on mechanical looms. These fabrics are maintenance-free and do not require starch and ironing. They are printed on the machine or woven in simple patterns. Handloom sarees are more expensive than machine-made sarees. The saree is most commonly thought to be nine yards in length. But for various draping styles, sarees often require different lengths for different drapes. But the standard length of the saree is five to nine yards in length.

As known saree is the traditional garment of India and it is the most common attire worn by women across the country as a regular daily outfit, occasional wear, or in the name of a traditional outfit the saree fits well in every setup.

Silk sarees are worn on various occasions like festivals, weddings, and other auspicious days that are known for traditional values. These sarees are expressive also. In India, every woman is having extreme quantity and variety of sarees in her wardrobe.

The saree business in India is being in billions. Ninety percent of women in India purchase at least one saree per year without thinking about the need for a wardrobe. As a result, many sarees were discarded every year for many reasons like fast-changing fashions, boredom, reduce the strength of the fabric, and many more. This will cause huge textile waste. It is one of the major causes of environmental pollution also. Because the chemicals used in the production process of the saree lead to environmental issues like air pollution, water pollution, etc.

There was a way to breathe new life into old sarees and in doing so we can give a new look and life to old sarees as well as can help the environmental issues and give sustainability to the old sarees. Nowadays new term "Upcycling" is important in the fashion industry. Upcycling and sustainability go hand in hand in the fashion industry.

Upcycling is one of the most sustainable ways to keep your wardrobe fresh and put a new spin on repurposed clothing. In simple words, the term upcycling means the reuse of discarded material in such a way as to create a new product of the same quality or value as the original product. It will give a new look and life to the used product and increase the sustainability of the product.

"Best out of waste" is the simple formula for upcycling textile waste. The upcycle doesn't see the waste they see the potential in it and their creativity starts with it. Many of the brands also use the term upcycle and sell their mass-produced garments and other upcycled products. Many brands used their platform to creatively turned old sarees into gorgeous new products.

#### Upcycle products from old sarees-

There are some upcycle products of old sarees like 'Kantha' is the traditional embroidery of Bengal. Running stitch is used for making the Kantha. The old saree with Kantha embroidery named into a beautiful blanket and scarf.

Kanjeevaram saree is one of the traditional and famous silk saree. This saree is having broad and heavy zari border so the saree is very expensive. This type of old and expensive silk sarees is upcycled into new garments like beautiful Anarkali dresses and kurties with some structural designs. Embellishments like hand embroideries will enhance the beauty of the garment as well as increase the cost of the garment. These types of garments are purely worn for occasional wear.

Kora silk sarees or raw silk sarees are also the best options for upcycling in garments like kurties with some embellishments.

Raw silk sarees can turn into Indo western garments like sleeveless overcoats, and long jackets which can be worn at parties and combined with some Western ensembles like jeans and skirts also. This will give the elegant look. Same like the old silk sarees with zari borders can convert into Lehenga or Half sarees. Anyone can customize the designs with some applied designs like decorative patches, different borders, and embroideries.

Cotton sarees can be upcycled into ethnic skirts, tops, and simple kurtas and add a fresh and new touch to the old sarees. Palazzo pants paired with crop tops are also an option for a cotton saree. It will give the complete indo-western look.





Kaftans are the trendiest option for the summer season. It is a comfortable garment. Lightweight sarees like Chiffon and Georgette sarees can be beautifully converted into Kaftans. These types of manmade fabrics are having great fabric fall and are less in weight. Western tops with cowl effects, umbrella skirts, and layered garments are the best options for this type of sarees.

Rather than garments sarees can transform or upcycled into bags, shoes, jewelry, and accessories and are sold worldwide. Fabric jewelry is now in trend. After the maximum usage of sarees, the leftover fabric or unused fabric parts of the sarees will be used for stuffing the pillows as well as soft toys. The leftover fabric of cotton sarees will be donated for creating menstrual production and initiate the resource to empower the local community.

#### **Sustainable benefits of upcycling-**

For being more sustainable upcycling is a cheaper way than purchasing new products. If anyone wants to change or refresh their wardrobe without spending money on it then upcycling is the best way for it. Transformation of old sarees into completely new products will give a new look and life to the sarees. With the help of upcycling it is easy to incorporate waste material into new garments. With the usage of innovative ideas and proper techniques, the upcycled products can be even more beautiful as well durable, and also less in cost. It is a great challenge for designers to create uniqueness as well as stylish and trendy designs out of old sarees.

#### **Environmental benefits of upcycling old sarees-**

Upcycling reduces textile waste and minimizes the consumption of new production as well as the raw material required for production. So automatically consumption of water, energy, and other valuable resources will save. It also reduces air pollution as well as water pollution.

#### **Conclusion-**

This review focuses on the Sustainable benefits of upcycling the sarees. The term upcycling reduces environmental pollution, increases creativity, and most important thing product sustainability. The need for sustainability is reusing, repurposing, and recycling old and used materials. The concept of upcycling of saree is a pillar of an eco-friendly environment. It is a way of reducing textile waste.

The term transforming, upcycling, and sustainability is not new to India. It is a part of their culture. Instead of throwing out the old garments, we find creative ways to repurpose them.

Before the upcycling of sarees, some of the important points should be known by the designer. The type of fabric, prints, color fastness, strength of the fabric, etc. So it is easy to upcycle the sarees according to the product like garment or accessories. The old sarees are crafted into bags, shoes, jewelry, accessories, and ready-to-wear garments.

With the help of upcycling the old sarees will get a new look and life and become a part of the wardrobe and daily attire. It will also give the resources to empower the local community.

Upcycling the old sarees can add a sense of individuality and uniqueness to our wardrobe and can maintain a legacy that the old sarees used to contain.

Upcycling is the best way of sustainability.

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LANGUAGE FOR SUSTAINABLE DEVELOPMENT GOALS (SDGs)

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**Abstract:**

The language we speak leads us to look at various dimensions of the world under the influence of the different grammatical properties of these diverse languages. This paper seeks to contribute to this development initiative by exploring how language can be used to achieve global sustainability in line with the Sustainable Development Goals. Language has been found to play an important role in achieving virtually all of the Sustainable Development Goals (SDGs) from quality education to healthy living, promoting peace and inclusive societies, industrialization and innovation, implementing and revitalizing global partnerships, and other goals for a global transformation. A language is a key tool for stating, implementing, and evaluating developmental goals about the persistent issues of political exclusion, economic marginalization, and social discrimination that plague the majority of the world's nations. The seventeen goals must all be accomplished by 2030 since they are all interconnected.

**KEYWORDS:** language, development, Sustainable Development, Sustainable Development Goals.

**Introduction:**

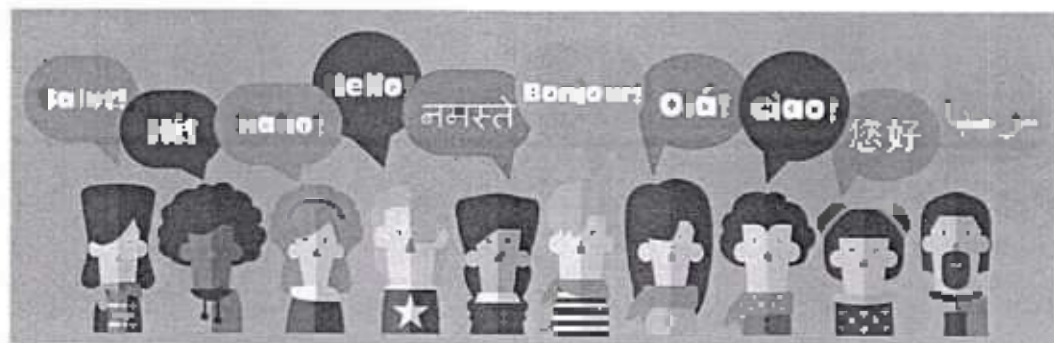
The United Nations approved the Sustainable Development Goals (SDGs), also referred to as the Global Goals, in 2015 as a global call to action to eradicate poverty, safeguard the environment, and guarantee that everyone can live in peace and prosperity by the year 2030. The 17 SDGs are interconnected because development must strike a balance between social, economic, and environmental sustainability and because actions in one area have an impact on outcomes in others. The Sustainable Development Goals (SDGs) aim to abolish poverty, hunger, AIDS, and discrimination against women and girls. Governments must commit to giving those goals the highest priority. In every situation, the SDGs must be accomplished with the help of society's collective creativity, technological know-how, and financial resources. The "Transforming our World: The 2030 Agenda for Sustainable Development" initiative, which consists of seventeen universal, transformative goals, intends to identify and





address key global concerns in both developing and developed countries. Colombia offered the notion of the Sustainable Development Goals (SDGs) during a Rio+20 preparation conference held in Indonesia in July 2011, but the United Nations accepted these objectives as the Millennium Development Goals (MDGs) at a summit in Bonn in September 2001. A more inclusive and comprehensive objective was required to address global concerns, utilizing sustainable development as a guiding concept, as the MDGs were unable to fully meet the majority of the listed goals, particularly in Africa. Sustainable development, according to the Brundtland Report (World Commission on Environment and Development-WECD (1987)), is defined as development that satisfies current demands without jeopardizing the capacity of future generations to satiate their own needs. It contains two crucial ideas: the notions of needs and limitations. The United Nations member states endorsed the Sustainable Development Goals (SDGs) with the resolution "The Future We Want" on September 25, 2015, during a summit in New York. To address the three aspects of sustainable development—economic, social, and environmental—the Sustainable Development Goals were created (United Nations, 2015). These ambitious targets call for both rich and developing nations to work together by 2030 to find sustainable solutions to the world's problems. The Millennium Development Goals (MDGs), Education for All Goals (EDAs), and, more recently, The Sustainable Development Goals (SDGs) all seek to establish a more integrated and genuine paradigm for sustainable and equitable development in both the developing and advanced nations of the world. These goals have given rise to several transformative visions in the twenty-first century. Many nations have already begun taking action to translate the development concerns expressed in 2030. Hence, this essay discusses these goals in light of Sapir-Whorf's theory of language to evaluate the contribution of language to the achievement of sustainable development goals.

#### Language:



Language is one of the distinctive qualities of the human species and a means of communication. By using consciously created symbols, language is a wholly human and non-instinctive way of expressing thoughts, and feelings (Yule,1989). To communicate both inside and outside of his environment, a person needs language. Language can be expressed verbally or nonverbally. While nonverbal language involves the use of signs and body language, such as facial expressions, gestures, signs, and other expressions in communication without the use of sounds, verbal language involves the use of sounds and symbols in expressions. According to Widowson (1979), all languages are highly evolved and complex communication systems that can all be used to give and receive information and express emotions to meet societal expectations. According to Nwadike (2004), language holds the key to unlocking people's hearts. We lose the people if we lose the key. If we value the key and keep it secure, it will open the doors to prosperity or money, resulting in the development of the country. As a result, language plays a crucial role in every stage of a country's development, from conceptualization to actualization and evaluation of societal goals, including sustainable development goals. These development goals' formulation, expression, interpretation, and understanding, as well as their execution and evaluation, are all significantly influenced by language.

#### **Sapir-Whorf Hypothesis:**

The Sapir-Whorfian theory of language serves as the theoretical foundation for the study, which is focused on how language contributes to the achievement of the SDGs. The concept of linguistic relativity, which states that a speaker's perception is relative to his spoken language, was first proposed by Benjamin Lee Whorf in 1938 and later developed by Sapir in 1929. This demonstrates that a person's sociocultural milieu has a significant impact on his or her thinking and expressive abilities. By applying this theory to the Sustainable Development Goals, we can observe the close relationship between language and culture as well as the need for intercultural education, especially when it comes to interpreting the goals through language. So, every language has a unique genesis, which supports the Sapir-Whorfian hypothesis. When the theory is utilized to achieve Sustainable Development Goals (SDGs).



**Sustainable Development:**



The United Nations defines sustainable development as the organizing principle for achieving human development goals while concurrently maintaining the capacity of natural systems to provide the natural resources and ecosystem services that are essential to the economy and society. A society where living standards and resource use continue to meet human needs without compromising the integrity and stability of the natural systems is the desired outcome.

**The Sustainable Development Goals:**



The Sustainable Development Goals are the blueprint for a better and more sustainable future for all. It addresses the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace, and justice. The Sustainable Development Goals are a set of seventeen goals agreed upon by all countries that are members of the UN to work for a better future for the country. The documentary "Future We Want" shown at the Rio+20



conference introduced the idea of a post-2005 development agenda, whose predecessors were Millennium Development Goals. It is a group of 17 goals with 169 targets and 304 indicators proposed by the UN on Sustainable Development Goals to be achieved by 2030.

**Goal 1. No Poverty:**

Poverty is more than the lack of income and resources to sustain a living. It manifests itself in hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion, and lack of participation in decision-making.

**Goal 2. No Hunger:**

Hunger is an alarm signal sent by the body when the stomach is empty and blood sugar levels drop. Language is key to acquiring the knowledge necessary to increase agricultural production and the incomes of smallholder farmers, especially women and indigenous peoples while respecting the environment, biodiversity, and resources of each region for the desired change.

**Goal 3. Good Health and Well-being:**

Well-being is a sense of satisfaction with life, a state characterized by health, happiness, and prosperity. Language is key to educating people about drug and alcohol abuse and prevention and mental health issues. It provides relevant knowledge and information about family planning, sex education, and reproductive health.

**Goal 4. Quality Education:**

Quality education includes, in particular, aspects such as the development of appropriate skills, gender equality, the provision of adequate school infrastructure, equipment, teaching materials and resources, scholarships, or teachers. Language helps learners to analyze, evaluate and summarize complex issues and apply what they have learned in new contexts. They also learn to appreciate the benefits of collaboration in pursuit of the common goal.

**Goal 5. Gender Equality:**

Gender equality is a principle that states that all men and women, despite their biological differences, should be treated equally and have the same rights to achieve gender equality and empower all women and girls. Language will play an important role in raising society's awareness of this goal and creating awareness of the ills of gender inequality in society.

**Goals 6. Clean Water and Sanitation:**

The 2030 Agenda acknowledges the importance of water resources for sustainable development as well as the crucial role that better drinking water, sanitation, and hygiene play in advancements in other fields like health, education, and poverty reduction—achievements that can only be made through language.



**Goal 7. Affordable and Clean energy sources:**

Renewable energy sources are those that can naturally renew or replenish. While fossil energies derive from sources that will someday run dry, they can be used indefinitely. The language will be used to train employees to attain this aim as well as to compile numerous facts on climate change and potential solutions to deliver inexpensive and clean energy. By doing this, individuals will be able to lower their daily and local environment's overall use of gasoline, packaging, and energy.

**Goal 8. Decent Work and Economic Growth:**

Employment that enables an individual to work in a respectable and safe setting, to be fairly compensated, and to support his or her family. When we put in decent work, we might advance professionally, win respect at work, and give men and women equal opportunities. To meet the need for respectable jobs, sustainable employment opportunities that can boost the economy of the nation must be provided. Language is used to develop and carry out policies that support employment opportunities and economic growth. The language supports the growth of analytical thinking skills, creative workplace approaches, and problem-solving abilities.

**Goal 9. Industries, Innovation, and Infrastructure:**

The term "industry" refers to the production of goods or related services within an economy. Innovation is the development of a new idea, tool, or method. The essential systems and services that sustain a country, city, or region are referred to as "infrastructure," and this includes the amenities needed for the economy to function. The ability to linguistically comprehend the advantages and disadvantages of various types of infrastructure from environmental, social, and economic perspectives enables transdisciplinary evaluation of infrastructure. The importance of sustainability is communicated by using language as a medium.

**Goal 10. Reduce inequality within and amongst countries:**

All people must consent to a social compact for society or a particular group to be treated equally in terms of civil rights, freedom of speech, property rights, and access to social goods and services. Equal rights and obligations are also included, which affects the entire society. Writers can use language to highlight the detrimental impacts of inequality and how they undermine international peace. Education ensures that laws and social programs primarily protect the weak and disadvantaged by raising awareness of current injustices. It encourages everyone's inclusion, regardless of age, gender, ability, race, ethnicity, country of origin, or religion.

**Goal 11. Make Cities Inclusive, Safe, Resilient, and Sustainable:**

A sustainable city allows its residents to live in comfortable conditions and harmony with the natural world around them while adhering to the principles of sustainable development in social, economic, and environmental aspects. To solve the complex urban difficulties, this phase expands the understanding of fundamental human needs and how they are met in local urban, peri-urban, and rural communities. Training also involves the use of the language necessary for the protection of their immediate surroundings.

**Goal 12. Ensure Sustainable Consumption and Production Patterns:**

Using services and related goods that satisfy fundamental necessities and improve people's quality of life is known as sustainable consumption. Sustainable production complies with several criteria, including not polluting the environment, conserving and sustaining energy and natural resources, being economically viable, safe, and healthy for both workers and customers and contributing to the social and creative advancement of the region in question. People can recognize tactics that adhere to the fundamentals of the language.

**Goal 13. Take Urgent Action to Combat Climate Change and Its Impact:**

Climate change is a shift in the typical weather patterns that have been recorded in a place over a specific period. All the components of the weather that we typically identify with it, such as temperature, wind, and precipitation, are present in these patterns. Global climate change is the term used to describe changes that impact the planet's whole climate. By adopting a language as a means of articulating their results, people can make knowledgeable judgments regarding their use and consumption habits, resulting in decreases in their CO2 emissions and power use, as well as increased recycling practices.

**Goal 14. Conserve and sustainably use the Oceans, Seas, and Marine Resources:**

Sustainable use is when current demands are met without putting the needs of future generations at risk. Through fostering scientific collaboration and understanding at all levels, building research capacity, and transferring marine technologies, marine education is encouraged. Individuals are taught to use their critical thinking abilities to examine actual problems with the sustainable use of oceans, seas, and marine resources, using primary and secondary research techniques, and to come up with workable solutions. This prompts them to adopt sustainable ocean practices into their daily lives and to inspire others in their local communities to take on these issues, as sufficient personnel is required to handle them and language-based teaching is crucial.



**Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss:**

Terrestrial ecosystems must be preserved, restored, and encouraged to be used sustainably. Forests must also be managed sustainably, desertification must be stopped, and biodiversity loss must be stopped. We have seriously harmed the ecosystem of our planet, which includes all life forms, through deforestation, the destruction of natural habitats, and land degradation. Promoting the conservation of biodiversity and the sustainable use of our ecosystems is not a goal in and of itself. Our ability to survive depends on it. Language-based human knowledge is necessary for forestation solutions that solve problems with material resources.

**Goal 16: Promote, just, peaceful, and inclusive societies:**

Peace is the absence of conflict and the absence of violence between heterogeneous social groups. Justice relates to two concepts: the goal of ensuring that everyone receives what they are entitled to, as well as the establishment of institutions like courts, ministries of justice, and judge-led panels. In educated societies, it is more likely that the public will have unrestricted access to information and that fundamental liberties will be upheld. Language serves as a medium to formulate and enforce these actions, enabling people to develop the ability to converse to contribute positively to society and demonstrate tolerance for various religions and worldviews based on equality and fairness.

**Goal 17: Revitalize the global partnership for sustainable development:**

In large part to digital technology, the world is now more connected than ever. Only with a steadfast dedication to international cooperation and partnership will the SDGs be accomplished. Achieving sustainable growth requires coordination of efforts to assist developing nations, especially the least developed ones. Development partnerships demand mutual understanding and compromise through a shared language or languages. This stage develops a thorough grasp of sustainable development, taking into account present poverty, environmental degradation, and inequality.

**DISCUSSION**

**Language and Sustainable Development:**



Language development is crucial because it enables communication between all parties involved in sustainable development on a local and global scale. Also, it has a significant impact on young people's schooling and cognitive growth.

- ❖ A sustainable language is thorough, varied, and rich. It must have a diverse variety of repertoires that help us recognize and comprehend our discourses (and prejudices), as well as those of others, and judge and engage with them. This enables us to express our opinions about the crises we face. This would make it possible for ecocritical ideas to be developed into suggestions for action plans and encourage discussion about them among other members of society.
- ❖ Language has the power to preserve, promote, and give rituals meaning—or it can serve as a vehicle for contemplation and change. Because social development is one of the most important facets of sustainable development, people are at the center of building a society or a nation. Language has a lot of room to grow as a means of communication between people. It provides a good forum for the discussion of ideas and the sharing of viewpoints that improves communication between the parties. To collaborate on a socio-cultural level, people all over the world need to develop strong communication and critical thinking skills. One of the most crucial everyday instruments for direct interaction and bargaining at both the macro and micro levels is language.
- ❖ Language serves as a bridge to the world's human connections. With this vast human network, knowledge and experiences from various situations and cultures can be shared. It aids in the development of cooperative attitudes and tolerance for various cultural and behavioural practices that support sustainable development. Since language is a potent tool that humans may use to create and defend the social realm, it plays an essential part in the world of sustainability.
- ❖ The cornerstone of abilities, participation, and communication is language, which enables populations to take an active part in socioeconomic development. We must create jobs and economies based on regional tongues. International language proficiency is not always necessary for economic growth. Set goals because, because beliefs are thoughts, and language influences how people think and, by extension, how a community thinks. The concept of the SDGs is incomprehensible without language.



**Conclusion:**

The seventeen sustainable development goals are clearly stated topics that include commonly acknowledged obstacles to the all-encompassing frameworks for national development. A language is a key tool for stating, implementing, and evaluating developmental goals about the persistent issues of political exclusion, economic marginalization, and social discrimination that plague the majority of the world's nations. The plan for a brighter, more sustainable future for everybody is found in the Sustainable Development Goals. They deal with issues like poverty, inequality, climate change, environmental degradation, peace, and justice, as well as other worldwide problems we confront. The seventeen goals must all be accomplished by 2030 since they are all interconnected.

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## MODERN TECHNIQUES FOR TEACHING ENGLISH AND COMMUNICATION SKILLS

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### Abstract

Among all living things that are born on the planet Earth, man is the most intelligent. It has been said that the expansion of the universe is like "the water of a never-drying river." We have direct experience of the progress which has been done in the world recently due to human "innovative skill." The era in which conventional teaching approaches dominated the classroom is over. We are the actual eyewitnesses and witnesses to the world's current progress, which was caused by humans. An era of invention and creativity has replaced the conventional teaching methods that previously dominated the classroom. People from the older generation of the 60s and the younger generation of 16s have very different mindsets from one another. What was praised in the past is now deemed ordinary. Earlier, getting 400 points in the SSC was a wonderful accomplishment, but now everyone is aware of the situation. It is not that the paper graders are doling out points like crazy for unanswered questions; rather, it is the reality that all pupils are now capable of learning thanks to advancements in teaching techniques. The creative teaching techniques of the 21st century have replaced the techniques used by teachers in the later 20th century. Today students' priority is to "Learn English," which includes its four skills listening, speaking, reading, and writing. We can observe students' never-ending desire to improve their English language and communication skills at the Intermediate level and, in particular, at the Graduate level. All language learners have benefited greatly from the English teachers' unique ideas that have given us new ways to learn this language. This paper's goal is to offer some helpful teaching strategies that might be tried to help pupils learn. Fundamentally, transmitting and receiving information must be the two main parts of education. In the end, a

teacher does his best to transmit the information as he has understood it. So, any communication strategies that do this without diluting the goal could be regarded as creative teaching strategies.

**KEYWORDS:** Multimedia, Education, Technology, Creative Approaches

**Introduction:**

There is a wide range of linguistic backgrounds in India, including numerous languages and numerous dialects. Several families still speak English daily; however, it differs from Standard English. The multilingual environment presents English teachers with a range of challenges. The world of today experiences quick technological transformation. Innovations are produced at an accelerating rate. The landscape of modern teaching methods has completely transformed as a result of the rapid advancement of information and communication technology. The classroom instructor of the twenty-first century should abandon conventional ideas and methods in favor of more modern and creative ones. To transform the socioeconomic position of the nation, English language teachers must be creative, resourceful, and innovative. They also need to be well-versed in the subject. The world is changing quickly as a result of globalization; thus, teachers must update their understanding of cutting-edge teaching methods to keep up with the needs of modern society. The improvement of students will be aided by a variety of cutting-edge tools and techniques. The employment of cutting-edge methods for teaching English to learners is explored in this essay. Innovative techniques including audio-video assistance, mimicry, group debates, dialogue construction, and dramatization would make it possible to learn the language and increase the learners' confidence.

This paper's goal is to assess both conventional and multimedia teaching strategies while also suggesting additional effective strategies that could be used to teach pupils new material. Fundamentally, transmitting and receiving information must be the two main parts of education. In the end, a teacher does his best to transmit the information as he has understood it. So, any communication strategies that do this without diluting the goal could be regarded as creative teaching strategies. Innovative educational practices can enhance instruction while

simultaneously empowering individuals, enhancing governance, and igniting national efforts to advance human development.

#### APPLICATION OF MULTIMEDIA IN TEACHING AND LEARNING:

To communicate information to an audience, multimedia refers to the integration of different digital media types, such as text, images, audio, and video, into a multi-sensory interactive application or presentation. What is taught to students and what the industry needs are out of alignment as a result of traditional educational techniques. As a result, a lot of institutions are turning to problem-based learning as a way to produce graduates who are imaginative, critical, and analytical thinkers who can solve challenges. In this study, we emphasize the use of multimedia technology as an inventive teaching and learning method in a problem-based learning environment by providing the students with a multimedia project to develop this skill set. Presently, a lot of institutions are reorienting their curricula towards problem-based learning as a means of generating graduates who are imaginative, capable of critical and analytical thought, and problem-solving. As information is now a means rather than an end, it helps develop stronger problem-solvers and promotes lifelong learning. To address the shortcomings of conventional teaching, problem-based learning is growing in popularity in educational institutions. Problem-based learning is viewed as an innovative strategy to assist students to understand how to learn through real-life situations because these traditional ways do not inspire students to challenge what they have learned or to associate with previously acquired knowledge. The instructor modifies the material's content using multimedia. Using various media components will enable the teacher to represent in a more relevant way. These media components can be digitally transformed, changed, and personalized for the presentation at hand. The students can learn more effectively by including digital media aspects in the project since they utilize a variety of sensory modalities. This will push them to pay closer attention to the information being delivered and retain it more effectively.

Applications with multimedia provide great teaching tools. Providing the pupils with the information can increase the effectiveness of the learning outcomes. By fusing the elements of texts, photos, audio, videos, animations, and user control, multimedia apps can be used to





provide information engagingly. The use of multimedia apps in the classroom has many benefits that can aid students in developing a deeper knowledge of particular concepts or information. Multimedia apps have certain screen designs, interaction and feedback mechanisms, navigational elements, and audio and video components. Without a doubt, teachers and lecturers may use multimedia programs as a tool to help them deliver excellent instruction. Nonetheless, there are drawbacks to using multimedia tools in teaching.

### **TEACHING WITH HUMOR:**

#### **"Humor is an effective teaching tool"**

A teacher with a contagious sense of humor is adored by all. Not only does it help to create good relationships between teachers and students, but it also offers much-needed relief while trying to comprehend a challenging lecture on a challenging subject. There is potential for advancement in any subject when there is a willingness to change. Teaching is difficult. Learning is difficult. It can be difficult to efficiently combine the two. Being funny is difficult. But laughing is simple. We are persuaded by both personal experience and academic study that humor in the classroom is a very powerful tool for both teachers and students.

A course is made more engaging by humor, which also helps to decrease tension. If the humor is appropriate for the subject, it may even help students remember the content better. Comedy has the power to put people at ease, ease stress, and so foster an environment that is favorable to learning and communication. Humor is the most efficient tactic for boosting recall of adverts, according to numerous researches in the field of advertising. Reading joke books and listening to comics on the radio make it simple to still humor in the classroom. It is important to encourage kids to take notes so they may understand how professionals employ exaggeration, pauses, and pacing. Exaggerate what you see in reality because a lot of humor comes from observing true events and circumstances in real life. Moreover, it should be noted that humor is crucial for teaching as well as the healing process.

### LEARNING A LANGUAGE WITH A MOBILE PHONE:

Due to their added features, such as messaging, gaming, emailing, and recording, mobile phones are viewed as little computers. PDAs, iPods, and wireless computing are all included in mobile phone-assisted language learning. The MPALL applications include short lessons on grammar points, games or quizzes that test discrete language concepts and are accessible via SMS, the internet, or downloads, vocabulary lessons, word definitions with usage examples, lectures that are recorded for better comprehension, a dictionary, and communicative language learning games.

Social interaction, context portability, sensitivity, connectedness, individuality, and immediacy are the key components of mobile phone-assisted language acquisition. More and more language learning is probably occurring outside of the classroom context as a result of the increased chances for computer-assisted language learning.

### ROLE-PLAY:

Simulated interactions between people or other social processes in which players take on different roles. Role plays consist of brief, realistic scenes, such as pretending to interview a famous person. The class can be split up into groups of four to five people for group projects. Choose one individual to serve as the group leader, who will assume the role of a medical consultant, while the other participants will assume the roles of patients. To examine a problem that pertains to the organization, role-playing playing and scenario analysis are frequently employed in businesses. Management institutions also use these techniques. But, other specializations like science and engineering can also try the same kind of practice. Although science and engineering courses have practical components, if students are presented with a scenario and additional options to address a particular problem, they are exposed to decision-making in a realistic setting. Role-playing techniques, for instance, can be used to clarify a pharmacist's job duties when training future pharmacists. Students might be given medical prescriptions and medications while being expected to act like pharmacists. Here, students write their actual prescriptions for medications, making this a more hands-on method of instruction

where theory is supported by appropriate practical knowledge. In management, engineering, and other science courses, a similar method can be used.

Students have the chance to engage in activities that mimic events related to careers through role plays. Role plays should be content-focused, aligned with learning objectives, and applicable to real-world circumstances to assist students to comprehend the value of using them. Role-playing games help students think more critically about difficult and debatable issues and to view events from several angles. Role plays may engage and motivate pupils when they are used effectively.

#### **BRAINSTORM:**

In a brainstorming exercise, pupils are given a single stimulus that acts as a springboard for numerous answers. What do you do when...? or another question with several viable solutions could serve as the trigger. The benefits of this method include allowing students to construct utterances at a level that is comfortable for them and giving them a significant amount of productive language practice compared to the teacher's input. Participants have a wide range of options available to them, and the fact that many of them are creative and entertaining means that they are more likely to be encouraged to contribute, and activities typically go along quickly with a high density of learner interaction.

#### **INTERNET USAGE:**

Take a holistic view of communication, language, and culture English language instructors are always looking for more effective methods of getting their students access to real content that will raise their knowledge and proficiency levels in the desired fields. Given how the internet has changed global communication, it makes sense that it would be a key component of a multi-media language lab for improving English language proficiency. Today, e-mail is the online application that is utilized the most frequently. E-mail-based learning activities can be incorporated into the curriculum by English language teachers. Search engines like Google and Yahoo direct users to websites that let them communicate with English-speaking natives. Modern email programs can handle text in a wide range of languages and can attach word-



- Students should form a circle for a game. There could be 5 or 6 students in the group. A minimum of three words, comprising a subject, verb, and object, must be written by one student. Within 10 to 15 seconds, the following student should compose a newsentence using the final word from the preceding one. They would then be able to assess their capacity for structuring sentences.

#### Conclusion:

The approaches that are more suited to a student's needs depending on their language proficiency are always valued in all respects. The novel techniques mentioned in this paper are just a few of the many that can be very useful for teachers in meeting the expectations of students at the intermediate and graduate levels.

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processing files. The software also enables us to send audio files and visual files as attachments, which improves the written communication's context. The British Broadcasting Corporation does a fantastic job of offering frequent online classes on learning the English language. Some websites offer online language laboratories with listening and speaking practice as well as recording capabilities for feedback due to technological advancements. When participating in online video conferences when native and non-native speakers are involved, a web camera can be a crucial tool. Internet relay Chat is one such program that permits synchronous communication between users located all over the world.

#### **GAME-BASED LANGUAGE LEARNING:**

Games that are task-based and serve goals other than enhancing communication are effective communicative exercises. All language games are designed to encourage language use among players, but players also use the target language while playing to play, convince, and bargain their way to winning outcomes. Both productive and receptive skills are needed for this procedure. Students can study in a fun and peaceful environment by playing games. Students can utilize language without tension once they have learned and practiced new terminology. The learner's focus is on the message while playing games, not the language. The majority of participants will focus more on winning than on the accuracy of linguistic expressions. One of the primary barriers preventing language learners from using the target language in front of others is the fear of negative evaluation and the worry of being harshly judged in public. Anxiety is lessened and verbal fluency is produced in a game-oriented environment, resulting in the achievement of communicative competence.

**The following are a few of the games:**

- ▶ Students should form a circle for a word game. There could be 5 or 6 students in the group. One pupil creates a term with at least five letters. Within 5 to 6 seconds, the following student must write a word beginning with the final letter of the previous word. They could use this to increase their vocabulary.

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**Socioeconomic Advantages of Up-Cycling Men's Shirts In Sustainable  
Fashion**

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**Abstract**

Nowadays Fashion brands manufacture clothes with high-quality and more durable clothing which can generate waste, due to the continuous change in trends. Up-cycling can be applied to the Fashion sector to recuperate waste and create original items. Clothing is not an altruistic purchase. This also elaborates environmental impact of the raw material and manufacturing process. It will help fast fashion retailers and marketers as it reduces the process of making a new garment from zero. This paper aims to study on socioeconomic advantages of up-cycling Men's shirts, which can extend to the study of the manufacturing process of Men's shirts and Upcycling process for Redesigning and Reproducing new products. Reusing fashion products for sustainability is a need of the fashion industry now a day. Apart from the environmental advantages which can be brought about by the re-use and up-cycling of fashion products, there are many socio-economic benefits of Up-cycling. It serves the clothes at a low cost. Reusing classic garments can be done in the fashion market because fads are temporarily in trend. Up-cycling helps to support small local businesses as it gives chance for re-manufacturing and allows for more creativity while redesigning and refashioning. Today's need of the fashion industry is to redesign the way clothes are made and used. Up-cycling provides more durable and innovative trendy garments or products to consumers, it will increase their quality of life and save them money in the long term.

**Keywords-** Up cycling, Sustainable clothing, fashion industry, Remanufacture, Refashion

**Introduction**

The Fashion market is rapidly changing with which a product becomes off-trend. Every alternate day Trend changes, collection changes by season. Production and consumption of fashion good constantly increased day by day during last few years. Now a days Fashion brands manufacturing cloths with high quality and more durable cloths Fashion industry producing clothes, shoes, bags and other merchandise generate wastes, due to the continuous change in trend. They must store notable quantities of textiles and components





no longer used for production. Also, the percentage of scraps of fabrics, and other materials, is often significant. A Life span assessment of classic products of the company is also presented to enhance the significant aspects of sustainability. Fashion industry is however characterized by substantial losses, due to production excesses on the one hand, and the "throw away" culture on the other due to fast change in trend.

Recycling can be applied to the Fashion sector in order to recuperate wastes and create original items, which can be particularly successful in a market where customers are increasing their sensitivity towards sustainability.

Clothing is not altruistic purchase. This also elaborates environmental impact about the raw material and manufacturing process. It will help fast fashion retailers and marketers as it reduces the process of making new garment from zero. Nowadays new product development process often pursues new trends. Cloths are manufactured rapidly according to trends, requirements, market needs, sustainability and its specialty. It creates waste terms of raw material waste, product short life span and environmental waste during production process. Hence, the Eco-Fashion or sustainable fashion is the need of an hour. It is defined as producing cloths for long lifetime use; the process for manufacturing the product causes no environmental impact and product can be reused. Reusing of fashion products for sustainability is the need of fashion industry now a day. Apart from the environmental advantages which can be brought about by the re-use and up cycling of fashion products, there are many benefits of a socio-economic nature. Up cycling serve the cloths in low cost as it reproduced by using same raw material and it also reduces manufacturing process. So that we can incorporate trendiest product in cheapest price. Together with some of the measures product be used to further reduce the current waste deriving from the fashion industry. Reusing of classic garments can be done in fashion market because fads are temporarily in trend. Classic garments like Shirts, T-Shirts, Trouser, Jeans, Saris and Skirts will remains in trend as they comes under the basics.

#### **Benefits of up cycling of cloths**

- It minimizes the amount of discarded materials and waste sent to landfills. Hence good for the environment.
- It reduces the need for production that uses new or raw materials. Hence it lower down the production cost.

- It is better for the planet as it reduces air pollution, water pollution, and greenhouse gas emissions, which saves natural resources.
- It helps to support small local businesses as it gives chance for re-manufacturing.
- It lower downs production cost and selling cost as the raw material is reused and refashioned.
- Supports local companies.
- Lower selling cost and refashioned clothes with new trends appeals to consumers.
- Allows for more creativity while redesigning and refashion.



### The current state of fashion is unsustainable

As per the environmentalist studies, fashion industry produces 80 billion new pieces of cloths every year. One kilogram of fabric generates 23 kilograms of greenhouse gas. In 2015, the fashion and textile industry was responsible for the emission of equivalent. We as a consumer discard 73% of cloths every year, those cloths in turn generate 53 million tons of landfills every year. We make fashion one of the most polluting industries in the world second after oil and gases. Hence we need to concentrate on the sustainability in fashion industry by up cycling classic products like shirts. It's a good step while developing the sustainable fashion industry.

### Sustainable fashion and Circular economy

A circular economy involves markets that give incentives to reusing products, rather than scrapping them and then extracting new resources. In such an economy, all forms of waste, such as clothes, scrap metal and obsolete electronics, are returned to the economy or used



more efficiently. Today's need of fashion industry is to redesign the way clothes are made and used.

#### **Economical advantages**

##### **To protect the environment**

Up cycling Fashion products would slow down the use of natural resources that reduce landscape and habitat disruption and helps to limit biodiversity loss. Creating efficient and sustainable cloths from the start would help to reduce energy and resource consumption. To make more reliable cloths that can be reused, upgrade or repaired would reduce the amount of waste



##### **Reduce raw material dependence**

The population is growing with it the demand for cloths is also growing. The demand grows with change in trends. New cloths requires new raw material, which grows demands for raw material. The supply for raw material is crucial and manufacturing process for raw material is also increases the cost of product. Some countries are dependent on other countries for raw material, which rises risk associated with supply, such as price volatility, availability and import dependency.

##### **Create jobs and save consumers money**

This could boost economic growth, create jobs as it increases competition in market and stimulate innovation. Redesigning raw material and cloths for circular use would also boost innovation across economy sector. As up cycling provides more durable and innovative trendy garments or products to consumers, it will increase the quality of life and save their money in the long term





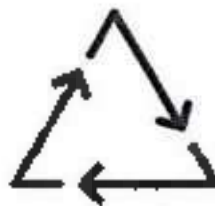
revived through the up cycling of fashion and textile products. It also increases social awareness towards sustainable fashion and up cycling of garments. This process can also give pocket friendly trendy product to the consumer within less time.

### Up cycling of Men's Shirts



Up cycling is redesigning of pre or post-consumer fashion waste is used to create new garment. This trend is growing in fashion industry and designers, which helps to save resources and minimizes the textile waste.

Upcycling is the best option to up cycle unwanted or dead stocked cloths rather than investing in some new raw material. It also helps for fast fashion and reduces the cost of production. Up cycling process increases life of cloths and keeps cloths in trend always. One can buy more cloths if the cloths can Up cycle that can give more utility for different occasions. Up cycling of classic garments like shirts always gives trendy collection as fads. According to the Indian market forecast market for men's shirts in India is estimated to be worth 37,132 crore, and it is the largest category of men's clothing, accounting for 28% of the overall market for men's clothing.

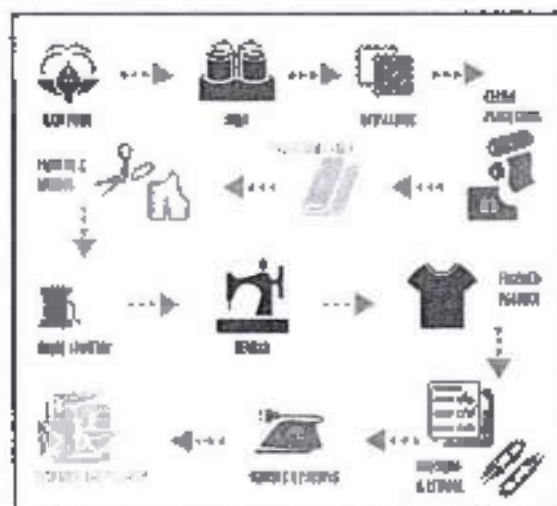


95% of discarded clothing can be recycled or upcycled

**Manufacturing process of Men's Shirt**

Men's shirt is a classic garment and it is manufactured by using cotton, linen, jute, polyester, nylon fabrics. Nowadays most of the brands are producing shirts with some special effects like wrinkle free, breathable, satin stretch, stain free which is more demanding. This specialty increases the cost for manufacturing and also gives sustainability to the shirt. Depending upon its use for different occasion shirt can be made by using different raw material. As shirt is more common and classic garment out of all men's wear, it is manufactured by using more sustainable raw material for its durability. Up cycling Of damaged or rejected Men's shirts can gives the profit to the manufacturing industry and also reduce dead stock. Men's shirt manufacturing process follows following steps:

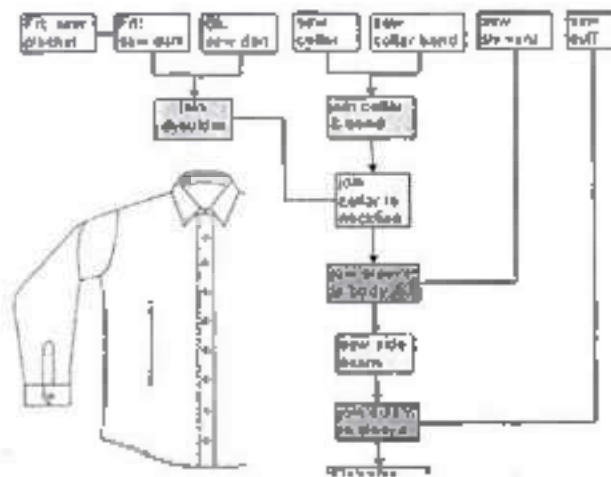
**Design Development--Sample Development--Design and Sample Approved--Raw Material Purchased/Ordered For Bulk Production--Fabric Processing--Fabric and Raw Material Inspection--Pattern Making--Grading--Marker Making--spreading--Cutting--Bending--Stitching--Trimming--Checking/Rework--Finishing/Ironing--Packing-- Dispatch**



The line assembly for the shirt in manufacturing industry is as following:



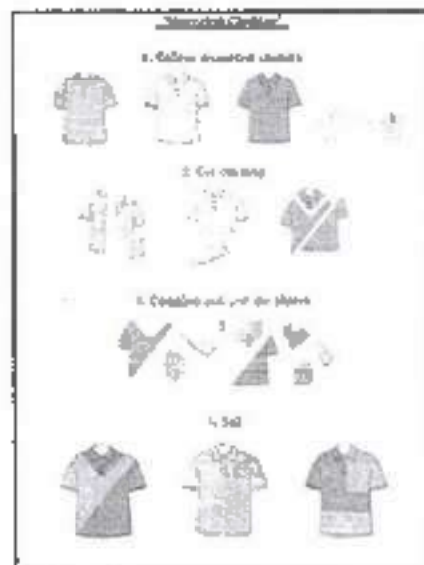




**Up cycling process for Men's Shirt**

Men's shirt is used as a raw material to produce new garment. Basic shirt is redesign and recut and restitch to produce new garment. Process flow chart for Up cycling Men's shirt follows following steps,

**Redesign--Resampled--Approval--Raw Material(Men's Shirts)--Pattern Drafting--Spreading--Cutting of Men's shirt--Restitch--New product Develop--checking--Trimming--Finishing--Packing--Dispatch**



New product development process by Up cycling men's shirt is depends upon the new product has be develop. But for sure this process minimises some steps for raw material manufacturing, processing, inspecting, etc. As well as this process requires less time to produce new garment with very short stitching and curing operations which reduce pressure on the employees during manufacturing. It also reduces manufacturing cost and can resetl within less time as fast fashion.

The material used for manufacturing Men's shirt is more sustainable and comfortable. Nowadays as the brands are developing products with high quality. Hence it can be easily used for Up cycling and redesigning it into New products like;

- Women's casual wear, summer wear, kids wear, Kitchen aprons, Night suits.
- Also it can be reused for making accessories like hand Bags, Pouches, Neck pieces Masks, Kids Fabric shoes, Bibs Home Décor, etc.
- It can be also used to redesign casual wear for men.

Following are some pictures which refer up cycling of Men's Shirt:



### Conclusion

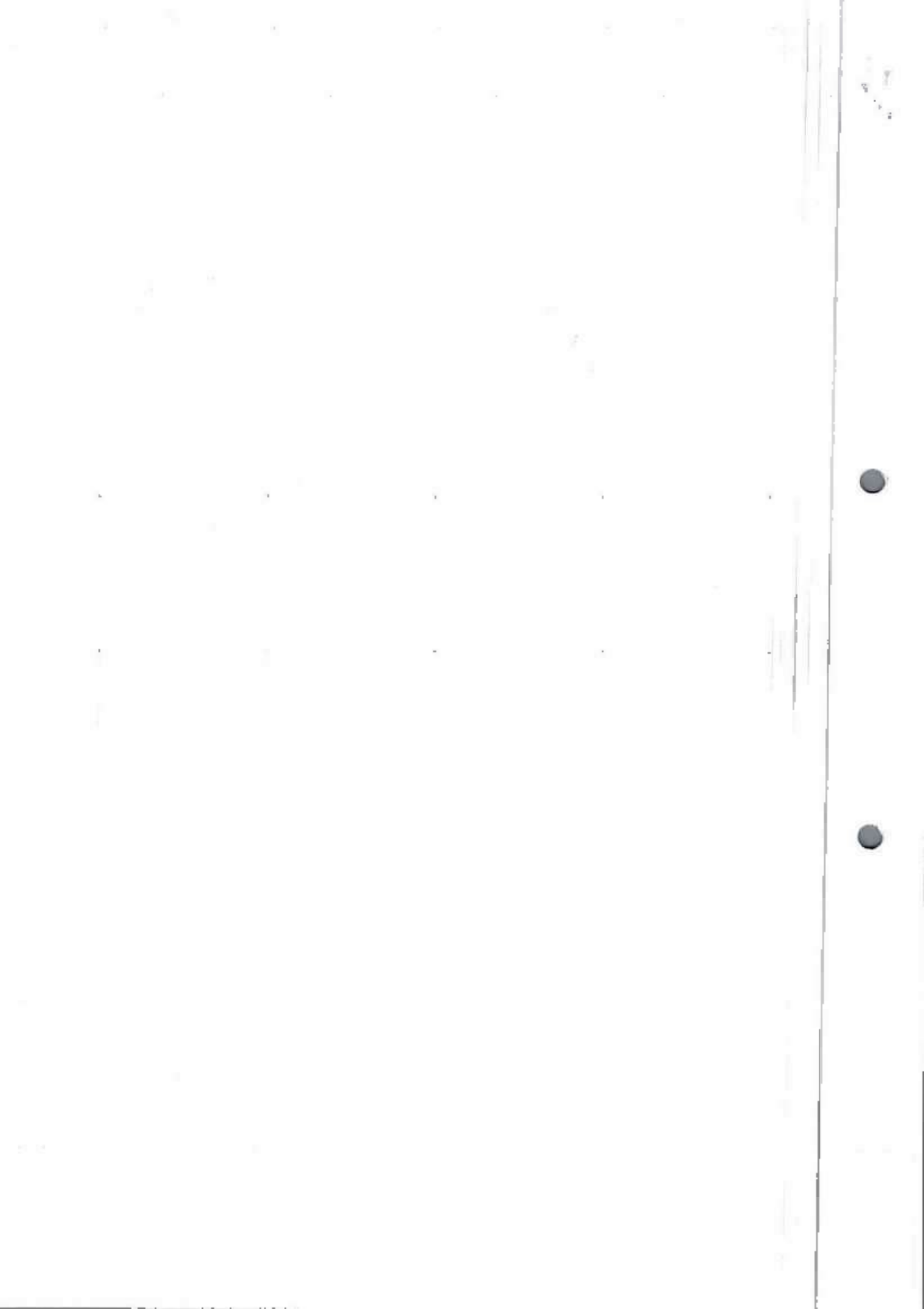
The study shows that the up cycling for fashion sustainability is environment friendly concept. According to the Indian market forecast market for men's shirts in India is estimated to be worth 37,112 crore, and it is the largest category of men's clothing, accounting for 28% of the overall market for men's clothing. Hence the percentage of waste production by this clothing is also higher, which is very harmful for environment. Also it will consume more amount of natural resources during manufacturing process. However we can produce more amount of new products by up cycling Men's shirts with the process study shows. This up cycling can give more profit in terms of money as study shows the raw material is reused and reduce cost. The re-manufacturing process also minimizes some cutting and stitching operations, which can reproduce new product within less time. This can be lowers down working hours and pressure on employees. Up cycling Of damaged or rejected Men's shirts can gives the profit to the manufacturing industry and also reduce dead stock. The study shows that the up cycling of men's shirt can also give chance for fast fashion, which is benefited for retailers and local marketers. This process also give an opportunity for designers as it gives more creative approach and scope for redesigning. Up cycling of Men,s shirts are having some economical advantages as; It boosts economic growth, create jobs as it increases competition in market and stimulate innovation. Redesigning raw material and cloths for circular use would also boost innovation across economy sector. Up cycling is a fashionable and creative way to make clothes look brand new and trendy in this fast fashion market. It gives profit by making more products by using single men's shirt can become pocket friendly to the consumers. As we are supplying product under fast fashion by this process, consumers can also get trendy products in time. Due to the increase the in environmental awareness and knowledge among consumers today, is a good opportunity to upcycled products while developing the sustainable waste management system. This unique selling point in products also brings an opportunity to increase own brand image .Consequently, we can expect a long run profitable business without wasting natural resources and harming the environment.



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CONSUMER BEHAVIOUR IN SUSTAINABLE FASHION

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**Abstract:**

Globally, sustainability and ethical consumption have emerged as essential concern in contemporary era. Adoption of eco-friendly products which has minimum negative environmental impacts while conserving energy and natural resources are increased. This report conduct a qualitative case study analysis based on thesis papers and literature reviews. Sustainable fashion aims to reduce waste, preserve already created products, and save natural resources. It undergoes four main parameters that are biodegradable, recyclable, new luxury and ethically made fashion. Sustainable fashion is associated with general wellbeing of not only fashion buyer or seller, but the people involved in or affected by the sourcing, production, use or disposal of the same. Eco-fashion aims to achieve carbon-neutral fashion industry, equality, social justice, animal welfare and ecological integrity. (1) This research provides essential values of sustainable fashion which effects on environmental and social condition.

**Keywords:** Sustainable fashion, Environmental impacts, Biodegradable, Recyclable, New luxury, Ethically made fashion.

**Introduction:**

The fashion industry is currently the second largest producer of carbon emissions in the world, after the oil industry. Fast fashion arise problems such as, climatic conditions, lack of energy and resources and unethical production. It is widely recognized that fast fashion is unsustainable, even though it is popular. Cheap fashion means accessible fashion but it encourages greater consumption. More importantly, Fast fashion puts pressure on textile industry which, impacts on those who are on the bottom of the production chain and the workers who actually makes the clothes. (2) Most companies shifted their preference form traditional business models to sustainable modern business in order to deal with that. The latest trends in fashion are not related to high fashion travelling from abroad or any must have



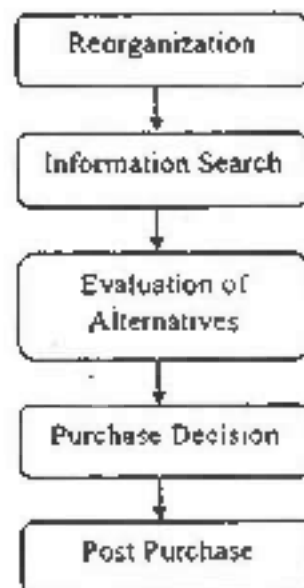


style it is the conception of sustainable fashion and ethical clothing. Sustainable fashion is determines how, where, and under what conditions products are made. However, the clothing industry is moving towards sustainable and ethical fashion model. The consumers consider social and environmental aspects while consumption of goods. The recent pandemic highly influenced on consumers' pursuit of eco-friendly consumption. According to a global consulting firm, consumers are shopping mindfully and cost consciously. The demand for local and sustainable brand is rising. Since the pandemic 61% consumers started eco-friendly purchase, even after the pandemic 89% consumers are expected to maintain this consumption pattern according to Accenture (3). According to McKinsey, (4) a class of next generation consumers (Generation Z), believes brand must keep their stand on environmental issues in fashion industry. It is important to practice sustainable ethical practices to fulfil consumer's needs. By the understanding of complex structure of the value chain of fashion industry, experts provide different opinions of sustainable fashion. Although interest and awareness of the environment have increased in consumers mind, the reality is that some consumers still misjudge the term, sustainability. Some consumers consider the eco-friendly fashion to be unnecessarily expensive and some hesitate to use recycled products.

Fashion is addictive, exclusive and very fast-moving. Furthermore, sustainability is about slowness, care, flourishing and responsibility (Paul, 2016). Sustainable fashion, seeks to empower workers across the supply chain by utilizing up cycling, recycling, and traditional manufacturing techniques, as well as renewable and organic raw materials (Johnston, 2012). In the slow or sustainable fashion, the fashion production encourages long term relationships, maintains local production rate and prominences transparency through the value chain (Ertekin and Atik, 2014). There are many problems which affects sustainable fashion. One of them is, it is more expensive as compared to the fast fashion brands. The rate of long, lasting high quality materials and domestic, local production is high than the products used in fast fashion. Because of this reason many consumers can't afford it, which is perhaps the biggest disadvantage of sustainable fashion. It makes difficult for the sustainable fashion brands to compete with the fast fashion brand in the same market place. These days "Greenwashing" is also a major issue in the fashion industry as many brands are using Greenwashing technique to attract the customers and to sell their products. Greenwashing brands are making false statements to suggest they are more eco-friendly than they actually are, it is impacting on the sale of actual sustainable fashion brands. Since Greenwashing brands advertises themselves

only as consumers want to see them, brands which are truly sustainable might easily be lost in the market.(5)

For any business to run smoothly understanding of consumer behaviour is very important although challenging task. Numerous researches described consumer behaviour in many ways. As defined by Belch consumer behaviour is "the process and activities people engage in when searching for, selecting, purchasing, using, evaluating, and disposing of products and services so as to satisfy their needs and desires". As described consumer goes through five stages of reorganization, information search, evolution of alternatives, purchase decision and post purchase behaviour while the process of buying.



**Figure 1: Five stages in consumer behaviour process (Kotler 2012) (6)**

The above figure shows the five stages of consumer behaviour which starts with the need for a product and ends with post purchase behaviour. The problem reorganization; first stage of buying process begins when the consumer recognizes a need or a problem initiated by external or internal stimuli. The second step is the information search in which the customers make the right purchasing decision by gathering actual information and get to know about competitive brands of the same products. The third step is evolution of alternatives which involves evaluation of each brand by the consumer with help of product information. The fourth stage; Purchase decision shows consumers usually purchase the preferred product but unexpected situational factors can disturb the buying decision. The post purchase is the last

stage of consumer behaviour process. The customer satisfaction after purchasing the goods can lead to the repetitive purchase attitude. Consumers do not consider all the steps of the buying process some of the stages can be skipped or reversed by different customers. (7)

Globally, sustainable fashion journey has grown widely. In slow fashion consumer focus on quality than quantity, as high quality products are durable and can be repaired. The sustainable goods are valuable, high quality produced, worn, maintained and if not needed they can be disposed, passed to others or can be recycled. Sustainable fashion aims to reduce negative impacts on environment and social performance. It can be classified into four major categories that is, biodegradable, recyclable, new luxury and ethically made fashion.(8) The 'biodegradable' is the materials that can be decompose in nature, as the result of the action of the biological agents such as plants, bacteria along with other physical agents such as sun or water that transforms these substances into compounds that serve as nutrients for the environment. Biodegradable goods are eco friendly and degrade easily without contributing in any negative impact on environment. Recycling and Upcycling fashion play a major role in the sustainability criteria of economic, environmental social dimensions.(9) Recycling is finding another use for an existing garment or in the term of textiles. It sometimes also means converting waste into reusable materials. The process of recycling textiles can also include the breakdown of high grade materials into their purest raw forms or substrates. It usually involves finding another use or user by re entering in the market. However, Upcycling fashion includes value addition on the existing good or disassembly of a garment to create a product of higher quality or value than the original.(10) Traditionally, luxury meant high quality, expensive products usually defined with status and exclusivity. However 'new luxury' incorporate the concept of closed loop design, with the efficient and zero waste manufacturing, retailing and disposal of the good. Environmental and human ethics guide the formation of new luxury goods.(11) The ethical fashion aims to reduce the negative impact on people, animal and the planet while the making till disposable of goods. The process of producing an item of clothing involves design, labour and materials and ethical fashion is considerate towards planet and people in every step of the way from making until the disposal of the same



Category of Sustainable Fashion	Properties
Biodegradable	<ul style="list-style-type: none"> <li>• Originated from nature</li> <li>• Environmentally friendly</li> <li>• Biologically decomposable</li> <li>• Reduces need for new materials use</li> <li>• Prevents waste</li> </ul>
Recycled/ Upcycled	<ul style="list-style-type: none"> <li>• Close looped fashion</li> <li>• Upgrades the quality/ value</li> <li>• Permit new purpose</li> </ul>
New Luxury	<ul style="list-style-type: none"> <li>• Small scale production</li> <li>• Custom made</li> <li>• Durable</li> <li>• High quality</li> <li>• Zero waste</li> <li>• Durable</li> </ul>
Ethical Fashion	<ul style="list-style-type: none"> <li>• Ethically sourced and produced</li> <li>• Free from human exploitation</li> </ul>

**Table 1: Categories of sustainable fashion**

Preferably, these fashion categories should be used to increase sustainable business performance, as implementation of one while neglecting others does not satisfy the need of sustainable clothing requirements

**Conclusion:**

This study aimed to focus on customer purchasing interests towards sustainable fashion and aspects influencing their buying decisions. This is to gain understanding about the environmental and social problems which fast fashion is creating as well as consumer's stand about sustainable fashion. The results of the study contribute to improving the environmental and social impact across the entire process of the value chain of the fashion industry. By suggesting the core values and different categories of sustainable fashion this research can help consumers to differentiate an actual sustainable brand and a green washed brand. This research shows the importance of sustainable fashion on environmental and social practices and ultimately communicates with consumers in the fashion industry. This can help to build domestic sustainable brands as well as consumers can easily understand sustainable fashion and can spread value utilization culture. Today's global consumers are highly conscious about eco-friendly value utilization and needs accurate information about the same. Building



brands and goods through sustainable core value will increase consumer understanding about sustainability and promote purchase.

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