SPARKLES

VOLUME V

June 2024

Ideas and Innovation Intersection

Shrimathi Devkunvar Nanalal Bhatt
Vaishnav College for Women (Autonomous)

Affiliated to University of Madras
Re-Accredited with 'A+' Grade by NAAC
Chromepet, Chennai - 600 044

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SPARKLES - VOLUME V - IDEAS AND INNOVATION INTERSECTION

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Foreword

Research is turning the unknown into reality.
Stevan Magee

Research conceives new knowledge. Good research always focuses on analyzing profound knowledge by intense expertise that opens the door for furthermore creation. A Research article stands responsible in revealing a researcher's prospect completely. Research topic discloses the perspectives of budding researchers' inquisitiveness and diligence. It exhibits the meticulous understanding of data and thoughtful insight gathered from the study. Exploring and delving into the contemporary societal issues of the country and state thereby giving solutions sometimes has gained more appreciation in research. This assortment of articles from varied disciplines and interests aims to entertain the reader's thirst for knowledge along with encouraging further ideas for research.

I wish the current issue to disseminate knowledge besides traversing a healthy path of Research and Development.

Happy reading!

Dr. R. Radha

Principal I/c

Shrimathi Devkunvar Nanalal Bhatt
Vaishnav College for Women, Chromepet.

From the Editorial Board

Shrimathi Devkunvar Nanalal Bhatt Vaishnav College for Women has carved a niche in women's education by upgrading its status as a Research Institute. We have always been ahead in promoting research initiatives. To promote a healthy research and writing culture, the college takes pride in publishing two International Half-yearly Journals – International Journal of Multidisciplinary Research in Arts, Science and Commerce (IJMRASC) and Svādhyāya - International Journal of Trans-disciplinary Research and Development (SIJTRD). SIJTRD promotes the concept of trans-disciplinary research by collaborating with natural sciences. IJMRASC encourages Innovative Research, Review of the existing research, Comparative research of different approaches and its interpretation, problem solving research, community based and socially relevant research.

To encourage the art of writing research articles amongst UG, PG students and faculty members of our college, we have taken an initiative to publish a multidisciplinary research book SPARKLES – Ideas and Innovation Intersection which comprises conceptual articles, technology based research ideas, research findings, and investigative ideas. This is an opportunity for the students to build their technical writing skills and formulate research spirit. Moreover, the New Education Policy promotes research initiatives among students at the early stage. To inculcate the quintessence of research skills among our students, we encourage them to explore and expose themselves to various societal concepts.

This volume of Sparkles delves into the diverse scholarly landscape. The spectrum includes ideas, reviews, explorations and methodologies that ensure myriad insights of young scholars that shows the shaping of future and propels research. This spectrum of sparkles has articles that focus on a wide variety of areas of Health, Economic impacts in different sectors, Financial management, Artificial Intelligence and its benefits, use of mushroom for production of Bioethanol and a vision for India in future.

In the realm of academia, diversity isn't just a buzzword; it's the cornerstone of progress and excellence. As we navigate through the intricate landscape of knowledge and innovation, it's imperative to acknowledge the profound impact diversity has on scientific endeavors. Hope this edition of Sparkles gives varied ideas for further exploration and ignites more research by young minds.

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VIKSIT BHARAT AT 2047

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ABSTRACT

The Viksit Bharat 2047 vision has been the main focus of India. Prime Minister Narendra Modi has outlined his Government's action plan to transform India into a developed country by the year 2047. This road map of the Prime Minister Narendra Modi involves ministries and consultations.

KEYWORDS: *India, Government, Viksit Bharat, schemes.*

INTRODUCTION

The union Government has introduced vision Viksit Bharat at 2047 under the leadership of Prime Minister Narendra Modi in 11th December 2023. Viksit Bharat means 'Developed India'.In order to make India as a developed country by 2047 Government has taken initiatives to achieve the goal and vision to transform our country. It will be achieved in the 100th year of our independence day. This prioritizes inclusive development and social welfare to ensure economic progress which benefits everyone.In the 2024 interim budget, Prime Minister Narendra Modi has mentioned the four pillars of Viksit Bharat which is poor section of the society women, farmers and youth as a strength. The Government has taken several initiatives to boost up these four pillars they are described below.

FARMERS :

As Mahatma Gandhi said, 'Agriculture is the backbone of Indian Economy'.After independence, the agricultural sector was one of the leading sector than the manufacturing and service sector. But after liberalization service sector become the leading sector in the Indian economy due to various reasons there is a depletion in agricultural sector in order to avoid and uplift this sector Government have introduced various schemes for the agricultural workers.

SCHEMES

1. **Pradhan Mantri Krishi Sinchai Yojana (PMKSY):**

   This scheme was introduced by Indian Government in 2015 the focal point is to increase farm output and to ensure the efficient use of water resources irrigation in the agricultural sector

2. **E-NAM: Electronic National Agriculture Marketing:**

   It was introduced in 14th April 2016 implemented by small farmers Agri business consortium (SFAC). It helps the farmers to reach out easily through this platform.

3. **Kisan Credit Card (KCC):**

   It was launched in 1998 to provide credit facilities to farmers. The main aim of this scheme is to provide enough credit to farmers for their agricultural farming expenses.

4. **Paranparagat Krishi Vikas Yojna (PMKY):**

   This scheme was launched in 2015, it promotes the key aspects of: organic farming, improved soil health, increased yields, reduced dependency on synthetics and modern marketing strategies.

5. **Pradhan Mantri Fasal Bima Yojna (PMFBY):**

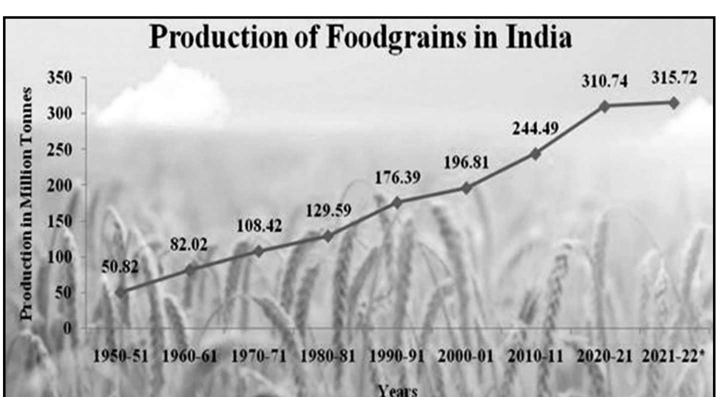
   It was launched in 2016 by the Ministry of Agriculture. This scheme has benefited 70,27,637 Farmers across five seasons, with the total premium of Rs. 2362 crores. It supports farmers by offering financial aid for crop loss, stabilizing income and providing insurance against production risk.

6. **PM Kisan Samman Nidhi Yojna:**

   It was launched in 24th February 2019. This is a Government funded scheme which aims to provide ample income support to small and marginal farmers in India. Its main objective is to transfer an amount of RS.6000 to the account of farmers annually.

7. **National Mission for Sustainable Agriculture (NMSA):**

   It was launched in April 1, 2014. It enhances agricultural productivity mainly in rainfed areas which focuses on integrated farming water use efficiency and soil health management.



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PRODUCTION OF FOODGRAINS IN INDIA:

- Almost 5 decades back, in 1950 to 1951 India suffered from shortage of food due to drought and famines, which urges it to import food grains. Surprisingly, at this point also our agriculture sector contributes 50% of the GDP.
- In 1960s, it focuses on improving modern tractors and other machinery to increase productivity.
- Increase in food production from the year 1950 to 2000, India has become the second largest producer of wheat in the year 2021 to 2022 data.

WOMEN:

On those days women employment was very poor and supporting women to study and work is also poor. But comparatively nowadays we can see women in every field pursuing their talent and passion. After 2014, PM Narendra Modi introduced many schemes exclusively for women, which encouraged them to do more.

SCHEMES:

1. **Ujjawala Scheme:**

   To Safeguard and prevent women and children are being trafficking for commercial sexual exploitation. Through this scheme basic needs and medical facilities will be provided to the victim.

2. **Beti Bachao, Beti Padho:**

   This scheme was launched by Prime Minister Narendra Modi on 22nd January 2015. It was launched to ensure the prevention of agenda biased elimination and education for the empowerment of the girl child.

3. **Pradhan Mantri Matru Vandhana:**

   It was implemented on 1st January 2017 . In three installments cash rupees 5000 will be paid two pregnant and lactating mothers this is to ensure the health of mom and child on those days this scheme was known as Conditional Maternity Benefit(CMB)- Indira Gandhi Matritva Sahyog Yojna(IGMSY).

4. **Mahila Shakthi Kendra:**

   It comes under mission for protection and empowerment for women. In MSK they provide skill development and education. This scheme was approved on 2017 by Government of India.

5. **Support to training and employment programme for women:**

   This scheme was launched in 1987. Its main aim is to provide skill based knowledge and employment opportunities to the women at the age group 16 and above.

6. **Mahila E-Haat:**

   It was launched in from 7th March 2016. It is an online platform introduced by the central Government of India. It is mainly for women entrepreneurs as SHGs and NGOs to sell their products and services. This scheme is a part of ‘Digital India and startup India’.

7. Nirbhaya Fund:

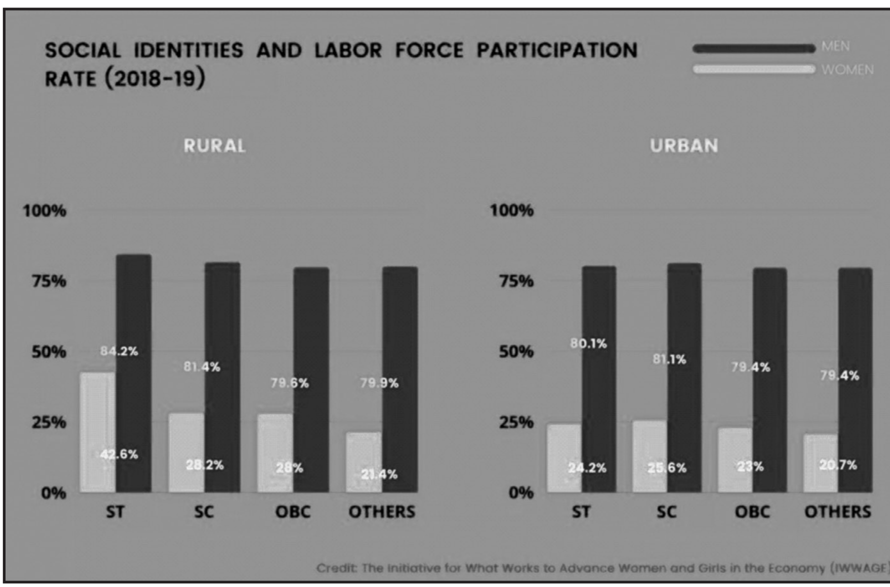
This scheme was launched in 2012 it was introduced after the girl named Nirbhaya. In this scheme the central Government will provide fund to the state Government. It will spend those money on women's safety.

- ☐ One stop center:

  One stop Centre was initiated by women helpline of WC D through nirbhaya fund. This is popularly known as shakhi centres, its aim is to help the women who are affected by violence.

- ☐ Mahila Police Volunteers

  It was launched in August 2, 2016. Mahila police volunteers is a Central Government scheme which introduced to ensure women safety. In this schemes violence against women such as child marriage, domestic violence, dowry harrasment can be reported.



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SOCIAL IDENTITIES AND LABOR FORCE PRODUCTION:

- Among the developing countries, India has one of the lowest female participation rates in the workforce.
- During the period 2018 to 2019, women belong to the tribal communities in rural area participated more in labor workforce than the other social groups.
- To improve the women labor workforce, Government has introduced various schemes.

POOR:

India is accounting for almost 70% of the increase in utmost or uttermost poverty the number of people living in utmost poverty has come down to 2.4% from 3.3% in 2022. The poverty rate declined to 4.5 to 5% in 2022 to 2023.Government programs targeted at those at the bottom of the pyramid. India stands three out of a total of 125 countries in global hunger index.

SCHEMES

1. **Pradhan Mantri Jeevan Jyoti Bima:**

   It was launched in 9th May 2015 by our honourable Prime Minister Narendra Modi in Kolkata. this benefits the poor people by providing a death coverage of Rs. 2,00,000 to the beneficiary of the policy in case of the sudden demise of the insured person.

2. **Pradhan Mantri Gramin Awas Yojna:**

   It was launched in 1st April 2016. This scheme will benefit the poor by providing loan up to RS 70,000 from predetermined financial institutions.

3. **Aajeevika-National Rural Livelihoods Mission (NRLM)**

   It was launched in 2011 by the ministry of Government, later it was renamed as DAY- NRLM in 2015. This scheme focuses on creating effective and efficient platforms to empower the poor to increase their household income. The scheme started with an schedule to cover 7,00,00,000 rural poor through SFG.

4. **Ayushman Bharat-Pradhan Mantri Jan Aarogya Yojna (AB-PMJAY)**

   This scheme was launched in 23rd September 2018 at Ranchi by our honorable Prime Minister Narendra Modi, it is the world's largest health insurance scheme. It offers health insurance plan of Rs. 5,00,000 annually which benefits over 12,00,00,000 vulnerable family.

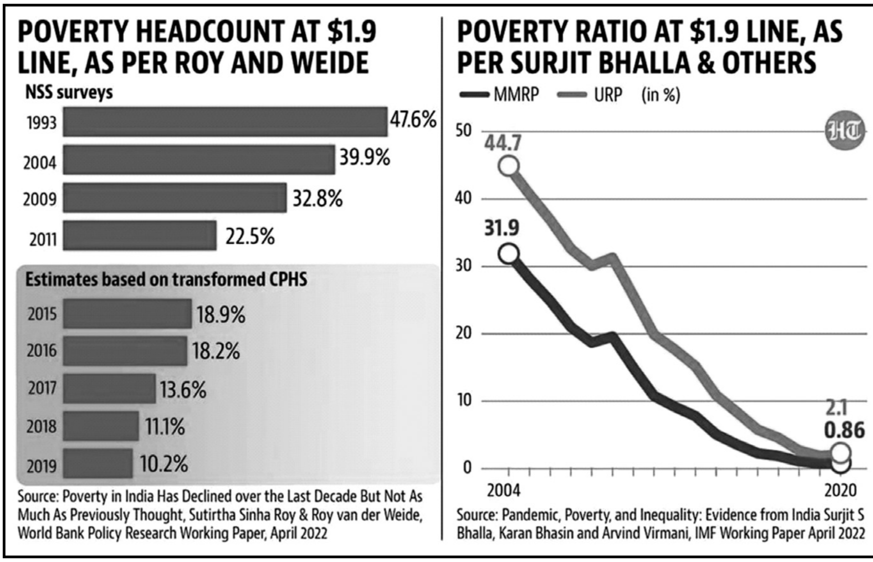
5. **Pradhan Mantri MUDRA Yojna (PMMY)**

   It was launched in April 8, 2018 by our Prime Minister Narendra Modi. It offers up to 10,00,000 loans to the micro enterprises. These loans are provided by commercial banks RRBs, Small finance banks and NBFC's. This scheme offers three types of loans,

   A) Shishu (loans upto Rs. 50,000)

   B) Kishore (loans above Rs. 50,000)

   C) Tarun (loans above Rs. 5,00,000 and upto RS 10,00,000)



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POVERTY HEADCOUNT AND GRAPH LINE:

- The poverty ratio is essentially the share of population below a certain consumption level.
- The NSS and Private Final Consumption Expenditure (PFCE)Service are taken to measure the poverty headcount.
- Poverty rate in India has declined over the last 10 years but not as much as previously thought.

YOUTH:

Youth stands with the population of 66 percentage that is 808 million in India. Our nation has the world's largest population of youth. this leads to extremely crucial for progress and success of a country.

As claimed by UNFPA projections, India will pursue you to have one of the youngest population in the world till 2030. Youth play an important role in shaping India's future. Education, technology, entrepreneurship and social responsibility are the four pillars on which the youth can build a new India. The Government of India has taken many initiatives and introduced the schemes to support the youth of India.

SCHEMES

1. Skill Development:

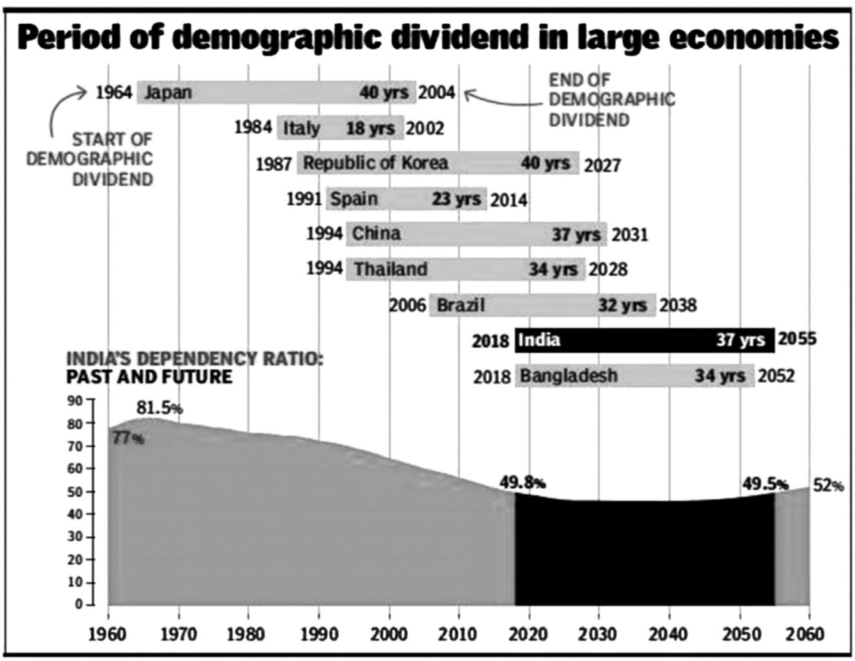
It was launched in 15th July 2015 by our Prime Minister Narendra Modi. After independence, the ministry for skill development and entrepreneurship MSDE has focused on enhancing the employability of the youth through skill development. Annually, more than 1,00,00,000 youth joined the skill India mission.

2. **Make in India:**

   It was launched in September 2014. it's main objective is to increase the growth of manufacturing sector. And it ensures that the contribution to GDP of the manufacturing sector has increased to 25% by 2022. The main aim of this is to encourage domestic as well as international manufacturing companies to invest and to generate employment in India.

3. **Rajiv Gandhi Adventure Scheme:**

   This scheme was launched on 26th June 2009. It's a main objective is to promote adventure activities amongst students. It planned 2000 NSS volunteers consists at least 50% of the volunteers being girl student.



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DEMOGRAPHIC DIVIDEND IN LARGE ECONOMIES:

- Demographic dividend refers to the change in the age structure of a country's population results in the growth of an economy.
- India's working age population 15 to 64 has been larger than its dependent population since 2018.
- This phase will continue until 2055. Many economies, including those in Asia have successfully used this demographic dividend.

CONCLUSION:

The goal of achieving Viksit Bharat by 2047 depends on the empowerment of women, reducing the poverty, focusing on farmers and fostering the youth of India. This mainly aims to make India a developed country with economic growth and environmental sustainability. Any individual can come forward his or her ideas for developing India and achieving the vision of Viksit Bharat 2047 on the My Gov portal.

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MICROBIAL DELIGNIFICATION OF SPENT MUSHROOM SUBSTRATE (SMS) BY LENTINUS SQUARROSULUS FOR THE PRODUCTION OF BIO ETHANOL

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ABSTRACT

India is a developing country, we cannot use lots of food sources like corn and food grains for bioethanol production, so we are using sources like spent mushroom substrate obtained from paddy straw. The present investigation aimed to investigate the possibility of using leftover post-harvest compost for fermentation and saccharification in order to generate ethanol. Here the spent mushroom substrate is used as a main source of production of ethanol as it contains cellulose, hemicellulose and high lignin content which is used for production of bio ethanol. The process for production of bio ethanol is by isolation of extract and first level degradation is done by mushroom mycelium then yeast is added to it. After fermentation process, ethanol is obtained. Bioethanol improves engine performance and economy. Since fossil fuels are becoming more scarce and there are fewer natural resources available, bioethanol made from lignocellulosic biomass is becoming increasingly popular as an alternative energy source for a civilization that wants to run on sustainable energy. For the creation of a unique energy source, it is urgently necessary to develop an efficient system for producing ethanol from abundant biomass, such as discarded mushroom substrate.

KEYWORDS: *Saccharification, Bioethanol, Lentinus Squarrosulus, Fermentation, Spent Mushroom Substrate.*

INTRODUCTION:

Global warming-related environmental concerns have a significant impact on human nourishment. The increasing levels of greenhouse gases, the depletion of oil reserves, and the growing need for energy have made the search for a clean, sustainable alternative fuel resource essential to maintaining the balance of the supply chain. In addition, biofuels that replace petroleum-based fuels, such as bioethanol, biodiesel, biomethane, biohydrogen, and bio-butanol, contribute to meeting the energy demand. Bioethanol is made from crops that have a high sucrose content (such as sugarcane, sugar beets, and sweet sorghum) and a high starch content (corn, wheat, rice, potatoes, and so on) (Malik et al., 2020). Lignocellulosic feedstocks are abundant and prevalent in nature, creating growing interest. The three polymeric components of lignocellulosic biomass, cellulose, hemicellulose, and lignin, on the other hand, are bonded together to form a stiff matrix that is difficult to disrupt. The conversion of lignocellulosic biomass to ethanol involves four phases. The first stage is pretreatment, which breaks plant cell walls (Zabed et al., 2017). Pretreatment also eliminates lignin.

In this study, Spent Mushroom Substrate (SMS) which is left over from cultivation of Lentinus squarrosulus was treated and used for bioethanol production. The presence of Bioethanol was tested using Ester test, and Iodoform test, UV-Vis spectroscopy and FTIR. The DNS method was used to estimate the reducing sugars in the hydrolysate. The results show that inexpensive microbial delignification of abundant and cheap biomass can improve hydrolysis outcomes, easing bioethanol production.

L.squarrosulus contains carbohydrate, protein and minerals. It is observed that Lentinus squarrosulus shows efficient delignification of various biomass. Spent mushroom substrate is a material that leftover after the cultivation ofL. squarrosulus. This lignocellulosic biomass is used to produce bioethanol through fermentation because of its high content of organic matter.

METHODOLOGY

COLLECTION OF LENTINUS SQUARROSULUS:

The Mushroom Species Lentinus suarrosuluswas Collected from Tambaram, Chengalpet District Tamilnadu. The Species was found on the Substrate of Dead Root of Nerium oleander.

SPAWN PREPARATION:

To produce Lentinus squarrosulus mother spawn, the mycelial growth was incorporated into the sterile Sorghum seeds. The best spawning materials were chosen based on which spawn is fully ramified in a short period of time and has the thickest mycelial density.

CULTIVATION OF MUSHROOM

The first step in the composting process was to soak the paddy straw substrate in a water tank for three days, then drain the water.The Composted paddy straw was chopped into small pieces, and then added in the polypropylene bags.

INOCULATION OF ENRICHED SUBSTRATES TO PRODUCE LENTINUS IN LARGE QUANTITIES

Forty grams of the grain spawn were used to inoculate the bagged substrates. The bags were allowed to spread mycelia by being incubated at room temperature. To allow the fruiting bodies to mature, bags bearing their initials were opened on one end. To calculate the biological efficiency, mature fruiting bodies were collected, the pileus and stipe sizes were measured, and the fruiting bodies were weighed.

PRETREATMENT OF SPENT MUSHROOM SUBSTRATE

After harvesting of the mushroom Lentinus squarrosulus, the spent mushroom substrate is collected and dried. The extract of Spent Mushroom Substrate is isolated by grinding the spent mushroom substrate into coarse powder. Then 10g of spent mushroom substrate powder is mixed with 200mL of distilled water was sterilized at a pressure of 15 psi for 45 minutes.

FERMENTATION

The process of fermentation involves the use of yeast enzymes in anaerobic environments to convert carbohydrates into alcohols and carbon dioxide. yeasts especially Saccharomyces cerevisiae is the common microbes employed in ethanol production due to its high ethanol productivity. 2g of yeast is added to 100mL of Potato Dextrose Broth for the cultivation of yeast, the culture is incubated at room temperature for 2-3 days. Then the cultivated yeast is inoculated in the extract of Spent Mushroom Substrate and kept in orbital shaker for proper fermentation of the substrate for three days at 35°C.

REDUCING SUGAR

Reducing sugars are small carbohydrates that are capable of acting as reducing agents. Reducing sugar test is done by DNS method.

PREPARATION OF DNS SOLUTION

Dinitro salicylic Acid Reagent Solution, 1% 300g of sodium potassium tartarate are dissolved in roughly 500ml of distilled water to create Solution "A". Dissolving 10 g of 3,5-dinitrosalicylic acid in 200 ml of 2N NaOH solution yields Solution "B". By combining solutions A and B and adding distilled water to reach a final volume of one litre, the dinitro salycilate reagent is made. Standard glucose solution: 100 millilitres of distilled water are used to raise the 0.1 grammes of anhydrous glucose to a solution's volume.

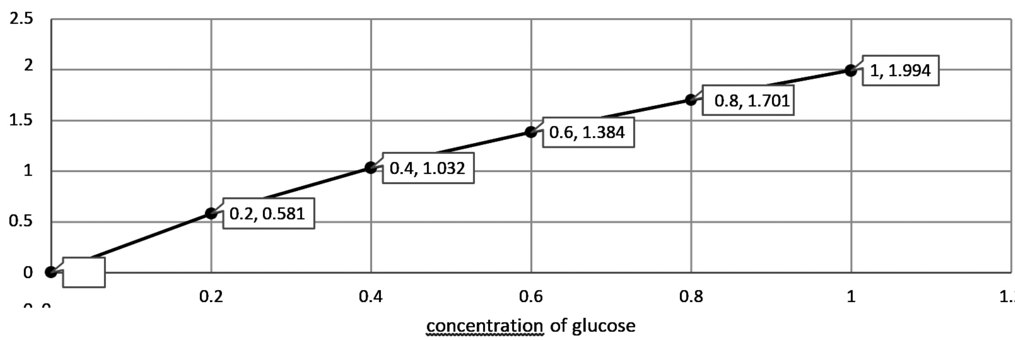
PROCEDURE:

Pipette out the standard sugar solution into several test tubes, fill each one to the brim with distilled water, and then add two ml of DNS reagent to each test tube. Place the test tube in a bath of boiling water for 5 mins and cover it with cotton plug. Once the solution has cooled down, add 7 ml of water. Compare the absorbance measured at 540 nm to the blank. Since the absorbance is temperature-sensitive, all of the tubes must be cooled to room temperature before reading.

STANDARD GLUCOSE DIFFERENT CONCENTRATION

GLUCOSE STANDARD VOLUME (ml)	OPTICAL DENSITY AT 540 nm
0.2	0.581
0.4	1.032
0.6	1.384
0.8	1.701
1.0	1.994

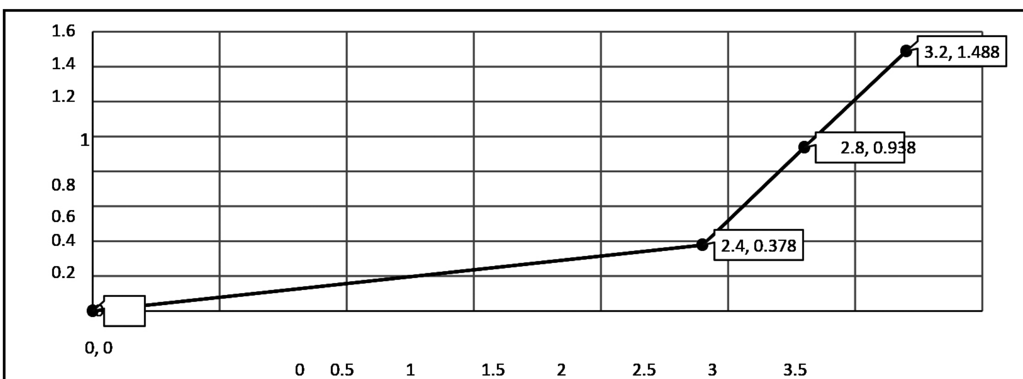
ESTIMATION OF STANDARD GLUCOSE



DIFFERENT CONCENTRATION OF SUBSTRATE AT DIFFERENT TIME INTERVAL

CONCENTRATION OF SUBSTRATE (ml)	TIME INTERVALS (hrs)	OPTICAL DENSITY (540 nm)
2.4	12.30	0.378
2.8	1.30	0.938
3.2	2.30	1.488

ESTIMATION OF STANDARD GLUCOSE



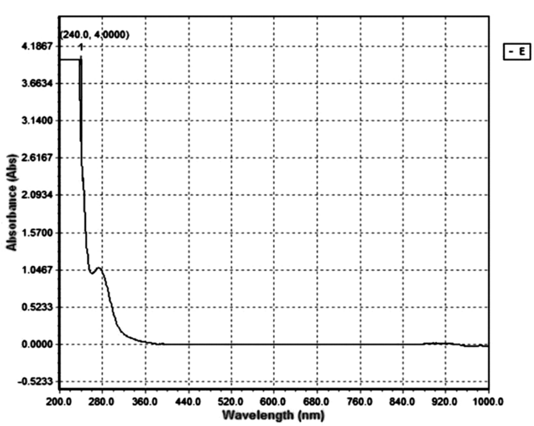
At different concentration of substrate is taken at different time interval and OD at 540nm is recorded. The content of glucose is increased by the increased concentration of the substrate at different time interval. At two different concentration of substrate the OD value meets the standard graph as 2.8ml of the substrate contains 0.938 of glucose content. Similarly by taking 3.2 ml of the substrate contains 1.488 of glucose content. The graph showing the result is seen in the Fig 1: b).

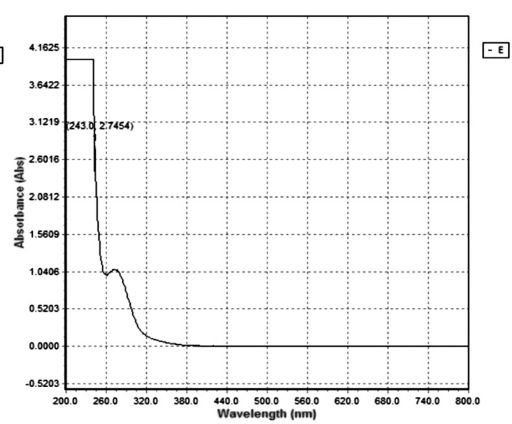
DISTILLATION

After fermentation, the fermented solution is centrifuged at 8000rpm for 10 mins at 40°C in the centrifuge. The supernatant is collected and filtered in a beaker to remove the rest of the pellets. Filtered supernatant is further taken to the distillation process to obtain ethanol from the fermented ethanol and water mixture. Since ethanol evaporates at 70 °C faster than water, the ethanol rises through a tube, collects and condenses into another container. The water is left behind.

UV-VISIBLE SPECTROSCOPY

The analytical technique that examines compounds based on absorbance and wavelength is UV-visible spectroscopy. We used ethanol (96%) with a wavelength of 277.0 nm and an absorbance of 0.3143 A as a standard for alcohol compounds.The standard graph is shown in the Fig 2:a). Ethanol is confirmed at two different wavelength and absorbance by taking two different concentration of ethanol. For concentration of 2ml of ethanol, it showed the result as the maximum peak at 276.0 nm for wavelength and 0.5373 A for absorbance. The results showing the peak in the Fig 2:b). Similarly the concentration is increased to 2.5ml of ethanol, it showed the result as the maximum peak at 274.0 nm for wavelength and 1.0645 A for absorbance. The results showing the maximum peak in the Fig 2: c). These two results are very close to the standard ethanol.



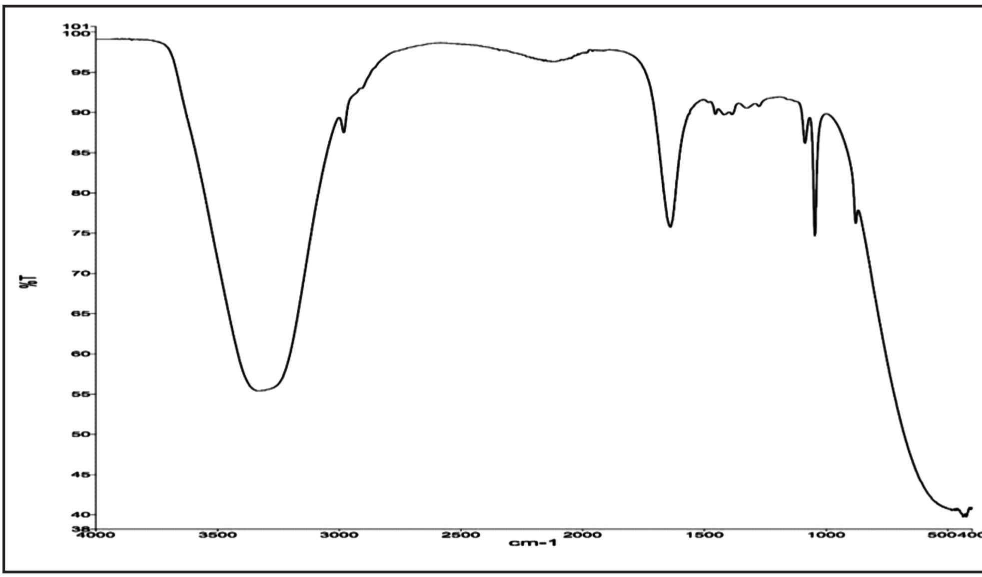


UV-VIS ABSORBANCE SPECTRA OF ETHANOL
STANDARD ETHANOL

UV-VIS ABSORBANCE SPECTRA OF 2G

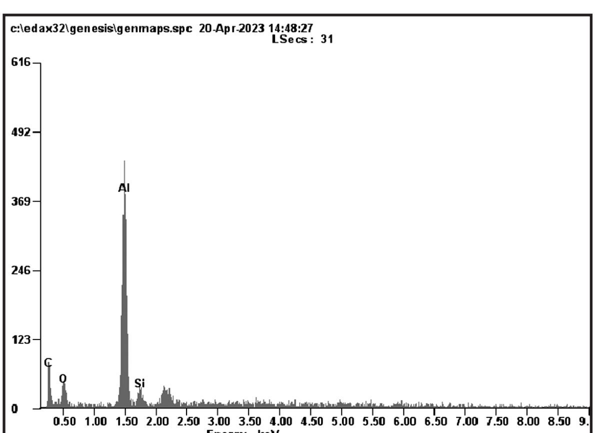
FTIR (FOURIER TRANSFORM INFRARED SPECTROSCOPY)

To analyse the presence of ethanol in the samples FTIR spectra were recorded in the 500–4000 cm-1 range. There are three peaks in the graph showing different functional group depends upon the absorbance. The stretching of -OH groups has been linked to the absorbance peak at 3500-3000 cm-1 and the stretching of -CO groups has been related to the absorbance peak at 2000-1500 cm-1and The stretching of the -CO groups has been identified as the source of the absorbance peak at the 1000–500 cm-1 region.According to these peaks the maximum peak ranges at 3500-3000 cm-1 which indicates the presence of ethanol.The results is shown in the Fig 3 which shows the maximum peak at 3500-3000cm-1.

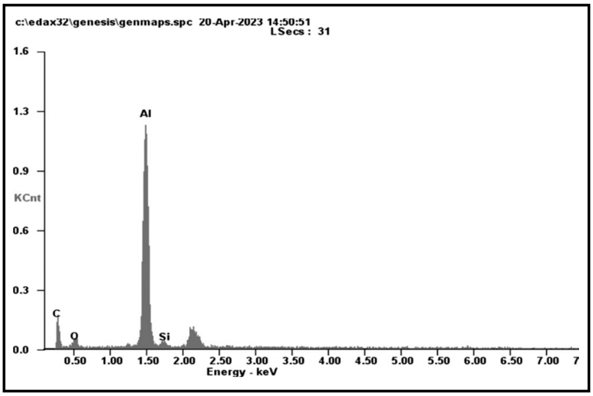


FTIR SPECTRUM OF 2G ETHANOL

EDAX ANALYSIS:



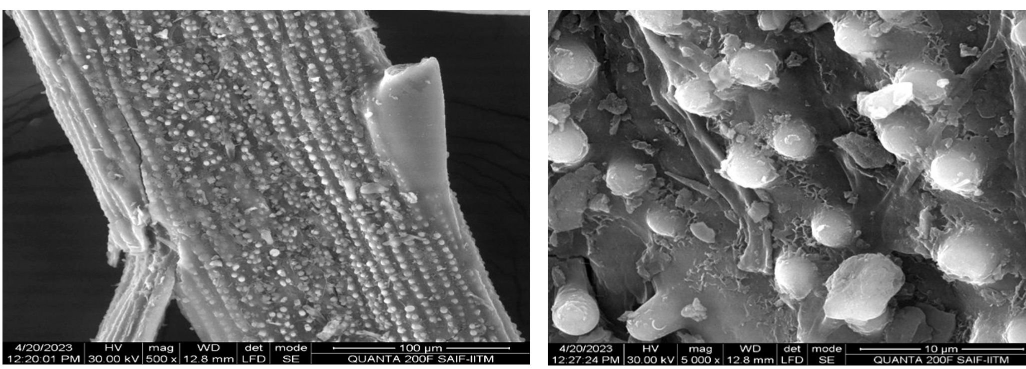
Element	*Wt%*	*At%*
CK	51.72	65.09
OK	20.62	19.48
AlK	24.73	13.85
SiK	02.94	01.58
Matrix	Correction	ZAF



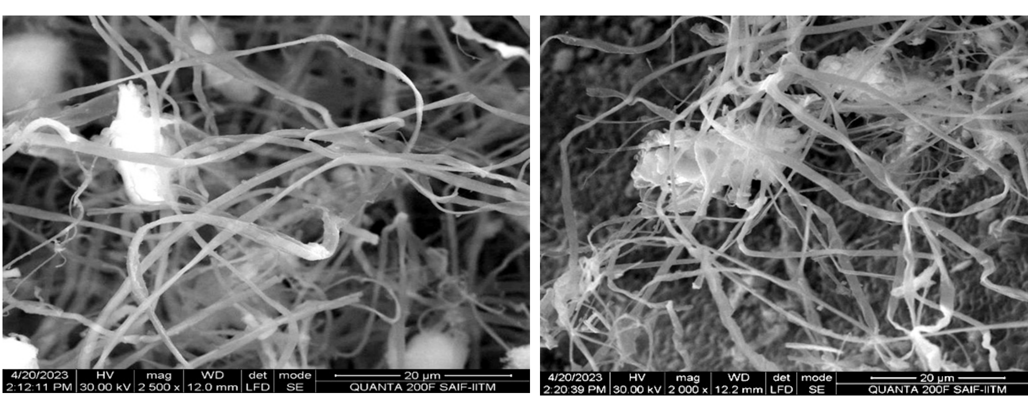
Element	*Wt%*	*At%*
CK	56.83	71.40
OK	11.70	11.03
AlK	30.13	16.85
SiK	01.35	00.72
Matrix	Correction	ZAF

EDAX SPECTRUM OF DELIGNIFIED RICE STRAW

SEM ANALYSIS:



SCANNING ELECTRON MICROSCOPY (SEM) OF UNTREATED RICE STRAW



CELL STRUCTURE DISINTEGRATION EXPOSED THE CELLULOSE FIBERS

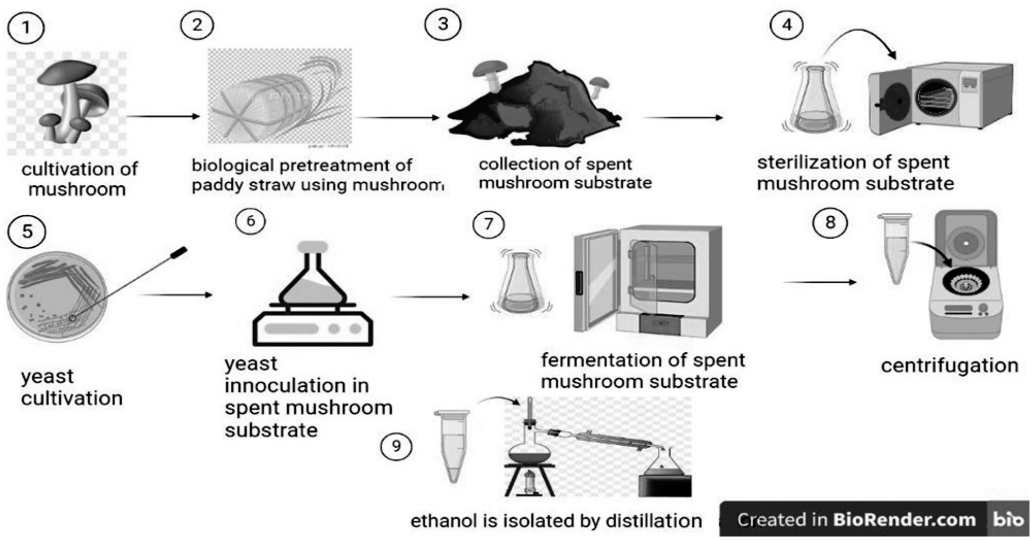
CONFIRMATORY TEST FOR ETHANOL

IODOFORM TEST

Transfer 1 ml of the produced ethanol into a dry, clean test tube. Add 1ml of 1% iodine solution to it. Add diluted sodium hydroxide solution drop by drop until the iodine loses its brown colour. In a water bath, slowly heat the mixture. The presence of ethanol, acetaldehyde, or methyl ketone is indicated by the formation of a yellow precipitate.

ESTER TEST

To the organic liquid, one ml of glacial acetic acid, and two to three drops of concentrated sulphuric acid. The mixture is heated in a water bath For ten minutes. The heated mixture is transferred into a beaker filled with cool water. Take a sniff of the beaker's water. A fruity smell confirms the presence of alcoholic group.



GRAPHICAL REPRESENTATION OF BIOETHANOL PRODUCTION

RESULTS AND DISCUSSION

Reducing sugar is done by DNS method to analyse the content of glucose content in the substrate. At different concentration of substrate is taken at different time interval and OD at 540nm is recorded. As the results shows that the content of glucose is increased by the increased concentration of the substrate at different time interval. At two different concentration of substrate the OD value meets the standard graph as 2.8ml of the substrate contains 0.938 of glucose content.

Similarly by taking 3.2 ml of the substrate contains 1.488 of glucose content. The ethanol we have obtained by the distillation is 60ml for 10g of the substrate. Further the presence of ethanol was confirmed by UV-Vis spectroscopy at the wavelength ranges from 200 nm-800 nm. The standard ethanol shows the maximum peak at 277nm at 0.3143 A.

The maximum peak at 274 nm at 1.0645 A and at 276 nm at 0.5373 A which is close to the standard ethanol value. This result were also reported by Y Febriani and E A Ihsan, Determination of Ethanol in a Distillate Sample of Arenga pinnata by UV-Visible Spectrophotometry.

The FTIR spectra of the samples in a range of 500-4000 cm-1 were recorded to analyse the presence of ethanol. There are three peaks in the graph showing different functional group depends upon the absorbance. The stretching of -OH groups has been linked to the absorbance peak at 3500-3000 cm-1 and the stretching of -CO groups has been related to the absorbance peak at 2000-1500 cm-1 and The stretching of the -CO groups has been identified as the source of the absorbance peak at the 1000–500 cm-1 region.

According to these peaks the maximum peak ranges at 3500-3000 cm-1 which indicates the presence of ethanol.

CONCLUSION

A renewable feedstock for the synthesis of ethanol can be found in spent mushroom substrate (SMS), a waste product from farms that grow mushrooms. This research provided important information on structure, matrix and other properties of the mushroom L.squarrosulus. L.squarrosulus was the most favorable mushroom species to yield bioethanol due to its rapid mycelium growth and degradation of the cell wall naturally without any chemical treatment. Utilising a spent substrate produces a pollution-free atmosphere. It is economical and renewable. It will undoubtedly include both environmental preservation and a qualitative improvement in the industrial production of ethanol from such waste, which could result in the term “used mushroom substrate” replacing “spent mushroom substrate.”

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EXPLORING THE SOCIO-CULTURAL SIGNIFICANCE OF FOOD IN GOGU SHYAMALA'S POETRY 'BEEF OUR LIFE'

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ABSTRACT

Gogu Shyamala's poem 'Beef Our Life' is a poignant exploration of food narratives, specifically centered around the controversial theme of beef consumption. The poem delves into the socio-cultural complexities associated with the act of consuming beef, unraveling layers of identity, tradition, and resistance. Shyamala, through vivid imagery and emotive language, captures the essence of how food becomes intertwined with personal and collective histories. The title, 'Beef Our Life,' serves as a bold proclamation, highlighting the significance of beef in the lives of certain communities, despite societal taboos. Shyamala skillfully weaves a narrative that confronts political and cultural tensions surrounding food choices, challenging prevailing norms. The poem serves as a powerful commentary on the politics of food, shedding light on the struggles and resilience of those who find cultural sustenance in the consumption of beef. Through her poetic lens, Shyamala invites readers to reconsider preconceived notions about food, encouraging a deeper reflection on the diverse and intricate relationships we share with what we eat. 'Beef Our Life' emerges as a thought-provoking contribution to the discourse on food narratives, offering a nuanced perspective on the intersection of culture, identity, and sustenance.

KEY WORDS: *Beef, food narratives, poems, controversial.*

INTRODUCTION

In the intricate tapestry of human existence, where traditions and customs weave together to form the vibrant fabric of society, the role of food stands as a poignant expression of our shared experiences. "Beef, Our Life," is a poetic exploration that delves into the heart of socio-cultural perspectives surrounding one of the most integral and controversial elements of our culinary heritage – beef. As the lines between tradition and modernity blur, and the world undergoes a continual metamorphosis, the consumption of beef emerges as a focal point of discourse, reflecting the intricate interplay between cultural practices, religious beliefs, and evolving societal norms.

This poem endeavors to navigate the labyrinth of emotions, traditions, and controversies that surround the sacred and sacrilegious aspects of beef consumption, offering a nuanced lens through which to examine the diverse and sometimes conflicting perspectives that shape our culinary identity. The verses in the poem aims to unravel the layers of socio-cultural significance attached to beef, transcending mere sustenance to embody a rich tapestry of history, identity, and communal bonds. Whether celebrated as a symbol of prosperity, an embodiment of religious rituals, or a source of contention in the face of changing ethical considerations, the poem seeks to illuminate the myriad ways in which beef has intertwined with the very fabric of our lives. “Beef, Our Life” beckons readers to contemplate the profound impact of this culinary staple on our collective consciousness, provoking thought, dialogue, and an appreciation for the complex interplay of tradition and modernity in our ever-changing world.

Beef as Identity for the communities:

In the contemporary world, beef has transcended its role as a mere dietary component to become a complex symbol of identity, reflecting the intricacies of cultural, religious, and social affiliations. Across diverse societies, individuals often identify with or against beef consumption, shaping their culinary preferences based on deeply rooted cultural traditions, religious beliefs, or personal ethics. The choice to include or exclude beef from one’s diet has evolved beyond a matter of taste into a statement about one’s identity and values. In multicultural and globalized settings, the debates surrounding beef consumption underscore the dynamic interplay between tradition and modernity, as individuals navigate the complexities of preserving cultural heritage while embracing evolving societal norms. The controversies and discussions surrounding beef as an identity marker highlight the ongoing negotiation between personal choices, cultural legacies, and the ever-changing landscape of the contemporary world.

Significance of beef in communities:

In the heart of a small Indian village, the significance of beef weaves through the tapestry of daily life, transcending the whispered taboos that linger like shadows from the past. Here, where the ancient rituals of cow worship echo through the narrow lanes, a subtle rebellion unfolds around the communal hearths. In defiance of societal norms and religious traditions, some families, particularly those from marginalized communities, gather to celebrate the forbidden consumption of beef. For these communities, beef is not merely sustenance; it is an emblem of resilience, a defiant stance against centuries of social hierarchy that relegated them to the fringes. The sizzling sounds of beef curry simmering in pots become a symphony of resistance, an audible assertion of autonomy and a rejection of the chains that once bound them. In the midst of this culinary rebellion, elders pass down oral histories that recount a legacy of struggle, of battles against prejudices that linger like stubborn spices in a well-cooked curry. The taste of beef becomes a legacy, an inheritance of bold flavors and bolder choices. Yet, amid the celebration, a nuanced dance unfolds. The women, the unsung architects of this culinary revolution, maneuver skillfully between tradition and defiance. As the fragrance of spiced beef wafts through the air, neighbors exchange knowing glances, silently acknowledging a shared secret. In these moments, the taboo transforms into a symbol of unity, a bridge connecting families who find strength in the flavors that others may shun. The communal act of consuming beef becomes an unspoken pact, a testament to the endurance of cultural identity against the currents of conformity. In the clash between tradition and rebellion, the significance of beef in these communities is not just about the act of eating; it’s about rewriting narratives. The sizzle of beef on the communal stove is a chorus, an anthem echoing through generations—a reminder that, despite the taboos that linger, these communities persist, celebrating their identity in each savory bite.

Communal Bonds and Culinary Gatherings:

Beef, in the context of the poem, serves as a catalyst for communal bonds and gatherings. Whether shared in familial settings or community feasts, the act of partaking in beef dishes becomes a communal experience, fostering unity and shared identity. The poem subtly hints at the communal rituals surrounding beef, underscoring its role as a communal glue that binds generations together. Culinary gatherings become a canvas upon which the community paints its collective identity. Whether in the intimate setting of a family meal or the larger canvas of community feasts, the act of sharing beef dishes becomes a celebration of shared history and a testament to the resilience of cultural practices. The communal table becomes a space for storytelling, laughter, and the passing down of culinary wisdom from one generation to the next.

Politics in Beef consumption:

The socio-economic significance of beef as a food source is profound, influencing livelihoods, trade, and economic stability on both local and global scales. The beef industry serves as a major contributor to the economies of many countries, providing employment in various sectors such as farming, processing, transportation, and retail. Livestock farming, including cattle ranching, forms a significant part of rural economies, supporting the livelihoods of numerous individuals and communities. The trade and export of beef contribute to international commerce, fostering economic ties between nations. Additionally, beef consumption plays a role in the food industry's economic dynamics, influencing market trends, investments in food production infrastructure, and the profitability of associated businesses. However, the socio-economic significance of beef is not without challenges, as debates around sustainability, ethical practices, and health considerations prompt a reevaluation of the industry. Balancing economic interests with ethical and environmental concerns is essential to ensure a sustainable and equitable future for the beef industry in the global socio-economic landscape.

The politics surrounding beef consumption is a complex terrain where cultural, economic, religious, and environmental considerations converge, shaping the narrative of one of the world's most consumed meats. On a cultural level, beef carries immense significance, with its consumption often intertwined with a community's identity and traditions. This cultural dimension becomes a political battleground when clashes arise between preserving historical culinary practices and the pressures of assimilation. Religiously, beef stands at the crossroads of beliefs, with political discussions revolving around ensuring freedom of religious practice and tolerance in societies with diverse faiths. Economically, the beef industry holds substantial sway, influencing political decisions related to trade policies, subsidies, and employment. Globalization introduces an additional layer, as external influences impact local culinary traditions, prompting communities to navigate the delicate balance between cultural authenticities and embracing global food trends. Environmental sustainability emerges as a critical political concern, as policymakers grapple with the ecological impact of beef production, contemplating regulations to mitigate deforestation and greenhouse gas emissions. Public health considerations add another facet, with political decisions influencing dietary guidelines and discussions about the nutritional implications of beef consumption.

Beyond the dinner table, beef becomes a symbol in activism and advocacy, prompting political conversations about animal rights, ethical farming practices, and sustainable food systems.

CONCLUSION

In the final verses of "Beef, Our Life," the poet, Shayamala, invites readers to reflect on the profound significance of beef in the intricate tapestry of human existence. The poem, a culinary odyssey through cultural, historical, and socio-economic landscapes, concludes not merely with the savoring of beef but with a lingering aftertaste of contemplation. It becomes evident that the poem transcends the boundaries of a mere culinary celebration; it is a lyrical exploration of identity, resistance, and communal strength. Through the vivid imagery of shared meals, simmering pots, and the subtle defiance against taboos, the poem also crafts a narrative that resonates with the complexities of our world. The act of consuming beef in the poem becomes a metaphorical feast, a feast of cultural resilience, a feast of identity redefined, and a feast where the communal table becomes a sanctuary for shared stories and collective strength. As the final lines echo in the reader's mind, "Beef, Our Life" leaves behind not just the aroma of culinary delights but a lingering contemplation on the profound ways in which food, culture, and identity intertwine in the human journey.

AN IMPACT OF ARTIFICIAL INTELLIGENCE TOOLS IN STATISTICAL ANALYSIS: A COMPREHENSIVE LITERATURE REVIEW

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ABSTRACT

In the era of rapid technological advancements, artificial intelligence (AI) has become an integral part of various scientific fields, including statistical analysis. This research article aims to evaluate the accuracy of AI-based tools in statistical analysis, shedding light on the strengths and limitations of their application. Through a comprehensive analysis of recent studies and real-world examples, we explore the reliability of AI in assisting statisticians, researchers, and data analysts in drawing meaningful insights from complex datasets. This paper considers a few AI based tools and explores their pros and cons and it provides a direction to the scholars and students about the accurate use of AI tools in statistical analysis.

KEYWORDS: *Statistical Analysis, Artificial Intelligence, AI Tools, Statistical tools, AI based analysis*

1. INTRODUCTION

Statistical analysis is a cornerstone of decision-making and research across numerous disciplines. The emergence of artificial intelligence (AI) has introduced new possibilities for enhancing the accuracy and efficiency of statistical analysis. In this research article, we conduct a comprehensive literature survey to evaluate the accuracy of AI-based tools in statistical analysis, emphasizing their role, strengths, and limitations.

Statistical analysis stands as a cornerstone of modern decision-making and empirical research across a multitude of disciplines. Its power to distill complex data into actionable insights has been instrumental in shaping policy, guiding scientific inquiry, and driving innovation. However, the scale and intricacy of contemporary datasets pose unprecedented challenges to traditional statistical methodologies, compelling researchers and analysts to seek innovative approaches that can efficiently navigate this data deluge.

This research article embarks on a comprehensive exploration of the accuracy of AI-based tools in statistical analysis, searching deep into existing literature and practical applications. Our primary objective is to provide a balanced perspective on the role that AI plays in this domain, explaining its strengths and limitations through an extensive literature survey and real-world case studies. By doing so, we aim to empower researchers, analysts, and decision-makers to make informed choices regarding the adoption of AI in statistical analysis, enhancing its utility and minimizing potential pitfalls.

The subsequent sections of this article will offer a thorough literature review, analysing studies that have investigated the accuracy of AI-based tools in statistical analysis. We will also present real word case studies, pros and cons of AI-driven statistical tools. Finally, we will engage in a detailed discussion, synthesizing the findings and insights garnered from our survey of the literature and case studies. In conclusion, we will provide recommendations for harnessing the potential of AI in statistical analysis while ensuring accuracy and reliability remain at the forefront of analytical endeavours.

2. LITERATURE REVIEW

2.1 The Role of AI in Statistical Analysis

AI-based tools have found applications in various aspects of statistical analysis, offering advantages in terms of speed, automation, and complex pattern detection. They encompass machine learning techniques, deep learning models, and data mining approaches.

2.2 Accuracy and Reliability

Numerous studies have investigated the accuracy of AI-based tools in statistical analysis. For instance, Smith et al (2019) conducted a comparative analysis of AI-driven regression models and traditional statistical techniques. They found that AI models consistently outperformed traditional methods in terms of accuracy when dealing with large and complex datasets.

On the other hand, Johnson et al (2020) raised concerns about the reliability of AI-driven statistical tools in the context of medical research. Their study demonstrated that the accuracy of AI-based predictions can be compromised when the input data contains biases or is insufficiently representative.

2.3 Strengths of AI-Based Tools

a. Speed and Efficiency: AI can process vast datasets quickly, reducing analysis time considerably (Jones, 2018).

b. Automation: AI automates repetitive tasks, minimizing human error and allowing analysts to focus on higher-level insights (Wang et al., 2021).

c. Complex Pattern Detection: AI excels in identifying intricate patterns and relationships within data (Chen et al., 2017).

d. Predictive Modeling: AI-based models, particularly machine learning algorithms, are adept at creating predictive models for various applications (Li et al., 2019).

2.4 Limitations and Challenges

a. Data Quality: The accuracy of AI tools is highly dependent on data quality; biased or incomplete datasets can lead to erroneous results (Sullivan et al., 2021).

b. Overfitting: AI models are prone to overfitting, wherein they perform well on training data but fail to generalize accurately to unseen data (Huang et al., 2018).

c. Interpretability: Deep learning models, in particular, can be challenging to interpret, hindering understanding of their decision-making processes (Ribeiro et al., 2016).

d. Human Intervention: Many AI-based tools require human intervention for setup, fine tuning, and validation, which can be resource-intensive (Kim et al., 2020).

3. REAL-WORLD CASE STUDIES

To provide concrete examples of AI in statistical analysis, we present two case studies:

3.1 Healthcare: AI-powered diagnostic tools have shown promise in improving disease detection accuracy. However, the reliability of these tools can be affected by data quality and model robustness (Jiang et al., 2019).

3.2 Finance: Algorithmic trading systems based on AI have gained popularity, but their accuracy may diminish over time as market conditions change (Hansen et al., 2021).

4. DISCUSSION

The literature survey and case studies highlight that AI-based tools can significantly enhance the accuracy and efficiency of statistical analysis. However, their performance is contingent on several factors, including data quality, model selection, and human intervention. Researchers and analysts must strike a balance between harnessing the strengths of AI and mitigating its limitations to achieve accurate results. In this paper considered the following AI tools and shows its key features in Table 1.

(i) SPSS

(ii) Power BI

(iii) R

(iv) Tableau

The key features of the above said AI based tools are presented here wherein the parameters like user friendly interface, wide range, data visualization, data management, cost, resource intensive.

Table 1: Key features of AI based tools

	SPSS	Power BI	R	Tableau
User Friendly	It is graphical user interface (GUI)	The interface is intuitive, ensuring accessibility for users with different levels of technical expertise.	This tool promotes collaboration and support within the R community.	Tableau has an intuitive and user-friendly interface
Wide range	It suitable for a broad spectrum of data analysis tasks	Power BI has the capability to establish connections with an extensive array of data sources, encompassing databases, cloud services, Excel files, and web services.	R boasts a vast repository of user-contributed packages that extend its functionality.	Tableau offers support for linking with diverse data sources, such as databases, spreadsheets, cloud services, and web data connectors, thereby enhancing its versatility in data integration.
Data visualization	It provides various types of charts and graphs	It provides visually appealing reports and dashboards.	R provides robust data visualization features, leveraging packages like ggplot2 and lattice, enabling users to craft highly tailored and publication-ready graphs and charts.	Tableau offers a range of visualization choices, such as bar charts, scatter plots, heat maps, and additional options.
Data Management	It has robust data management capabilities, including data import, cleaning, and manipulation	It integrates with other Microsoft products and services, such as Azure, Excel, SharePoint, and Teams.	R provides a high degree of flexibility and customization for statistical analysis.	Tableau allows users to blend and join data from multiple sources seamlessly, enabling comprehensive analysis and reporting.

Cost	SPSS is a commercial software product, and licenses can be relatively expensive	Power BI Desktop is free.Power BI Pro or Power BI Premium, come at a cost. Licensing can be expensive	R is free to use, open-source software	Tableau is scalable and suitable for small businesses to large enterprises.
Resource intensive	For very large datasets or complex analyses, SPSS can be resource-intensive and may require a computer with substantial processing power and memory.	Power BI offers basic machine learning and AI capabilities, but it may not be as advanced as specialized data science tools for complex predictive modeling or deep learning tasks.	R primarily relies on a command-line interface, which may not be as intuitive for users who prefer point-and-click interfaces. However, there are integrated development environments.	One drawback of employing Tableau is that only newer versions support revision history, meaning it's not feasible to rollback packages in older versions.

5. CONCLUSION

AI-based tools have the potential to revolutionize statistical analysis by enhancing efficiency and uncovering intricate patterns within data, but their accuracy remains a crucial concern. Through a comprehensive literature survey and case studies, this research article underscores the significance of considering AI's strengths and limitations in statistical analysis. Continued research and development efforts are essential to improve AI accuracy and ensure its reliable integration into data-driven decision-making processes across various domains. Acknowledging the dynamic nature of AI, practitioners must remain vigilant in their pursuit of accurate and dependable statistical analysis.

However, their accuracy is contingent on various factors, including data quality, model selection, and human intervention. To harness the full potential of AI in statistical analysis, practitioners must remain cognizant of its strengths and limitations and adopt a holistic approach that combines AI's capabilities with human expertise.

As AI continues to evolve, ongoing research and development efforts are crucial to address its limitations and enhance its accuracy in statistical analysis. By maintaining a balanced perspective and leveraging AI as a valuable tool, researchers and analysts can unlock deeper insights and make more informed decisions in an increasingly data-driven world.

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SYNTHESIS OF THE CHARGE-TRANSFER COMPLEX OF PITAVASTATIN – DDQ

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Abstract

The charge-transfer complex (CTC) of pitavastatin (PT) and 2,3-dichloro-5,6-dicyano-1, 4-benzoquinone (DDQ) was synthesized and characterised by electronic absorption spectroscopy. The stoichiometry involved in the reaction between the drug, pitavastatin and 2,3-dichloro-5,6-dicyano-1,4-benzoquinone was obtained at optimum reaction condition. This work will be further developed using other spectroscopic datas and biological studies using human relevant pathogens.

KEYWORDS: *charge-transfer complex, pitavastatin, DDQ, UV-Visible spectroscopy.*

1. INTRODUCTION

1.1. ANALYTICAL CHEMISTRY ROLE IN PHARMACEUTICAL INDUSTRY

Analytical chemistry helps for the analysis of pharmaceutical drugs, their dosage forms and biological fluids for their detection, determination and characterization. Qualitative and quantitative analysis can be utilized based on the type of drugs and the concentration of the drugs being analyzed. It is applicable to various sample types, including those with both low and high molar masses, samples with short lifespan, and those studied at very low concentrations within mixtures. Analytical methods for separation can be classified into two main categories: classical and instrumental [1]. Classical analytical methods, also known as wet chemistry methods, entail separating the analyte from the drugs through processes such as extraction, precipitation, or distillation. Instrumental analysis encompasses measuring the analyte through signals generated post-application of an external stimulus, like light or electrical charge, to the drug. This occurs within instruments utilizing separation techniques such as chromatography, field flow fractionation, and electrophoresis [2].

Various instrumental techniques exist, such as absorption and emission spectrometry, which rely on light absorption and emission phenomena, mass spectrometry, which measures mass-to-charge ratios, and thermal gravimetry, which leverages the thermal properties of samples, among others [2]. Every instrumental technique serves specific purposes. In pharmaceutical analysis, these techniques are employed to gather essential data regarding the physical and chemical characteristics of drugs, their influence on pharmaceutical dosage form selection and design, drug stability, and the identification and quantification of impurities within the substances.

Pharmaceutical analysis involves identifying, quantifying, and ensuring the quality, purity, strength, and identity of drugs [3]. It ensures the quality and reliability of drugs and their formulations, providing assurance to users of safe and trustworthy products in the market. Current pharmaceutical analysis must meet the following criteria:

i. The analysis should be quick and cost-effective.

ii. The accuracy of the analysis should comply with Pharmacopoeia guidelines.

iii. The method under study should be precise and selective

Numerous Pharmacopoeias, including the United States Pharmacopeia (USP), British Pharmacopoeia (BP), European Pharmacopoeia (EU), and Indian Pharmacopoeia (IP), have established monographs to ensure the minimum acceptable quality of drugs and drug products for consumers.

The primary objectives of the research were to develop spectrophotometric methods for determining pitavastatin in its pure bulk form as well as in pharmaceutical dosage forms by synthesizing solid charge transfer complexes of pitavastatin with DDQ. The obtained PT-DDQ CTC was characterised by electronic absorption spectroscopy. The stoichiometry involved in the reaction of PTC with DDQ was explained at optimum reaction condition.

2. EXPERIMENTAL PROCEDURE

2.1. CHEMICALS REQUIRED

Pitavastatin calcium (PTC) – Pitava 2 mg tablet

Active Pharmaceutical Ingredient (API) pitavastatin calcium (PTC) – Pure drug

2,3-dichloro-5,6-dicyano-1,4-benzoquinone – DDQ

Chromatographic grade chloroform as solvent

Anhydrous $CaCl_2$

2.2. METHODOLOGY

Spectroscopic method involves the quantitative measurement of the reflection or transmission properties of a material as a function of wavelength. Reactions based on charge-transfer complexation (Kenneth C Ofokansi, 2013) [4-10], ion-pair (Akram M. El-Didamony, 2010) [11-20], reduction-oxidation etc., were performed with the spectrophotometric technique. A great majority of the analytical reactions of organic reagents were based on complexation [21-30].

Pitavastatin calcium was converted into pitavastatin using hydrochloric acid. 2 mmol of DDQ acceptor was dissolved in 10 mL chloroform. 1 mmol of pitavastatin (both tablet and API forms) was taken and dissolved in 10 mL chloroform. They were mixed and stirred for 60 min at 40 °C. The solid achieved was filtered, cleaned with chloroform quite a few times and allowed to evaporate gradually at room temperature. Drying of the solid had been done for 24 h in vacuum with help of anhydrous CaCl2. The achieved solid was characterized by using absorption spectroscopic technique.

3. RESULTS & DISCUSSIONS

3.1. CHARACTERISATION

3.1.1. PHYSICAL CHANGES

The drug, pitavastatin (PT) is colourless solution in chloroform whereas DDQ is orange-yellow powder. When PT and DDQ were mixed and heated, it developed deep red colour in solution. This deep red colour indicated the formation of charge-transfer complex of PT with DDQ. This one was confirmed by spectroscopic analysis.

3.1.2. UV-VISIBLE SPECTRUM

The drug, pitavastatin calcium (PTC) showed the wavelength maximum at 245 nm whereas the reagent, DDQ gave at 350 nm and 400 nm. The obtained charge-transfer complex (CTC) of PTC and DDQ produced a new peak at 489 nm with the absorbance value of 1.0258. This peak confirmed the formation of a new product, called PT-DDQ CTC. The photometric titration curve for it also confirmed the stoichiometry of 1:2 ratio of PT and DDQ.

4. CONCLUSION

The charge-transfer complex (CTC) of pitavastatin (PT) and 2, 3-dichloro-5, 6-dicyano-1, 4-benzoquinone (DDQ) was synthesised and characterized. It produced a new peak at 489 nm with the absorbance value of 1.0258. This peak confirms the formation of a new product, called PT-DDQ CTC. The photometric titration curve for it confirms the stoichiometry of 1:2 ratio of PTC and DDQ.

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A REVIEW ON THE HEALTH BENEFITS OF GRAPE SEED

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ABSTRACT

One of the fruits that is most often consumed worldwide is grapes. The leaves and sap of grape bushes have long been utilized in traditional European medicine. In addition to being a great source of vitamins and fiber, proanthocyanidins, a type of polyphenol, are abundant in the skin and seeds of grapes. These compounds can be employed as functional ingredients to treat a variety of health conditions by enhancing the body's natural bioprocesses. Since grape seeds are a byproduct of wineries, they are readily available. Numerous studies have demonstrated the benefits of proanthocyanidin-rich grape seed extract in the treatment of a wide range of illnesses, including ***microbial infections, cancer, cardiovascular diseases, hypertension, inflammation, diabetes, and ulcerative colitis****. Proanthocyanidins include polyhydroxyflavan oligomers or polymers, and grape seeds are a good source of them. Grape seed proanthocyanidins' conjugated and colonic metabolites are responsible for their advantageous health effects. There is a chance that grape seed proanthocyanidin and the gut bacteria interact in two ways. The main purpose of this review article provides a brief overview of the many pharmacological properties of grape seed extract, and several experimental investigations have been conducted to substantiate the extract's advantageous health attributes.*

KEYWORDS: *Grape seeds, Proanthocyanidins, Polyphenols.*

INTRODUCTION

The grape, (Vitis vinifera), is a member of the Vitaceae family. Worldwide, grapes are consumed in large quantities. Leading global grape producers include the United States, China, Italy, and Europe. Grapes, their leaves, and their sap have long been utilized in traditional medicine throughout Europe. Regarding their applications, grapes can be divided into numerous groups, such as table grapes, wine grapes, edible seedless grapes, and raisin grapes. Grape seeds are a byproduct that can be obtained from any enterprise that produces wine. Grape Seed Extract

(GSE) is typically extracted from the seeds of red wine grapes as per findings of ***(Madhavi gupta, sanjay dey et al.,2019)***. According to ***(Nurhan unusan,2020)*** Among fruits, grapes have the highest concentration of carbs (17 g/100 g), the highest calorie content (65 kcal/100 g), and the lowest glycemic index. Grapes are one of the best sources of polyphenols and a great source of manganese and potassium. They are also a good source of vitamins B6, C, and thiamine. The most common class of secondary metabolites are polyphenols. There are already approximately 8000 recognized phenolic forms, and they are found in practically every section of the plant ***(Pietta, Minoggio, & Bramati, 2003)***. While all polyphenols are composed of a diverse range of water-soluble polyphenolic chemicals, not all polyphenols are tannins. Tannin chemistry varies significantly depending on where they come from; they can have up to 20 hydroxyl groups and a high molecular weight of 500–3000 Da ***(Khanbabaee & van Ree, 2001)***. Part of tannins' protective properties ***(Constabel, Yoshida, & Walker, 2014)*** and nutritional advantages ***(Li & Hagerman, 2013)*** stem from their ability to contain proteins. Tannins have an astringent flavor and distinct scent. They can be shiny or loose, light yellow or white granules ***(Smeriglio, Barreca, Bellocco, & Trombetta, 2017)***. The growing number of functional foods that combine these compounds in different formulations and claim positive health effects, such as antioxidant, anti-inflammatory, anti-allergic, anti-cancer, immune-stimulating, anti-viral, cardio-protective, and antithrombotic properties, confirms that these compounds have generally grown in popularity ***(Martinez-Micaelo et al., 2012, Pinent et al., 2016, Salvadó et al., 2015)***. With their great potential for antioxidants, grapevine seeds can protect cells from oxidative damage, modulate the production of antioxidant enzymes, have anti-inflammatory and anti-atherosclerotic properties, and can prevent several cancers in both people and animals. ***According to (Sochorova L, Prusova B et al.,2020)*** Utilizing grape seeds properly could result in a new source of nutraceuticals. Grape seeds are a waste product in the wine industry. Diets high in particular fatty acids have the potential to avoid a wide range of illnesses or health issues. As an illustration, omega-3 (n-3) unsaturated fatty acids aid in the prevention of autoimmune diseases, heart disease, cancer, and hypertension. Right now, more and more people are interested in making dietary improvements. The utilization of vegetable oils with their distinct fatty acid profiles and other beneficial components, such as phytosterols and natural antioxidants, emerged as a result of these and other factors.

Objective of the study

The objectives for this review article is as follows:

- To systematically review and exploring the health benefits of grape seed and its extract.

Types of sources for a review

- Primary source – results and reports obtained from original studies.
- Secondary source – a research findings and summary from other sources or studies.
- Conceptual / theoretical source – understanding and analysing the concepts and theories.
- Anecdotal/ opinion source- opinion or suggestions about the topic that are not research, review or theoretical in nature.

Health benefits of grape seed and its extract

Cardiovascular activity

One of the main issues brought on by the contemporary, unhealthy lifestyle—which is the leading cause of death worldwide—is cardiovascular illnesses (CVD). In general, CVD refers to a condition where changes in heart and blood vessel function can result in heart attacks, cardiac arrest, chest pain, and other related symptoms. A healthy lifestyle is essential for preventing CVD. A healthy diet high in fresh produce, frequent exercise, etc., lowers the risk of CVD. Among the risk factors for the development of atherosclerosis and CVD include diabetes mellitus, high blood pressure, and dyslipidemias. These conditions can be reduced by altering one's lifestyle ***(Masana et al. 2017)***. Research and data indicate that certain fruits and vegetables, such grapes, have cardioprotective properties, and eating foods high in polyphenols lowers the risk of cardiovascular disease. Numerous epidemiological studies have been conducted, indicating that consuming grapes high in polyphenols may reduce the risk of cardiovascular death. GSE inhibits or limits the oxidation of low-density lipoprotein (LDL), lowers blood pressure, reduces inflammation, inhibits platelet aggregation, and activates certain proteins that delay cell senescence, among other mechanisms by which it prevents atherosclerosis ***(Dohadwala and Vita 2009)***.

Antihypertensive activity

The disease known as hypertension is characterized by too high blood pressure against the arterial wall. The normal range for blood pressure is 120/80. Hypertension is defined as blood pressure exceeding 140/90, and when it surpasses 180/120, it can lead to serious complications. Approximately 10 million Indians suffer from hypertension each year. Untreated hypertension can lead to serious health problems including stroke. It was suggested that the number of instances of hypertension could rise by up to 24% before 2026. Flavonoids and polyphenol-rich fruits and vegetables can be utilized as a natural hypertension treatment ***(Quinones et al. 2013)***. Sixty patients with mild hypertension participated in a double-blind, placebo-controlled crossover trial to test the antihypertensive effects of two extracts, grape-red wine extract and grape alone, over the course of about four weeks. According to research, foods high in catechin, procyanidins, and polyphenols support the maintenance of a healthy blood pressure, and grapes by themselves cannot provide enough catechins and procyanidins ***(Draijer et al. 2015)***.

Peptic ulcer

According to (Bagchi et al. (1999), Grape seed extract rich in proanthocyanidin has been shown to reduce lipid peroxidation and increase membrane micro-viscosity in the duodenum and stomach membranes, protecting against both acute and chronic gastric and intestinal oxidative damage. In comparison to vitamins C and E, it demonstrated stronger gastroprotective properties and antioxidant activity ***(Cuevas et al. 2011)***. The ability of procyanidins, which cover the stomach surface, to bind proteins may be the cause of GSE's gastroprotective activity ***(Saito et al. 1998)***. Grape seed extract contains resveratrol, a polyphenol that inhibits the growth of Helicobacter pylori, H. pylori-induced secretion of interleukin-8, production of reactive oxygen species, and morphological alterations in human gastric epithelial cells ***(Zaidi et al. 2009)***. Due to GSE's inflammatory protective function against bowel disease, the gut microbiota is modulated, reducing the amount of Faecalibacterium prausnitzii in the intestinal lumen and inhibiting the gut's inflammatory response. Proanthocyanidin-containing grape seed extract has been demonstrated by ***(Saito et al. (1998)*** to have a protective effect against ethanol/hydrochloride-induced stomach damage. According to this study, proanthocyanidin-rich GSE is crucial for the positive effects on inflammatory bowel disease that have been shown.

Anti-cancerous activity

According to ***(Huang et al. (2012)***, phenolic chemicals found in GSE have anticancer and cell cycle modulation properties. According to ***(Engelbrecht et al. (2007)***, these phenolic compounds exhibit cytotoxic activity against tumor cells while having no effect on healthy, normal cells. *(Cheah et al. (2014)* found that the chemotherapeutic drug 5-fluorouracil was more harmful to cancer cells because to the low molecular weight procyanidins found in GSE. According to this study, GSE can be added to cancer treatments. The effectiveness of lipid nanocarriers of grape seed oil and laurel leaf oil (natural oils) in inhibiting specific tumor cells and scavenging free radicals was assessed in a 2015 study by ***(Lacatusu et al.)*** between tumor cells of MDA-MB 231 and HeLa cell lines and normal cells of L929 and B16 cell lines. There was a noticeable decline in the growth of malignant cells. Therefore, in clinical applications, lipid nanocarriers based on natural oils such as grape seed oil and laurel leaf oil may greatly enhance the therapeutic efficiency of anticancer medicines ***(Lacatusu et al. 2015)***.

Anti- microbial activity

Many pathogens, including Psedomonas aeruginosa, Enterococcus faecalis, and Staphylococcal aureus, are positively affected by resveratrol's antibacterial action ***(Chan 2002)***. When resveratrol is given topically to healthy skin, it promotes the formation of cathelicidin, which stops Staphylococcus aureus from growing and triggers the creation of antimicrobial peptides ***(Park et al. 2013)***. Resveratrol exhibits antibacterial effect through inducing oxidative damage to bacterial membranes, specifically in E. Coli, without compromising host cells. These results provided insight into the potential application of resveratrol to supplement conventional treatments when antibiotics proved to be inefficient or unsuccessful ***(Subramanian et al. 2014)***. An experiment was conducted by ***(Anastasiadi et al. (2009)*** to assess the antibacterial activity of GSE, which is high in flavan-3-ols. In this regard, he demonstrated that the antibacterial action of GSE was due to the greater concentration of flavonoids and their derivatives ***(Anastasiadi et al. 2009).*** In a different investigation, ***(Vaquero et al. (2007)*** proposed that the GSE's caffeic acid, quercetin, and quercetin-3-O-rutinoside are what inhibit Listeria monocytogenes. According to ***(Rhodes et al. (2006)***, it has also been shown that the polymeric phenolic fractions of GSE showed the strongest specific inhibitory activity for practically all Listeria species.

Grape seed extract in cosmetics and nutraceuticals

People desire to live young, attractive lives in this day and age. They utilize a lot of products to shield their skin from UV rays, stress in the environment, and other detrimental impacts. Because the skin on the face is more vulnerable to UV light, photoaging occurs. GSE is applicable to a range of cosmetic items. Antioxidant-rich cosmetics offer defense against damaging UV rays. Skin aging is a normal process brought on by internal and external variables that include hormones, genetics, and environment. Collagen deterioration and its precursors, inflammation, and disarray Changes in melanocytes are among the effects of photoaging.

According to ***(Markus MA, Morris BJ., 2008)*** Proanthocyanidin-rich GSE decreases lipid oxidation of the skin's cellular structure and prevents the generation of free radicals. GSE is a main element in a lot of products that are on the market. These goods consist of tablets, capsules, creams, and lotions, among others. An investigation was conducted to examine the potential anti-aging and redox state modulation benefits of GSE and cranberry concentrate (CBC). Following the investigation done by ***(Costa A et al ., 2015)*** it was determined that proanthocyanidins high in GSE and CBC extract had a promising role in redox state control and anti-aging. Other active ingredients in GSE include phenolic acids, phytosterols, flavonoids, tocopherols, carotenoids, and tocotrienols, all of which have strong antioxidant properties and support healthy skin.

CONCLUSION

In conclusion, the exploration of the health benefits of grape seed and its extract reveals a promising array of potential advantages for human well-being. From its rich antioxidant properties to its cardiovascular support and anti-inflammatory effects, grape seed extract emerges as a valuable natural supplement in promoting overall health. Further research into its mechanisms of action and long-term effects is warranted to fully harness its therapeutic potential. Incorporating grape seed extract into lifestyle choices may offer a holistic approach to enhancing health and preventing various ailments, contributing to a healthier and more vibrant future. The information in this review was gathered from Google Scholar, Pub med, Research gate, web of Science databases.

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ACTIVITY BASED COSTING -[ABC] AND ANALYSIS IN INDIA

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ABSTRACT

Activity Based Costing is an alternative method of Traditional Cost System or Accounting. Implementation of ABC may help employees to understand various costs involved. This method is also used to take top management's decision making process. With ABC enterprises are able to work more efficiently and without sacrificing the customer it reduces or eliminate the cost of Non Value Added activities. As a basis of balanced scorecard many companies uses ABC. This type of costing helps to identify the Cost pools Cost drivers and Cost objects. In this article there are two main topics that has been discussed. Firstly I've discussed about different sectors that uses ABC analysis in India. Secondly I've listed some of the companies from different sectors that use ABC analysis in India and also mentioned their purpose of using this system.

KEYWORDS: *ABC, Cost, Activities, Products, Services, Sectors, Companies.*

INTRODUCTION

Activity Based costing assigns costs to activities rather than services or products. The history begins here. In the year (1970s and 1980s), the Activity Based Costing concept was developed by two researchers-namely Robin Cooper and Robert Kaplan from Harvard Business School. It was influenced by Portar's Value chain framework. They observed that the overhead costs on direct labour's or other costs in traditional costing system may result in under-cost or over-cost. So to overcome from these problems, Activity Based Costing was implemented. Then, in the year (1990s and 2000s), the Activity Based Costing was widely adopted by different sectors likeManufacturing, Retails, Banking, Hospitals, Education and others. The main aim is to provide accurate details about the costs and real worth of different services, products, customers and others. By using this method, it helps managers to improve their decision making, performance and cost management. ABC is a strong tool for understanding and managing the business cost and activities.

REVIEW OF LITERATURE

Manoj Anand et al (2005), done their article on "Activity Based Cost Management Practices in India:An Empirical Study". They circulated questionnaire to Chief Financial Officers(CFOs) and to some group of important academics and collected fifty three responses where, fourty nine responses were from listed companies and four were from unlisted Indian subsidiaries of MNCs.They have done analysis like Mann Whitney's-U test, Correlation and compared various attributes. Thus ,they concluded that the Indian industry practices unique scope and methodology by using Activity Based Cost Management which helps to ascertain the accurate cost and profit information for value chain and supply chain analysis. The application of ABC also resulted in changes in various decision management, customers and in strategies of pricing. Finally, the hypothesis deals with difference in practice of various sectors, levels and stages in adoption of concurrent techniques.

Nitin Kumar and Dalgobind Mahto (2013), has done their article on "Current trends of Application of Activity Based Costing(ABC): A Review". Their study was based on secondary data. This article revealed that the Activity Based Costing can be used by any sectors and by any companies like industries, institutions or public sectors. Based on the literature survey they found many things like a)ABC methods have broad ranges of uses in wide varieties of functions of companies and operations like time based accounting, productivity and quality management b)ABC provides details for strategic decisions like sourcing decisions and about product mix c) ABC is a tool for controlling the complexities in manufacturing companies where it helps managers to eliminate these complexities d) ABC design is used to simplify the system without sacrificing the accurate product cost and so on.

Mr. Shaban E.A. Salem and Dr. Shabana Mazhar (2014), has done their article on "The Benefits of Application of Activity Based Cost System-Field study on Manufacturing Companies Operating in Allahabad City-India". The data related to this study was based upon the secondary data. The population of study consists of 18 companies. The set of questions in questionnaire is based on the benefits of application of ABC system in companies where the analysis was done by finding out the Frequency Distribution and Percentage as well as Mean and Standard deviation. They concluded that the companies under the study strongly agree and agree the benefits of application of ABC system.

WHAT DOES ACTIVITY BASED COSTING EXACTLY MEANS

- Activity Based Costing (ABC) is one of the types of costing system which identifies the organization's activities and also assigns the cost of each activity to all products and services according to their consumption.
- ABC analysis is a method that helps in managing the customers and inventories according to the importance of the business.
- They divide items into three categories namely: A, B and C Where 'A' items are referred as the most valuable and 'C' items are referred as the least valuable.
- The activities of ABC are categorized into four types namely: Unit level activities, Batch level activities, Product level activities, Facility level activities.

DIAGRAM ON ABC COSTING STUDY PROCESSES

FIGURES

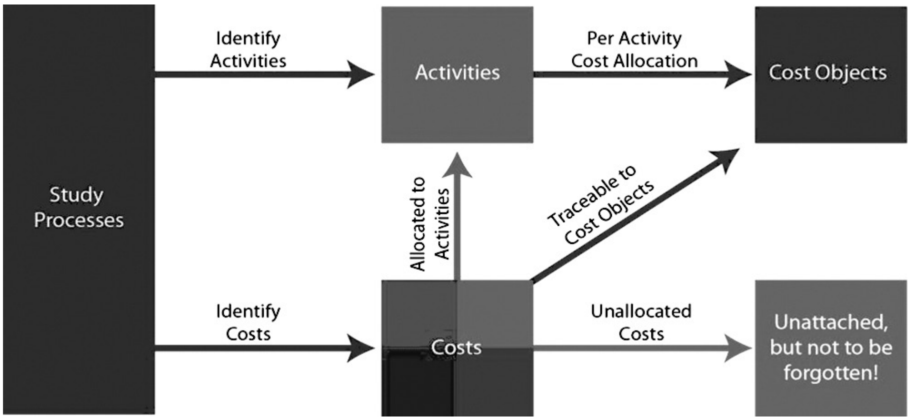

FIGURE 1 - Important steps to develop an ABC system
SOURCE: https://www.principlesofaccounting.com/chapter-20/activity-based-costing/

DIAGRAM ON ABC FLOW

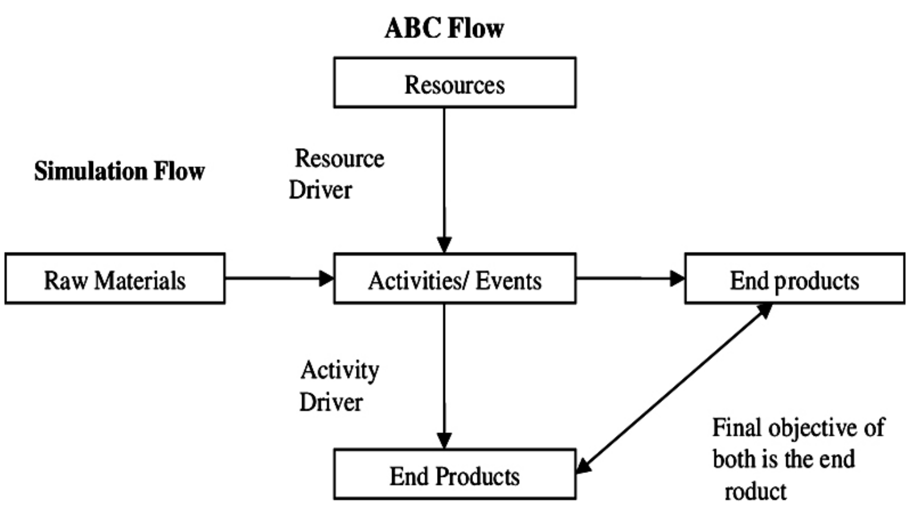

FIGURE 2 – ABC Flow

SOURCE: https://www.semanticscholar.org/paper/Activity-Based-Costing-(ABC)-%E2%80%93-An-Effective-Tool-Mahal- Hossain/8e6a2d5db65725ebc1ce952c755ab9da69e6a0ae

ADVANTAGES OF ABC

The following are some pros of Activity Based Costing;

- ❖ ABC helps businesses to take better decisions regarding the process, outsourcing , product mix and analysis on customer's profitability.
- ❖ It provides realistic and accurate information regarding costs than traditional and other costing methods.
- ❖ It supports us to find and eliminate the non-value-added activities to improve the efficiency and to minimize the costs.
- ❖ ABC system can also be used for various purposes like product costing, target costing, analysis on customer profitability and so on.
- ❖ It requires a clear identification of all the activities of product or service and also helps in assigning the cost drivers and cost pools of each activity.

DISADVANTAGES OF ABC

The following are some cons of Activity Based Costing;

- ❖ ABC is very costly to implement and complex to maintain where it requires collection of large data for analysis and reporting.
- ❖ This method may not be suitable for low-volume business sectors or industries.
- ❖ It may not obtain all the cost or factors that affect the profitability like demand of the market, quality and others.
- ❖ As there is change in business process and environment it may require to constant update on information regarding the activities and cost drivers.
- ❖ It may require extra software and tools as it is not compatible with existing accounting standards and systems.

ABC ANALYSIS IN DIFFERENT SECTORS IN INDIA

ABC Analysis is used by various sectors in India. Only some of them are tabulated below;

SECTORS IN INDIA	PRACTICES IN ABC
Manufacturing sector	ABC analysis is applied here for segregating the goods based on the revenue which also helps the increase in level of profit margins in industries.
Retails	This method helps retailers to manage their inventory effectively and also focus on high- demand items which generate more revenues.
Automative Industry	This analysis helps to assess the efficiency of the workers and also collect information regarding resource employment.

Warehousing	This system is used to optimize storage and space handling.
Service sector	This type of costing helps to measure the cost of various services like banking, insurance, education, hospitals and so on based on the activities that performed for each service or customers.
Distribution	It helps to analyze the distribution of cost towards goods and services in the stage of supply chain management.
Tele communication	This system helps to allocate the various cost associated intelecommunication services like data,internet etc which depends upon the activities.

COMPANIES THAT USES ABC ANALYSIS IN INDIA

Here are some list of companies that uses ABC in India;

COMPANIES IN INDIA	REASON FOR PRACTICING ABC
Tata Motors	It is one of the largest automobile manufacturers in India where it uses ABC to assign the cost of overheads in various services and products like commercial vehicle, spare parts and after service sales By this they can easily find the cost drivers of each product or services and to improve the customer satisfaction.
Hindustan Unilever	It is one of the leading consumer goods company in India where it uses ABC to allocate overhead cost on various products and services like soaps, shampoo, detergent and others By this they can optimize the price marketing strategies and product mix.
Infosys	It is the global leader in Information Technology and Consulting services where it uses ABC to measure the Profitability and performance of various projects and clients and to enhance its quality and standards.
Reliance Industries	It is a diversified conglomerate which uses ABC for improving their cost management and profitability analysis in sectors like energy, textiles,petrochemical, textiles ,retails and in telecommunication.
Wipro	It is a leading IT Services and Consulting company in India which uses ABC to improve its service quality and to optimize its price.
ICICI Bank	It is one of the largest private sector bank in India which uses ABC to measure each product and services and to implement customer centric and cost effective solutions.
HDFC Bank	It is a leading private sector bank which uses ABC for measuring various products and services like loans,deposits, digital banking etc.

Apollo Hospitals	It is a leading healthcare provider uses ABC to determine the cost and profitability in various departments and services like pharmacy, surgery and insurance.
ITC	It is a multi-business enterprise that uses ABC costing to determine the cost of various products and businesses like hotels, foods, paper etc.
Mahindra & Mahindra	It is a diversified group which uses ABC to analyze the cost of various business and products like tractors, automobiles, farm equipments etc.
Bharti Airtel	It is a leading telecom operator uses ABC to measure the cost of various services like data, broadband, digital TV etc.
NTPC	It is a leading power generator uses ABC to track the cost of various plants and units like coal, gas and hydro etc.
ONGC	It is a leading oil and gas exploration uses ABC to measure the cost of various fields and wells and to measure the profitability of each well and field.

CONCLUSION

On overall I conclude that, there are many different sectors and companies are benefited by using the Activity Based Costing and Analysis .It provides accurate values than other costing systems. It also mitigates over costing and under costing of cost objects. It also helps in benchmarking other products and many other benefits. It provides awareness and adoption of ABC among the Indian businesses especially the small and medium enterprise by providing them adequate training guidance and support.

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VISUAL RECOGNITION ASSISTANCE

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ABSTRACT

Recognizing faces presents a significant challenge for those with vision impairments. The project "Visual Recognition Assistance" endeavors to address this challenge by developing a system capable of identifying faces and audibly announcing the associated names. Utilizing advanced deep learning techniques, the system will analyze facial features in real-time, enabling users to recognize familiar individuals and encounter new acquaintances with greater ease. By providing this functionality, the system aims to enhance the confidence of visually impaired individuals in social interactions.

KEYWORDS: *Raspberry Pi, Bluetooth, Face recognition, Camera, MySQL.*

INTRODUCTION

Individuals with visual impairments, including those who are blind or have low vision, encounter numerous challenges in their daily lives, with navigation posing one of the most significant challenges for individuals with visual impairments. Whether completely blind or experiencing limited vision, navigating unfamiliar environments can be daunting. Often, they rely on external aids such as human assistance, guide dogs, or specialized electronic devices. Another significant challenge is identifying individuals in various social interactions. To address this issue, we've developed the innovative project "Visual Recognition Assistance". This device, seamlessly integrated into their eyeglasses, offers efficient assistance to the visually impaired. The primary aim of this project is to accommodate individuals with visual impairments by creating an Intelligent Face Recognition System that leverages cutting-edge technologies, including deep learning (Keras MobileNetV2), traditional computer vision (Haar cascades), and IoT (Raspberry Pi), to provide enhanced recognition capabilities and foster independence in social situations.

EXISTING SYSTEM:

Individuals with visual impairments or low vision frequently encounter challenges in recognizing others, impacting their social interactions and daily routines. It's common for visually impaired individuals to rely on glasses for assistance. However, existing systems tailored for them often involve manual methods such as ID cards or PIN codes, which may not be optimized for accessibility. Additionally, traditional security measures and reliance on non-visual cues or human assistance can hinder independent navigation. Understanding context poses another challenge, as image recognition systems often struggle in this regard compared to human vision. The consequences of these difficulties can manifest in various psychological issues, including loneliness, social isolation, anxiety, and depression, which are prevalent among individuals with vision loss. Furthermore, accessibility to the vast resources of the internet remains a significant barrier for the blind. Even with these hurdles, those with visual impairments continue to pursue fulfilling lives, though they often confront inaccessible infrastructure and societal barriers.

DISADVANTAGE:

- Misrepresentation.
- Stigmatization.
- Lack of understanding.
- Stereotyping.
- Insensitive.

PROPOSED SYSTEM:

Recent estimates by the World Health Organization (WHO) indicate that there are 253 million individuals living with vision disabilities, with 36 million being blind and 217 million experiencing moderate to severe vision impairment. Our objective is to develop a face detection and recognition system using Raspberry Pi-3, aiming to enhance accessibility for visually impaired individuals. It helps blind people to identify the person who is standing in front of them. It involves visual detection and visual recognition from images taken by pi camera. If the input image is matched, it pronounces the person's name to the blind person by audio signal through text to voice converter. Suppose the image is not matched, it asks whether to store it in the database or not. Based on the user need these devices accessed. This innovative glass technology is designed to empower individuals with visual impairments, reducing the challenges they face in everyday activities and fostering their active participation.

ADVANTAGES:

- Navigating Unfamiliar Environments: (In new environments, the system serves as a guide, verbally identifying people and assisting visually impaired individuals in navigating social or professional settings more independently.)
- Security and Comfort: (The system's secure access control ensures that visually impaired individuals can trust the technology to provide reliable information about their surroundings, enhancing both security and comfort.)
- Reducing Dependency: (With the assistance of the Intelligent Face Recognition System, visually impaired individuals can reduce their dependency on others for basic social interactions).
- Audio Response via Bluetooth: (Makes your devices talk by using Bluetooth.)
- User-Friendly Interface: (Easy and simple design, especially for people who might find it hard to see.)
- Secure Access Control: (Keeps things safe by only letting in people it knows, not strangers).
- Affordable Hardware: (Utilizes cost-effective components, ensuring accessibility to a wide audience without incurring substantial costs.)
- Real-Time Operation on Raspberry Pi: (Quickly figures out who's who using a small computer in real-time.)

- Modular Architecture: (Easy to take care of and make better, like building with blocks.)
- API Integration: (Connects with other things on the internet to do any updates).
- Versatile Solution: (A smart system that recognizes faces using cool tech for many different uses)

SOFTWARE REQUIREMENTS:

- Putty Terminal: (Putty can connect to a remote machine through SSH (secure shell).
- PyCharm Community Edition: (It supports web development with python (Coding Language).

HARDWARE REQUIREMENTS:

- Raspberry Pi 4 Model B:(It provides a huge scope for virtual machines).
- Raspberry Pi Camera: (It detects faces and emotions).
- Bluetooth Device: (Enables audio output, providing intuitive responses via Bluetooth connected devices).
- Raspberry Pi CSI Camera Connector: (Before the image is transmitted it is placed in the memory in individual frames).

LIBRARIES USED:

- os
- adam
- pyaudio
- pyttsx3
- numpy
- Tensorflow

FIGURES:

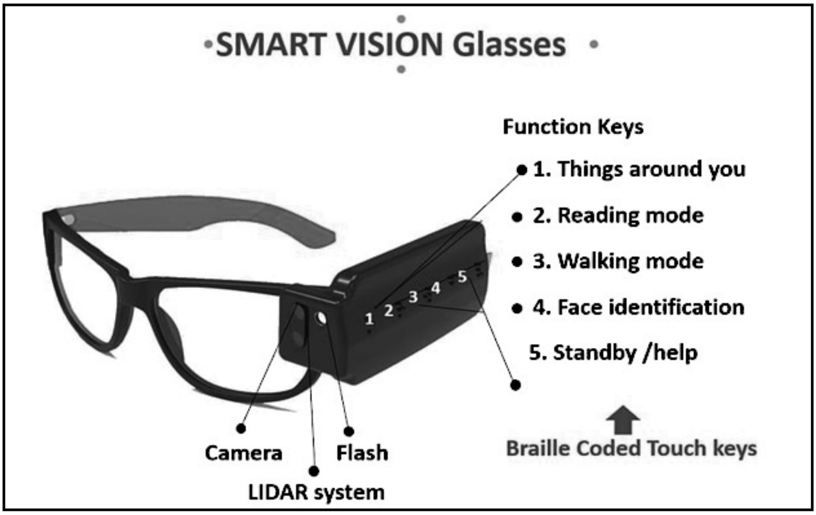

FIGURE 1 - MODEL OF PROPOSED FRAMEWORK

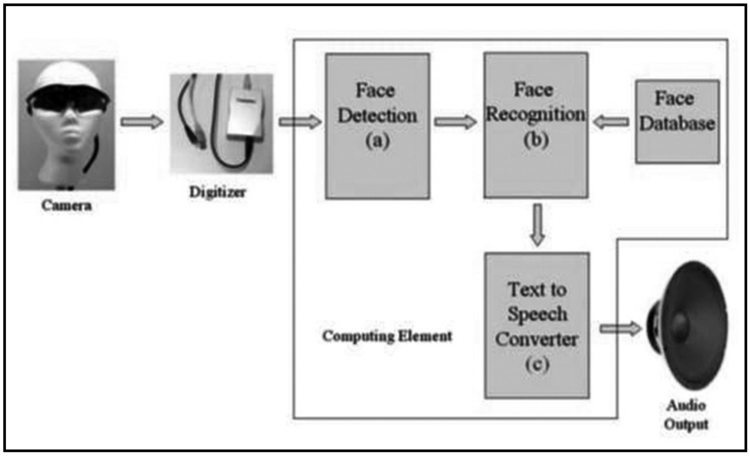

FIGURE 2 - WORKING MODEL

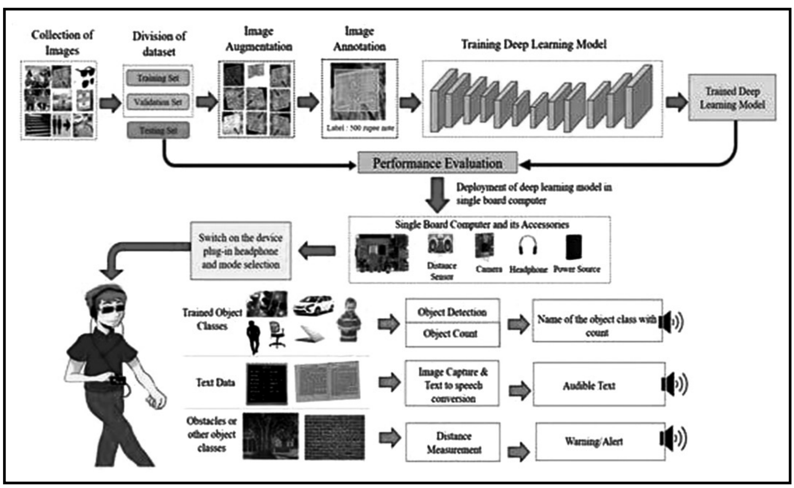

FIGURE 3 - BLOCK DIAGRAM

PROPOSED SYSTEM TECHNIQUE:

The proposed system introduces an image processing solution utilizing OpenCV on Raspberry Pi 3, operating on the Linux-based Raspbian OS. Specifically crafted for individuals with visual impairments, this compact device connects to the internet via Raspberry Pi 3's integrated Wi-Fi, enabling seamless data retrieval from a MySQL database upon recognizing a person. The image processing workflow is structured into three key components: initial face detection and storage in a database with preprocessing, training using image datasets, and subsequent classification and recognition of faces using the LBP algorithm. Upon successful identification, pertinent information is retrieved from the MySQL database, and a text-to-speech approach leveraging Python's pyttsx library delivers auditory output through connected earphones. This functionality empowers visually impaired individuals to promptly recognize and access concise information about individuals in their surroundings.

ABOUT LBP ALGORITHM AND TEXT-TO-SPEECH METHOD:

The LBP (Local Binary Pattern) algorithm is a method used in the proposed system for face detection and recognition. It works by looking at small patterns in images, sort of like how you might notice patterns in a puzzle. These patterns help the system figure out if a face is in the picture and who it might be.

As for the text-to-speech method, it's like having a magic translator that turns written words into spoken words. In this system, when the face recognition matches someone, it converts their name into spoken words so that a blind person can hear and know who is within their reach or audible vicinity. It's like having a friendly voice to tell you who your friends are!

FUTURE ENHANCEMENT:

These are some future enhancement ideas of our project

- Enhanced Object Recognition
- Detailed Scene Descriptions
- Improved Navigation Assistance
- Facial Recognition and Emotion Detection
- Integration
- Sensory Feedback
- Personalized AI Assistance
- Environmental Sensing
- Gesture-Based Controls
- Community and Social Integration
- Continuous Software Updates

CONCLUSION:

Our project addresses the critical requirement for a real-time crafted to cater to those with visual impairments, a specialized face recognition model. Through the integration of advanced technologies such as MobileNetV2 and CNN with conventional electronic devices like the Raspberry Pi, we aim to enhance both their communication capabilities and safety measures. This initiative represents a significant advancement towards a safer, more efficient, and environmentally friendly real-time face recognition system for the visually impaired community. Our innovative solution not only boosts security by ensuring accurate identification but also contributes to the broader mission of inclusive technology. The distinctive feature of intuitive audio responses via Bluetooth further distinguishes our project. By directly addressing the specific needs of visually impaired individuals, our endeavor showcases the transformative potential of technology in fostering a more inclusive and secure future.Nonetheless, further research in this field is imperative. Exploring the development of more precise and effective algorithms for identification and recognition should be a focal point of future studies. Utilizing larger datasets and employing more sophisticated machine learning models could significantly contribute to the creation of cost-effective solutions.

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A REVIEW: THE BENEFITS OF SORGHUM AND WATER CHESTNUT FLOUR

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ABSTRACT

In the field of functional foods, sorghum and water chestnut flour—which are made from gluten-free grains and aquatic corms, respectively—are drawing interest as viable substitutes. This abstract explores the nutritional benefits that these flours provide. High in fiber, protein, and antioxidants, sorghum flour is a good choice for gluten- free substitutes. Its high fiber content aids in digestion, blood sugar regulation, and satiety making it a great choice for managing diabetes and weight. Furthermore, sorghum has an exceptional antioxidant profile that lowers the risk of chronic diseases like cancer and cardiovascular conditions by reducing oxidative stress. The distinctive nutritional qualities of water chestnut flour made from the plant's corms make it stand out. Water chestnut flour, rich in vital minerals like potassium, manganese, and copper, supports the body's enzymatic processes, electrolyte balance, and bone health. Moreover, its low glycemic index makes it safe for diabetics and guarantees a consistent release of energy without raising blood sugar levels.

KEYWORDS: *Functional food, Sorghum, Water chestnut, Gluten free.*

SORGHUM

Sorghum is a major cereal and an essential crop for feed and food in the world's semi-arid regions. Sorghum vulgare and Sorghum bicolor are two species of sorghum that belong to the grass family.

Like other cereals, sorghum is a great source of protein and carbohydrates. This cereal is free of gluten, which is important given the current situation in which celiac disease (CD), an immune reaction to gluten intolerance, is becoming more common. Grain sorghum contains phenolic compounds called flavonoids, which have been demonstrated to inhibit the growth of tumors. Sorghum may help diabetics because its starches and sugars are released more gradually than in other cereals (Kulamarva et al., 2009).

SORGUM'S NUTRITIONAL COMPOSITION

The elements that make up sorghum grain are except a lower oil content, essentially comparable to maize. The grain is composed of 65–76% starch, 2% fiber, and 8–12% protein. In addition to having a high percentage of protein (19%) and ash (10%), the germ is a rich source of oil (28% of the germ). Even though cellulose and hemicellulose make up the majority of bran, a sizable amount of starch is deposited in the mesocarp tissue of this fraction. Wax rather than oil makes up the majority of bran lipids. Different sources of sorghum grain may have different compositions due to a variety of factors, such as the hybrid's makeup, the climate and soil, and crop management practices (Abah et al.,2020)

An extensive analysis of the nutritional components of sorghum and its possible health benefits can be discovered. Rich in antioxidants, sorghum offers a plethora of health advantages and could potentially ward off the chronic illnesses that afflict our modern world. For varying circumstances, different sorghum varieties offer more benefits. Antioxidant levels are higher in red and black sorghum than in white sorghum.

DIGESTIVE HEALTH

To consume the fiber and micronutrients that are provided by all parts of the grain, consumers are urged to use whole-grain alternatives in baking due to the rising incidence of celiac disease and the growing demand for gluten free products. Sorghum was shown by enzyme-linked immunosorbent assay analysis to be devoid of the gliadin-like peptides that people with celiac disease should stay out of their diet. Sorghum is a good source of soluble prebiotic fiber, or fermentable fiber, in addition to being a wheat substitute.

SORGHUM'S ANTIOXIDANT ACTIVITY

Black and red sorghum varieties demonstrated anti-inflammatory properties in mouse model studies, while white and bronze sorghum did not. Red sorghum is known to have a high polyphenol content and a significant antioxidant capacity, but the polyphenols' bioavailability varies widely (McGinnis & Painter, 2020)

CANCER PREVENTION

Carcinogens, including toxic, mutagenic, and cancer-causing agents, harm DNA by producing reactive intermediates such as reactive oxygen species (ROS), reactive nitrogen species (RNS), and other reactive electrophilic metabolites. These substances are major contributors to cancer development. A strong association exists between the presence of carcinogens in humans and the activity of phase I (cytochrome P-450) and phase II enzyme systems, which work to remove both internal and environmental carcinogens. The earlier discussion on sorghum highlighted its benefits, especially with phase II enzymes like NQO reductase, indicating its potential role in cancer prevention. Nevertheless, the lack of extensive research makes it difficult to draw definitive conclusions about its significant effects on human health.

OBESITY

Obesity and other non-communicable diseases (NCDs) have many similarities. Chronic inflammation and prolonged oxidative stress are contributing factors to various chronic diseases. Studies have shown that high-tannin sorghum prevents weight gain in rats, rabbits, chickens, and pigs. While weight maintenance is not desirable for animals raised for meat, reducing weight gain could help prevent obesity in humans. The interaction between tannins and starch in sorghum, which is stronger with higher molecular weight tannins, results in greater complexation with sorghum starch, thereby reducing caloric intake. This explains why animals consuming high-tannin sorghum tend to gain less weight. Additionally, it leads to a lower glycemic response, which is advantageous for individuals with diabetes and obesity (Birhanu, 2021).

DYSLIPIDEMIA AND CARDIOVASCULAR DISEASE PREVENTION

Animal and in vitro research suggests that sorghum's phenolic and lipid fractions influence factors related to dyslipidemia and cardiovascular disease risk. These benefits are attributed to compounds such as phytosterols, polycosanols, and phenolic substances, which may affect cholesterol absorption, excretion, and synthesis. Recent studies have shown that administering freeze-dried phenolic extracts from sorghum (in doses of 50–600 mg/kg) to hyperlipidemic rats over 14 days significantly reduced their levels of triacylglycerol and plasma cholesterol. The liver and plasma cholesterol levels of normolipidemic hamsters were found to drop upon administration of sorghum lipid supplements (Birhanu, 2021).

WATER CHESTNUT

Water chestnuts, which float in shallow water fields, ponds, lakes, and flood plains, are anchored by their roots in the soil beneath the water. These plants are a nutritious food source and offer various pharmacological benefits throughout the entire plant. They are tasty and rich in essential minerals, carbohydrates, and proteins. In Ayurvedic medicine, water chestnuts are commonly used in recipes as appetizers, coolants, astringents, tonics, and aphrodisiacs. Additionally, they help treat conditions such as lumbago, bronchitis, bilious disorders, sore throats, and fatigue. Despite their many medicinal uses, the fruit is widely consumed as a vegetable in many countries. Because of its unique qualities and therapeutic benefits, water chestnuts are among the most widely consumed vegetables in the nation. Individuals Consume water chestnuts raw or boiled; some people use them to dress salads. They use water chestnuts to make a variety of curries. Due to a lack of food, some impoverished people use water chestnuts as their primary source of nutrition during the winter (Hossain & Rahmatullah, 2020).

NUTRITIONAL COMPOSITION

A study on the biochemical composition of Trapa bispinosa fruits suggests they could be valuable sources of carbohydrates, protein, and minerals for human consumption. The fruits contain 62.5 percent moisture, 1.04 percent ash, 2.13% crude fiber, 0.92% total soluble sugar, 0.33% reducing sugar, 0.59% nonreducing sugar, 8.7% starch, and 0.84% lipid were found to be the nutritional makeup of water chestnuts. 0.275 mg of water-soluble protein, 60 micrograms of beta-carotene, 1.1 mg of vitamin C, and 0.5 mg of total phenol were present in 100 grams of green variety (Adkar et al., 2014).

HEALTH BENEFITS

Water chestnuts have fair amounts of calcium, potassium, iron, and zinc in addition to being good sources of calories, carbohydrates, dietary fiber, and vitamin B6. Therapeutic uses for water chestnut include treating measles, jaundice, cough, and summertime heat. T. bispinosa is a significant Indian plant (Raghav et al., 2019).

Qualities that are antimicrobial and antifungal Recent studies have looked into the possibility of using locally- made drugs to treat infectious diseases. Fruit extracts from different water chestnut varieties have demonstrated the antifungal properties of trapa bispinosa, an antimicrobial agent. Because of their strong antifungal activity against the treated fungi, ethanol, and petroleum extract showed a significant inhibition zone when compared to both the distance fungicide and control. (Adkar et al., 2014).

Singhara is used to treat bronchitis, diarrhea, dysentery, swelling, and thyroid issues. It is a naturally occurring antioxidant that helps heal weakness, shields against UV rays and prevents wrinkles. It aids in the prevention of heart disease, gout, ulcers, and sugar. Singhara is beneficial in treating leprosy, sore throats, urinary tract infections, fractures, and anemia. It helps treat coughs and has antioxidants. The fruit peel of Singhara is ground and applied to swelling to provide relief. Consuming singhara flour regularly aids in weight gain (Raghav et al., 2019).

They also possess a host of additional therapeutic qualities. Water chestnut fruits are used to treat a variety of conditions, including leprosy, anemia, fractures, bronchitis, and sore throats. The juice extracted from these fruits is effective in treating dysentery and diarrhea. Furthermore, water chestnuts support fetal development and assist in managing pregnancy-related hypertension. After delivery, a pregnant woman is given porridge made from water chestnut flour to check for hemorrhage (Rani et al., 2016).

Water chestnuts also promote the secretion of milk from the mammary glands. The juice extracted from water chestnuts aids in the expulsion of phlegm and bile, addressing a range of health concerns. Moreover, it enhances vitality. Water chestnuts are known for their ability to reduce inflammation and purify the bloodstream. They are energy enhancers that dispel fatigue and examine the blood leaking from the wound. Water chestnuts are a great source of K, containing 362.1 mg in one cup. This mineral is essential for healthy brain and muscle function. By balancing sodium, it also controls blood pressure and water retention. Water chestnuts with snow peas. Water chestnuts' exceptional cooling qualities make them the ideal food to combat the summer's intense heat (Rani et al., 2016).

Neuroprotective mechanisms: The impact of hydroalcoholic extract from Trapa bispinosa on biochemical markers including glutathione peroxidase, catalase, lipid peroxidation, and fluorescence product was examined in the brains of female albino mice. To accelerate the aging process, 0.5 mL of 5% D-galactose was administered for 15 days. This led to a reduction in antioxidant enzymes such as glutathione peroxidase and catalase, an elevation in lipid peroxidation, and an increase in fluorescence products in the cerebral cortex. Subsequent co-treatment involved intraperitoneal administration of 500 mg/kg of hydroalcoholic Trapa bispinosa extract, resulting in a decrease in the fluorescence product in the cerebral cortex. Furthermore, T. bispinosa restored glutathione peroxidase and catalase activity while inhibiting increased lipid peroxidation in the cerebral cortex compared to the aging-accelerated control group. (Adkar et al., 2014).

USES IN COOKING

The white-colored corms are the portion of the vegetable that can be eaten. They are typically consumed raw. They are also utilized after a brief boil. They're used to make cake (water chestnut cake) and flour. Singhara is high in fiber, vitamins, minerals, and carbohydrates. They have a crunchy and crispy texture. Water chestnuts are a unique vegetable due to their crisp texture and subtle, fresh flavor. Whether cooked or canned, it maintains its crunch. In addition to adding flavor to food, it can be consumed raw or cooked. They taste crunchy and crispy and are used with things like coriander, rice, noodles, ginger, sesame oil, and bamboo shoots (Rani et al., 2016).

CONCLUSION

Therefore, sorghum and water chestnut flour are valuable additions to the dietary landscape due to their nutritional benefits, especially for those who are looking for nutrient-dense and gluten-free alternatives. The high fiber, protein, and antioxidant content of sorghum flour has many health benefits, such as better blood sugar regulation, better digestion, and a lower risk of chronic diseases. In a similar vein, water chestnut flour is a great option for preserving electrolyte balance, bone health, and stable blood sugar levels due to its abundance of important minerals and low glycemic index. Sorghum and water chestnut flour stand out as promising ingredients that provide taste and nutritional advantages, adding to a more inclusive and healthful food ecosystem as the demand for functional and nutrient-dense foods grows.

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A STUDY ON FINANCIAL MANAGEMENT PRACTICES OF YOUNG ADULTS TO MITIGATE MATERIALISM

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ABSTRACT:

The increasing complexity of the modern financial landscape has also increased the responsibility of the youth to have a responsible financial behaviour. This study investigates the various ways of achieving the responsible financial behaviour with the materialistic influences and examines the various aspects of materialism as well as financial management habits like budgeting, savings, spending, investment and impulsive decisions which is termed to be as financial literacy that the young adults should develop in achieving the financial wellbeing. The materialistic influences shaping the financial behaviour are investigated using the data of 258 young adults aged 20 - 35 years which was collected through a structured questionnaire. The study explores how young adults prioritize their spending and their choice of selecting the investment options out of various investment avenues. The ultimate outcome of the study provides the valuable insights to the educators, financial institutions and other policy makers to develop their resources and targets to promote the financial literacy among young adults, leading to a responsible financial behaviour.

KEYWORDS: *Materialism, Financial behaviour, financial management, financial literacy.*

INTRODUCTION:

Materialism in common term means the belief that having more money and things is the most important thing in life. It is a philosophical stance or a view that emphasizes the material possessions, luxury and tangible things over spiritual, intellectual or abstract values. The term materialism is a contrast of the term idealism which prioritizes the importance of ideas and values. Every young adult must know the impact of their materialistic attitude on their personal financial management. Over materialistic person tends to have a desire for immediate gratification which could result in various consequences like overspending and debt accumulation which automatically creates a financial stress in the minds of young adults.

The creation overspending and debt accumulation is due to lack of proper personal financial management. Thus it is important for the individuals to know the impact of their materialistic attitude on their personal financial management. To address these issue young adults should cultivate healthy financial habits such as setting financial goals, creating a budget, avoiding unnecessary debts and prioritizing experiences over material possessions. Financial literacy among young adults would help them to have a proper financial management.

LITERATURE REVIEW:

- Adindya Tasya Salsabilla Anwar, Goso Goso et al (2023) have done a research on the title "The Relationship between Materialism and Financial Literacy on Student Financial Management Behaviour". They have explained Financial Management Behaviour has a process how individuals manage their finances. The authors considered that the good Financial Management involves proper planning and decision making. They also stated materialism as acquisition of material wealth. The term financial literacy was explained by them as it is an understanding of basic concepts like personal finance, investment, financial planning and financial decision making. The researchers have divided the total population of five hundred and seventy five students of Muhammadiyah Palopo University in the department of management into eighty five samples using purposeful sampling method. The authors used Validity test, reliability test, multiple linear regression analysis, t test and F test and concluded that both materialism and financial literacy has a significant effect on financial management behaviour of the students.

- Maria (2023) has done their study on the title "The Effect of Materialism and frugality on over indebtedness. The Moderating role of financial literacy". The study was constructed with objective of examining the mediating effect of financial literacy and its impact on financial literacy. The hypothesis for the study was constructed in such a way that financial literacy moderates the link between materialism, frugality and over indebtedness. The Researchers used convenience sampling technique and collected one hundred and eighteen respondents from Indonesia who works in both public and private institutions. The Author used Structural Equation Modelling method to test the variables such as Materialism, Frugality, Financial literacy, over Indebtedness. The study concluded that people with more desire to buy things frequently are over indebted. This means that those people who have less financial literacy tends to be more materialistic and over indebted, likewise frugal people with high financial literacy have less chance of over indebtedness.

OBJECTIVES OF THE STUDY:

- To Know the Demographic features of the respondents and their Financial Management Habits.
- To Identify the Young Adults' Spending priorities.
- To Identify the Young Adults's preferences towards various Investment Avenues.
- To Examine the association of Financial management habits of Young adults with their demographic features.

RESEARCH METHODOLOGY:

- Number of Respondents: 258 Respondents
- Method of Data Collection:
  - Primary Method: Structured Questionnaire
  - Secondary Method: Articles, Journals and Websites
- Type of Sampling: Convenience Sampling
- Area of the Study: Chennai City, Tamil Nadu
- Statistical Tool Used: Percentage Analysis, Friedman Ranking test and Chi Square using SPSS

LIMITATIONS OF THE STUDY:

This Study focuses only on the Materialistic attitude of Young adults aged from 20 years to 35 years.

DATA ANALYSIS AND INTERPRETATION:

PERCENTAGE ANALYSIS

TABLE – 1

Variable	Dominant Group	Percentage
Gender	Female	53.1
Age (In Years)	20-25	44.2
Education Level	Under Graduate	37.2
Employment	Private Sector	57.0
Income Per Month in RS	10000-20000	38.8
Marital Status	Un Married	53.1
Preference of preparing Budget	Yes	55.0
Percentage of Savings	1% - 5%	34.9
Making Impulsive Purchases	Rarely	43.0
Experience of Financial Stress due to Overspending	Yes	54.3
Handling Unexpected Expenses	Some What Confidence	38.4
Having Long Term Goals	Yes	68.6
Analysing the Benefits before taking any purchase decisions	Yes	70.2
Regretting the Wrong purchase decisions due to its Financial Impact	Yes	57.0

Source: Primary Data

FRIEDMAN RANKING

TABLE 2 - Rank analysis was applied to know the avenues of spending among young adults:

Avenues of Spending	Mean Rank	Ranks
Children's Education	4.3	I
Home related Expense	3.6	II
Rent/Eb/Gas bills	3.1	III
Travel and Tourism	2.2	IV
Entertainment	1.8	V

Source: Primary Data

INTERPRETATION:

From the above Table 2, Children's education has been ranked first with the highest value 4.3, which represents that most of the young adults are prioritizing their income towards education fees. Home related expenses has been ranked second with the value 3.6 while other home related utility bills are ranked third with the value 3.1. Travel and tourism is ranked fourth with the value 2.2 and entertainment is ranked fifth with the value 1.8 which represents that young adults give less priority towards Travel and Tourism and Entertainment. From the above table it can inferred that young adults prioritize spending towards children's education and other home related expenses more than spending on travel and tourism.

TABLE: 3 - Ranking analysis was applied to know the areas of investments preferred by the young adults.

Areas of Investment	Mean Rank	Ranks
Bank Deposit	3.8	I
Real Estate Investment	3.1	II
Shares/Mutual Fund/ Bonds	2.9	III
Retirement Benefit	2.7	IV
Insurance	2.5	V

Source: Primary Data

INTERPRETATION:

From the above table: 3, Bank deposit has been ranked first with the highest value 3.8, Real estate investment has been considered second with the value 3.1. The investment in Shares, Mutual Funds and bonds has been ranked third with the value 2.9. The respondents have ranked retirement benefit and insurance has fourth and fifth among the listed areas of investments. From the above it is also prominent that many respondents are not aware of the retirement benefits which help the young adults to lead their retirement life likewise the knowledge about various insurances which covers the risk of life, health, automobiles etc. should be understood by the respondents.

CHI SQUARE TESTS

Association between the Age of the respondents and their impulsive purchase decision making

TABLE: 4

H0: There is no significant association between Age of the Respondents and Impulsive purchase decisions they take.

Independent Variable	Chi Square Value	Df	Asymp. Sig. (2-sided)	Inference
Gender	21.162(a)	4	.000	There is a Significant Association.

Source: Primary Data

INTERPRETATION:

From the above table: 4, it is found that p (.000) < 0.05 therefore H0 Rejected

Thus there is an association between age of the respondents and impulsive purchase decisions they make.

Association between Income of the respondents and the amount they save

TABLE: 5

H0: There is no association between Income of the respondents and the amount they save.

Independent Variable	Chi Square Value	Df	Asymp. Sig. (2-sided)	Inference
Income	43.453(a)	12	.000	There is a Significant Association.

Source: Primary Data

INTERPRETATION:

From the above table: 5, it is found that p (.000) < 0.05 therefore H0 is rejected.

Thus there is an association between the income earned by the respondents and the amount kept by them as a savings.

Association between Educational Qualification of the respondents and their analysing attitude

TABLE: 6

H0: There is no significant association between Educational qualifications of the respondents and the attitude of analysing the product's benefit before making any purchase decision.

Independent Variable	Chi Square Value	Df	Asymp. Sig. (2-sided)	Inference
Education	24.038(a)	3	.000	There is a Significant Association.

Source: Primary Data

INTERPRETATION:

As per Table: 6, it is found that p (.000) < (0.05) therefore H0 Rejected

Thus there is an association between Educational qualification of the respondents and the attitude of them to analyse the benefits of the product before making any purchase decisions.

Association between Educational Qualification of the respondents and their Long term goals

TABLE: 7

H0: There is no significant association between Educational qualification and their long term goals

Independent Variable	Chi Square Value	Df	Asymp. Sig. (2-sided)	Inference
Education	18.555(a)	3	.000	There is a Significant Association.

Source: Primary Data

INTERPRETATION

From the above Table 4.21, it is found that p (.000) < (0.05) therefore H0 is rejected

Thus there is an association between educational qualification of the respondents and their long term goals.

SUGGESTIONS:

- Based on the findings above it is critical to increase the awareness of Insurance and Retirement planning among young adults which covers all the financial risks encountered by them.
- Some often do impulsive purchases which results in overspending beyond their budget. This kind of purchase decisions should be controlled to have a good financial management.

- Most of the young adults regret about their purchase decision due to its financial impact which indicates their lack of understanding about the importance of financial management.

- Moreover it is necessary for every young adult to understand the importance of financial literacy to control their materialistic attitude which ultimately helps in shaping up a good financial behaviour.

CONCLUSION:

In the world of finance, every young adult are supposed to manage their finance efficiently. Many young adults exhibit their tendencies towards short term gratification rather on long term stability; this shows the importance of enhancing the financial literacy among young adults. Though many young adults have started to allocate their finances wisely still some of the individuals tend to spend frequently or overspend beyond their budget which shows their misconceptions about the personal financial management. The materialistic attitude among young adults could be controlled by understanding the importance of financial literacy which ultimately focuses on shaping their financial behaviour.

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CUSTOMERS' COGNIZANCE ON JAN AUSHADHI AND COST PARITY OF ALLOPATHY AND AYUSH MEDICINES NOTABLY AYURVEDA AND SIDDHA

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ABSTRACT

Pradhan Mantri Jan Aushadhi Kendra is the central government scheme established to provide allopathic generic medicines at lower cost for economically weaker people who cannot afford to buy medicines at high cost. AYUSH is an integration of various traditional medicines namely Ayurveda, Yoga & Naturopathy, Unani, Siddha, Sowa Rigpa and Homeopathy. The Indian government launched the Ministry of AYUSH on November 9, 2014, with the goal of promoting traditional medicine through education, research, and promotion throughout the country. A drastic switch over from allopathy to traditional medicines has been seen over the past decade as people became more health-conscious and sought treatments without ill effects. This study aims to gain insights on the degree of awareness and opinion on Jan Aushadhi, the medical cost variation according to region, the price comparison of traditional medicines specifically Ayurveda and Siddha and on the association between gender and chronic disorder. This research has been carried out by collecting 252 responses using the convenience sampling technique.

KEYWORDS: *Jan Aushadhi, AYUSH, Allopathy, Ayurveda, Siddha.*

INTRODUCTION

The Department of Pharmaceuticals launched the Prime Minister Indian Public Medicine Scheme, also known as the Pradhan Mantri Bharatiya Jan Aushadhi Pariyojana (PMBJP), as a government of India campaign and public welfare effort. The general public can purchase helpful pharmaceuticals at discounted rates from the Pradhan Mantri Bharatiya Jan Aushadhi Pariyojana Kendra (PMBJK). The facilities of the programme are set up to provide generic drugs, which are less expensive than branded ones but retain equivalent quality and functionality.

In order to foster traditional medicines across the nation through promotion, research, and education, the Indian government established the Ministry of AYUSH on November 9, 2014. AYUSH is an acronym of several traditional and alternative medicines namely AYURVEDA, YOGA, NATUROPATHY, UNANI, SIDDHA, SOWA-RIPA and HOMEOPATHY. India is the birthplace of the traditional alternative medicine known as Ayurveda. It is stated that the God of Ayurveda is Lord Dhanwantari. This legendary deity was born with ambrosia in one hand and Ayurveda in the other, when churning the milk ocean. Siddha is an ancient traditional system of medicine having its origin in South India, predominantly Tamil Nadu. According to Siddha codex, this medical system was taught by Lord Shiva to his consort Lord Parvati which in turn taught to Nandi by the latter who preached the same to nine devtas. Lord Shiva is considered to the supreme Sidhdhar. Siddhar Agasthiyar was considered to be the founder of this Siddha medicine though its origin is found to be spiritual. There are 18 important Siddhars who contributed for this medicine. The Siddha medicines were inscribed on palm leaves in Tamil language.

RESEARCH METHODOLOGY

Convenience sampling was employed, and the study design was descriptive. 252 participants responded to the structured questionnaire used to gather the primary data, which was shared through Google Form. The secondary data were gathered from a variety of online sources. ANOVA, Chi Square, Independent sample t test, and Percentage analysis were the tools employed.

OBJECTIVES

- To examine the awareness level, preference and perception on Jan Aushadhi.
- To study if the consultation fees varies with the area of residence.
- To discover if there is a significant difference in the medicine cost of Ayurveda and Siddha.
- To know if there is an association between gender and suffering from chronic disorder.

REVIEW OF LITERATURE

- T K Mahato, D Raulji (2021) conducted a conceptual study called “Present scenario of generic medicines in India: A comparative study” to know the availability of Generic Medicines through Pradhan Mantri Jan Aushadhi Kendra (PMJAK), to compare the prices between generic and branded medicines, to discern the reason for lower price of generic medicines and retail outlets other than PMJAK for sale of generic medicines and the initiatives taken by the Government to promote the generic drugs. It was made known that the generic medicines were 80% to 85% cheaper when compared to the branded medicines, safe with the same quality standards. The reason for low cost was that the pharmaceutical companies producing medicines under PMJAK cut down marketing expenses. Also, branded companies which manufactured their own medicines according to the prescribed formulae were able to hold the patent only up to 20 years after that the formula were released communally which led to fall in prices. The prices of Anti pyretic, Anti allergic, Anti infective, Anti cancer, ENT, Central Nervous System Acting, Cardiovascular Acting, Female Reproductive organs, Skin, Diabetes, Respiratory system, Vaccine medicines sold by PMJAK and DAVAINDIA were cheaper when compared to branded medicines.

- Hemant Katole (2019) did an article on "Why patients prefer allopathy and ayurvedic therapy in India?" The aim of the study was to know the reason for preference towards Allopathy and Ayurvedic Medicine. An online survey was conducted with 1018 customers. Percentage Analysis and Chi-Square test were used as the statistical tools. The study revealed that 83.69% of the respondents were under the Age Group of 21-40, 72.88% of the respondents preferred Allopathy and 41.06% of the respondents' monthly expense of Rs 1000- Rs 5000 was spent for medication. It was further revealed that respondents' whose monthly income was Rs 5000- Rs 10000 or above Rs 10000 preferred Ayurvedic therapy. The overall result of study was Allopathy therapy was preferred by the customers for its convenience and easy availability in the hectic lifestyle whereas Ayurvedic therapy was preferred by the customers due to its cheaper rate, nil side effects and existence of natural ingredients.

- Bihari Dora, Shalini Gupta et al., (2015) published a conceptual article called "Importance of AYUSH in Present Health Care Perspective" to enunciate the significance that AYUSH serves in the prevention of illnesses, conditions like diabetes and hypertension, mental health, and other issues including cosmetology, anti-aging, rejuvenation, and sexual disorders.While the modern medical system helped in recovery of the disease occurred, Complementary and Alternative Medicine (CAM) helped in prevention from a disease likely to occur. Most of the AYUSH healthcares were located in metro cities making them unaffordable to reach out rural people. While acute conditions were to be treated using modern medications, chronic health issues were to be treated prioritizing traditional CAM promoting awareness on AYUSH to people all over the nation.

DATA ANALYSIS AND INTERPRETATION

1. Percentage analysis is applied to gain insights on inquiries related to JAN AUSHADHI

Table 4.1

Awareness on Jan Aushadhi

AWARENESS ON JAN AUSHADHI	NUMBER OF RESPONSES (252)	PERCENTAGE (%)
Yes	89	35.32
No	163	64.68

Source: Primary Data

INTERPRETATION

From the above Table 4.11, it is revealed that 64.68% of the respondents were not aware of Jan Aushadhi medicine while 35.32% of them were aware of Jan Aushadhi.

Table 4.2

Presence of Jan Aushadhi outlet

CATEGORY	SUB CATEGORY	NUMBER OF RESPONSES (89)	PERCENTAGE (%)
Presence of Jan Aushadhi Outlet	Yes	57	64.04
	No	17	19.11
	Maybe	15	16.85
Preference on Jan Aushadhi Medicines	Yes	43	48.31
	No	17	19.11
	Maybe	29	32.58
Opinion on The Price Of Jan Aushadhi Medicines	Very low	36	40.45
	Moderately low	41	46.07
	At par with the price of general pharmacy medicines	12	13.48
Factors influencing the price of Jan Aushadhi medicines	Lower marketing expenses	28	24.35
	Lower grade medicines	13	11.3
	Government Aided	74	64.35

Source: Primary Data

INTERPRETATION

From the above Table 4.2, it is unveiled that among 35.32% of the respondents who were aware of Jan Aushadhi, 64.04% of the respondents had Jan Aushadhi outlet near their area, 48.31% of the respondents have an outlook of purchasing Jan Aushadhi medicines in the future, 46.07% of the respondents perceived the prices of the Jan Aushadhi medicines to be moderately low, 64.35% of the respondents believed the prices of Jan Aushadhi medicines to be low due to Government aided outlet.

2. ANOVA is applied to study if there is a difference between area of residence and consultation fees.

H0: There is no significant difference between the area of residence and consultation fees.

Table 4.3

ANOVA TEST

	CONSULTATION CHARGES				
AREA OF RESIDENCE	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.894	2	3.447	5.964	.003
Within Groups	143.912	249	.578		
Total	**150.806**	**251**			

Source: Primary Data

INTERPRETATION

As the p value 0.003 is lesser than the level of significance which is 0.05, null hypothesis is rejected and thus it can be concluded that there is a significant difference between the area of residence viz., urban, semi urban and rural and the consultation fees charged.

3. Independent Sample t Test is applied to study examine if there is a difference between the prices of Siddha and Ayurveda medicines.

H0: There is no significant difference between the prices of Siddha and Ayurveda medicines.

Table 4.4

Independent Sample t Test

	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
COST OF AYURVEDA AND SIDDHA MEDICINE	3.65	0.06	1.51	502	0.132	0.159	0.105	-0.048
			1.51	499.15	0.132	0.159	0.105	-0.048

Source: Primary Data

INTERPRETATION

As the p value 0.132 is more than the level of significance which is 0.05, null hypothesis is accepted and thus it can be concluded that there is no significant difference between the cost of Siddha and Ayurveda medicines.

4. Chi – Square is applied to study if there is an association between gender and chronic disorder.

H0: There is no association between gender and suffering from chronic disorder

Table 4.5

CROSS TABULATION ON GENDER AND SUFFERING FROM CHRONIC DISEASE

GENDER	SUFFERING FROM CHRONIC DISEASE		**TOTAL**
	YES	NO	
MALE	32	65	97
FEMALE	52	103	155
TOTAL	**84**	**168**	**252**

Source: Primary Data

Table 4.6

Chi – Square test

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.008(b)	1	0.927		
Continuity Correction(a)	0	1	1		
Likelihood Ratio	0.008	1	0.927		
Fisher's Exact Test				1	0.52
N of Valid Cases	**252**				

Source: Primary Data

INTERPRETATION

As the p value 0.927 is greater than the level of significance which is 0.05, null hypothesis is accepted and thus it can be concluded that there is no association between gender and suffering from chronic disorder.

SUGGESTIONS

- Adequate plans and policies need to be established by the Government to create awareness on Jan Aushadhi and proper assurance had to be given on the quality of the medicines.
- Since different groups of people live in different regions, the costs incurred for medical consultations and medication purchases should be the same throughout all of the regions, without regardless of area of residence.
- The traditional medicines need to be sensitized more among people by the AYUSH ministry especially in rural areas where the medicine price is more or less equivalent among its kind.
- Permanent recovery from any kind of medicine is highly anticipated by all the people especially for those who suffer from chronic disorders which are not backed by gender.

CONCLUSION

Jan Aushadhi outlets require adequate promotion to reach out all sectors of people from various localities provided the medicinal quality is given complete assurance manufactured with high standard components. AYUSH has been established to promote traditional medicine than completely relying upon Allopathy. The costs of traditional medicines in private institutions need to be regulated so that many people can afford to buy them begetting permanent recovery as well.

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CULTIVATING RESILIENCE IN THE ANTHROPOCENE: AN ECOCRITICAL STUDY OF 'SOIL NOT OIL' BY VANDANA SHIVA

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ABSTRACT

Ecocriticism is a lens through which we can approach the connections between literature and the environment. As a theory it helps us to utilize every tool we have in the fight against the Environmental degradation. This research paper critically examines the book "Soil Not Oil" in the context of the Anthropocene epoch, focusing on its potential to promote climate resilience. With the ongoing acceleration of environmental degradation, the world is grappling with its escalating effects. It becomes increasingly imperative to explore sustainable alternatives and to develop an environmental conscious behaviour among people.

This research paper deepens the central message of the book 'Soil Not Oil', emphasizing the importance of prioritizing soil health over fossil fuel consumption. The book sheds light on how the climate chaos and peak oil are converging with a third crisis – the food crisis. By analyzing the principles proposed in "Soil Not Oil", the paper highlights the transformative potential of these ideas in promoting sustainable practices and mitigating climate challenges. This study unravels the importance of integrating these concepts into climate change education, with the aim of shedding light on how "Soil not oil" inspires a paradigm shift in perception, awareness and action for the environment. Through this analysis, the paper contributes to the discussion of building a resilient future in the complex context of the Anthropocene.

KEYWORDS: *Climate resilience, climate change, climate mitigation, paradigm shift, sustainability.*

INTRODUCTION

Climate Change is one of the foremost threats to human well-being and planetary health. The pace and scale of climate action are insufficient to tackle the climate change. Sharing of diverse knowledge about developing an Environment positive behaviour is a crucial and significant enabler for effective Climate action. Vandana Shiva, a world-renowned Environmental thinker and activist, the Director of Navdanya and the Research Foundation for Science, Technology and Natural Resource Policy sheds light on the triple crisis, wherein she writes about the nexus between the triple crisis of climate change, peak oil and food crisis. This research article explores the importance of cultivating climate resilience in the Anthropocene, in which we are now facing a triple convergence of crises, which threatens the survival of human beings and the environmental health.

According to Vandana Shiva, of the three major crisis that are enlisted in the book, the emerging food crisis is one of the most immediate threat to the survival of the poor in the global south. The food crisis emerges from the process of industrialization of agriculture and removal of the native workers, peasants and the family farmers from the land. The other reason behind this is the effects of globalization and trade liberalization of agriculture on food security and food sovereignty. In order to respond to the catastrophe, we must respond to the triple crisis which she mentions as the nexus that must simultaneously overcome dehumanization, economic inequality and ecological Anthropocene.

Climate change is one of the raging crisis of this era. It stands as an ecological challenge thereby affecting both human and nature. Vandana Shiva points out the connection between the energy and the climate change crisis. First of all, the change in the course of the natural events and emerging Anthropocene threatens the very survival of the human species. This challenge is the most global of all the other challenges. No species can hide from the course of the nature and its action. Climate change is impacted heavily by human activities, the way we eat, shop and live our lives. Since there are various factors that contributes to the climate change, adaptation and mitigation techniques must incorporate all the aspects of our lives.

THE AGE OF OIL AND THE CLIMATE CHANGE

“Energy’ in the mechanical paradigm, which views nature as a machine and not a living system, is defined as the capacity to do work.”, (Soil Not Oil, 5). In the age dominated by the effects of the oil and growing threat of climate change, as societies grapple with the consequences of fossil fuel dependency, there is an urgency to address the environmental challenges that we face. This shift in the conception should underscore the significance of preserving our planet’s soil, the foundation of sustenance and biodiversity, as an alternative to the damaging pursuit of the oil driven economies. The age of oil signifies the current century in which the demand and production of oil has increased over the history. This symbolises the overpowering nature of the capitalist, consumerist behaviour that deepens the climate crisis. The mechanistic notion of conceiving nature and our environment must change and there should be a shift in our focus from the unsustainable practices tied to oil extraction and consumption to a more sustainable and resilient ways of living that will be harmonious to both humanity and the planet.

The industrial paradigm which began and spread in the countries like India through globalization has resulted in dehumanization of the poor people whose lives were dependant on the wellbeing of their environment and surroundings. The dominant model of Globalization is aggressive because it exploits the poor of their rights to food, land and their livelihoods. The crisis of climate change is being used by the power to deepen inequality by robbing the poor of their food and land while failing to achieve sustainability. In order bring about a paradigm shift in our conception of human progress and well being, we need to be aware of the pseudo-solutions that are proposed as solutions for the climate change. These pseudo-solutions that are put forth as a process of greenwashing, tries to deny the link between climate change an d the fossil fuel based industries, thereby further worsening the crisis. Vandana Shiva points out the need for this paradigm shift through which we must understand the need to imagine how can we live better without oil, thereby giving priority to soil and not oil.

THE ANTHROPOCENE AND CLIMATE CHANGE

One of the most grappling environmental issues in this era is climate change. It is affecting the lives on the planet and all the natural ecosystems. The Anthropocene marks an epoch in which man made disasters have become a geological force, thereby leaving an indelible mark on the planet's biodiversity and ecosystem. Climate change is driven predominantly by the increase of green house gases in the atmosphere. The major contributor to this crisis includes burning of fossil fuels, especially oil. Global climate change is not the problem of the future. It is happening in this era, where change to our planet's climate driven by increased man made emissions of heat trapping green house gases are affecting the whole environment and the posing a threat to the survival of the human beings and other species on the planet. These effects includes melting of glaciers, shrinking of ice sheets, sea level rise, severe weather patterns like extreme rainfall and drought, frequent wildfires, heat waves, shift in the plant and animal geographical ranges and the change in the seasonal patterns of blooming of plants, the intensity and frequency of these extreme events are increasing day by day. Climate change has resulted in an increase of such extreme events.

"The scientific evidence is unequivocal: climate change is a threat to human wellbeing and the health of the planet. Any further delay in the concerted global action will miss the brief, rapidly closing window to secure a liveable future.", (IPCC on Climate Change). These stand as a testament to the urgency of combating climate change. Our planet is facing the effects of record breaking temperature and extreme heat waves. According to the data provided by NASA, July 2023 was the hottest month on record. July 20223 was 1.18 degree celsius above the average according to NASA's GISTEMP record. These extreme events are apart of increasing global temperature caused by human activities, especially through emission of green house gases.

The climate change not only affects the ecology but also the human beings, who are pushed to poverty. According to Vandana Shiva, the solution to climate change and the solution to poverty are the same. This sheds light on placing importance to enhance, protect and promote production and consumption patterns centered on people and not fossil fuels. In the era of the Anthropocene, we can reduce our ecological footprint, economic inequality of life and food democracy, which has the potential to change our conception about what is real sustainability, thereby paving way to the road to energy justice in a period of climate chaos.

PEAK OIL AND ITS IMPLICATIONS

Peak oil is critical point in the global oil production which carries profound implications for various aspects of the world, including its impact on the climate change. We are facing the dual challenges of depleting oil reserves and a warming planet. In this crisis, we must understand the intricate relationship between peak oil and climate change to build a sustainable future. Concurrently, the world faces the reality of peak oil, the point at which the global oil production reaches its zenith and begins an irreversible decline. The implications of peak oil extend beyond economic considerations, thereby affecting energy security, geopolitical dynamics and environmental concerns. This has a far reaching economic and geopolitical ramifications, as societies grapple with dwindling energy resources. This point, the impending scarcity of oil may also present an opportunity to develop and transform, thereby encouraging a shift towards sustainable energy alternatives. The decline in the oil production, presents a unique opportunity to accelerate the transition to low carbon and renewable energy sources. As conventional oil becomes rarer, there is a need to look for the alternatives as solar, wind, bioenergy etc. This transition in the energy production and consumption is not only crucial for mitigating climate change but also for reducing our dependence on the fossil fuels, which leads to the environmental catastrophe. Peak oil though it is not a standalone solution to climate change, it can catalyze to a paradigm shift in the energy use, consumption patterns and priorities that can collectively contribute to a more resilient and sustainable future.

'SOIL NOT OIL' – A SUSTAINABLE PARADIGM

According to Vandana Shiva, addressing the intertwined challenges of climate change, peak oil and the food security requires a holistic approach. To attain genuine sustainability, energy systems must be embedded in society and ecosystems. Industrialised, globalised agriculture use mainly chemical fertilizers that go to pollute the soil and water. Oil is used to industrially process food. Oil is used for the plastic in packaging and oil is used in the transportation of the production for consumption. Fossil fuels are the heart of the industrial agriculture. Industrial Agriculture uses ten times more energy than ecological agriculture does. Whereas, the localized, ecological, regenerative agriculture can reduce green house gas emissions by a significant amount while improving our natural biodiversity, soil, water and the lives that are embedded within the ecosystem.

The mechanistic worldview and the industrialization process have promoted over extraction and overconsumption of resources, This has resulted to the effects such as the exhaustion of natural resources, building up of pollution and the destruction of communities whose livelihoods were dependant on the land. "Soil Not Oil" emphasizes on the significance of healthy soils in mitigating climate change, fostering sustainable agriculture and ensuring food security. Sustainable agricultural practices that prioritize soil health can help adapt to changing climate while reducing dependency on fossil fuels. Vandana Shiva presents regenerative agriculture as a sustainable agricultural solution and how adopting regenerative agricultural practices becomes imperative in the Anthropocene. Regenerative agricultural techniques such as crop rotation, agro forestry, reduction in tillage can restore soil health. Healthy soil acts as carbon sinks and plays a major role in the process of carbon sequestration. These natural carbon sinks sequesters carbon dioxide from the atmosphere and reduces its atmospheric presence.

CONCLUSION

‘Soil Not Oil’ underscores a blueprint for cultivating resilience in the Anthropocene. As we live in an era defined by human induced transformations, the ideas presented in the work illuminate a path that harmonizes our relationship with our environment, while intimidating the urgency of soil conservation and its role in the climate action. The emphasis on regenerative agriculture not only addresses the need to mitigate greenhouse gases also presents deeper connection between human societies and the ecosystems that sustain them. Therefore, it is the profound responsibility of every individual to unleash the power in cultivating resilience against the environmental catastrophe that is dwindling our planet. The concept of cultivating resilience is crucial in building a resistance to the diverse effects of the false consciousness of the so-called notions of progress and development which has in turn ruined the wellbeing of our environment and ecosystem as a whole. Thus, ‘Soil Not Oil’ reminds us that in nurturing the soil, we nurture our collective resilience. By embracing the ideas presented in relation to the regenerative practices and sustainability, we can forge a more harmonious relationship with our planet, ensuring that the Anthropocene becomes a chapter of restoration and renewal rather than one of irreversible decline.

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GIFT CITY OF GUJARAT- A BOON TO INDIA

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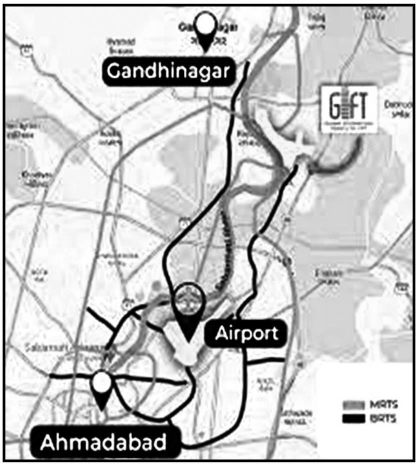
ABSTRACT

Gujarat is a state which lies in the western part of India. It is the one of the top most state in exporting industrial products. It exports nearly 33% of its production in the year 2022-23. It exports agriculture products such as cotton, sugarcane, groundnuts, milk and milk products throughout the world. Gujarat stands at number one position in pharmaceutical industry and exporting medicines. This state has recorded the lowest rate of unemployment in 2022. Adding cherry on the top of the cake GIFT city is being constructed in Gujarat. This is will help to boost up Gujarat's economy and India's foreign direct investment.

KEYWORDS: *Gujarat, Export, Gift City.*

INTRODUCTION:

Gujarat International Finance Tech-City, also known as GIFT City, is only India's financial service centre. It is located in the Gandhi Nagar district of Gujarat near the Sabarmati River. This covers up to 886 acres of land. This city consists of schools, hospitals, office space, residential apartments, hotels, retail establishments etc... It is technically constructed in between both the cities of Gandhinagar and Ahmadabad; both the cities are only 30 minutes away from GIFT city.



Source: Wikipedia

GIFT City:

During 2007, the then Chief Minister of Gujarat, Mr. Narendra Modi introduced The Gujarat International Finance tech-city as a pioneering plan to develop a world-class financial and business district in Gujarat. It is being promoted as a Greenfield city by the government. This is the first and foremost smart city of India. It is planned to construct equally to the world-famous cities such as Network, Hongkong, London, Dubai etc. In this city, 67% of land was allocated for commercial purposes, 22% of the land was allocated for residential and 11% for social facilities. This city consists of special economic zones which help to achieve increased trade balance, create employment opportunities, and increase investment.

COMPARISON OF GIFT CITY WITH OTHER WORLD CITIES:

	Paris (La Defense)	Tokyo (Shinjuku)	London (Dockyard)	Pudong (Lujiazui)	GIFT (INDIA)
Land Area (Sq km)	1.6	1.6	1.05	1.7	3.58
Construction scale (in mn sq m)	2.5	1.6	1.1	4.5	8.5
Green belt (in 1000 sq m)	40	120	50	363	1183
Height (m)	200	250	250	490	410

Source: https://www.slideshare.net/AnahatVikram3/presentation-Gift-citypdf

INTERNATIONAL FINANCIAL SERVICE CENTRE:

- The international financial service centre is a place where people can get financial services from other country and it also provide wealth management, asset management, global portfolio diversification, global tax management, risk management, corporate treasury management, merges and acquisitions, development of fintech centres, international tax administration services.
- The top three international financial service centre are located at New York, London and Singapore.
- This helps in the access of the world market in an easier way.
- This plays a huge role in the reduction of poverty of a country and improves the standard of living of the people by generating the huge number of job opportunities.

MEMBERS:

Gujarat International Finance Tec City Co. Ltd.

Board of Directors	Gujarat International Finance Tec City Co. Ltd.
Dr. Hasmukh Adhia	Chairman - Nominee of Government of Gujarat
Shri JP Gupta, IAS	Nominee of Government of Gujarat
Shri Sanjeev Kumar IAS	Nominee of Government of Gujarat
Mr. Rajkumar Beniwal, IAS	Nominee of Government of Gujarat
Mr. Tapan Ray, IAS (Retd.)	Managing Director & Group CEO
Ms. Anjali Bansal	Independent Director
Prof Chetan Vaidya	Independent Director
Mr. Dileep Choksi	Independent Director

Source: https://Giftsez.com/board-of-directors.aspx

GIFT SEZ Ltd.

Board of Directors	Designation
Mr. Madhukant G. Sanghvi	Director
Dr. Sudhir Jain	Director
Mr. M V Nair	Director
Mr. Tapan Ray, IAS (Retd.)	Director & Group CEO

Source: https://Giftsez.com/board-of-directors.aspx

FEATURES OF GIFT CITY:

INFRASTRUCTURE: Inorder to minimize the power outages, there will be an electric supply upto 400mw. This will be laid in a tunnel. This city will be well featured in telecommunication. Natural gas pipeline will be connected to all the houses and commercial building alternative to the gas cylinders.

SOLID WASTE MANAGEMENT: In Gift city a special method is adopted for waste management. Through the vacuum chutes which will be installed in all the buildings the wasted will be collected and taken to the processing unit. This waste will undergo plasma gasification and other various steps.

TRANSPORT FACILITIES: There are varied rapid transport system within and outside the Gift city such as metro , bus, flight, train etc. As it is located, in between Ahmadabad and Gandhinagar which is the most developed city in Gujarat it is easy to export the products.

TAX REDUCTION: In order to motivate the international business entities to start their work in Gift city certain range of tax exemption is allowed. National Stock Exchange (NSE) and Bombay Stock Exchange (BSE), 12 domestic banks and 5 international banks and non life insurance business are started setting up by 19 companies in Gift city.

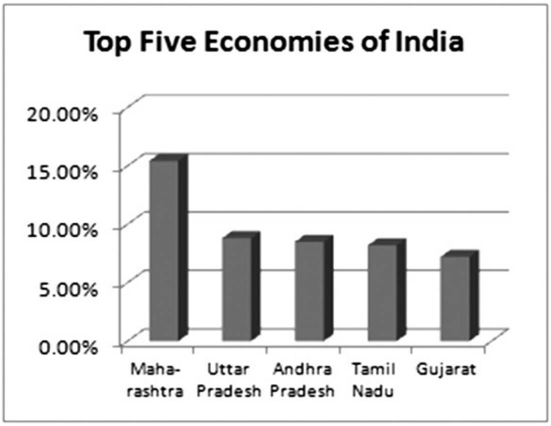
Source: https://www.slideshare.net/AnahatVikram3/presentation-Gift-citypdf

ECONOMIC IMPACT ON GUJARAT:

Gift city will create a huge impact on Gujarat's economy by direct and indirect forms. Such job creation, infrastructure development, transportation facilities, boosting up of local business, urbanization. This city will make Gujarat as an international corridor for business. This project is initiated for a sustainable city for economical growth and environment conservation. Gujarat block chain summit 2024 has been hosted in the Gift city. In this summit some of the forum topics have been covered they are fintech, women empowerment, logistic and supply chain, block chain, edtech , startup, employment, youth skills development, sustainability, investments, industries and innovation and infrastructure.

ECONOMIC IMPACT ON INDIA:

As a state Gujarat will attract more foreign investment, it will become a place of industrial growth and ease of doing business and contribute toward the GDP growth of our country. Gift city is the only place where international financial service centre located in India. This Gift city not only benefits the state Gujarat but it will also create a great impact on our whole country. Gujarat contributes nearly 8.25% of India's GDP and this rate keep on increasing every year.



Source: QUORA

CONCLUSION:

Gift city is a futuristic model for a sustainable and smart city. This will create great opportunities for domestic and international businesses. This city's features, location, infrastructure will help to create more employment opportunities and attracts many foreign investors.This city will contribute heavy flow of income in Indian economy.

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A STUDY ON CONSUMER BUYING BEHAVIOUR TOWARDS RELIANCE TRENDS WITH SPECIAL REFERENCE TO CHENGALPATTU DISTRICT

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ABSTRACT

Fashion keeps changing as it reflects social, economic and cultural changes. It plays an important role in a person's life because it is considered as a means of self-expression. Reliance Trends is one of the India's most favoured fashion destinations. This research paper titled, "A study on consumer buying behaviour towards Reliance Trends – with special reference to Chengalpattu District" was an attempt undertaken with the objective to know the factors influencing consumers to purchase at Reliance Trends. For meeting the research objectives primary data was collected through a structured questionnaire using Google forms from 106 respondents in Chengalpattu district. Secondary data was collected through other reliable sources. Detailed analysis was done with the collected data using various statistical tools like friedman ranking test, chi-square test, correlation and univariate frequency distribution. The outcomes of this research paper would guide the company in gaining some insights into how they could plan their future activities.

KEYWORDS: *Fashion, Reliance Trends, Consumer buying behaviour, Purchase intention, Shopping, Reputation.*

INTRODUCTION

A marketing team's effort in market research and consumer trends helps companies to consistently meet the needs of consumers. An economy could not function without consumers. Consumer buyer behaviour is an inseparable part of marketing. The study focused on identifying the consumer buying behaviour towards Reliance Trends. The objective of the study was to get reliable result that helps the company in bridging the gap between consumers and their purchases.

OBJECTIVES OF THE STUDY

- To analyse the demographic profile of the respondents.
- To obtain the ranks secured by factors influencing the respondents to purchase at Reliance Trends.
- To establish the association between amount spent by the respondents on shopping at Reliance Trends and level of satisfaction.
- To establish the relationship between age of the respondents and amount spent by the respondents on shopping at Reliance Trends.
- To find out the number of brands preferred to be purchased by each respondent at Reliance Trends.

REVIEW OF LITERATURE

Muruganantham & Nivetha (2021) analysed customer satisfaction towards Reliance Trends in Coimbatore city. The study focused on finding customer expectations and analysed customer satisfaction with Reliance Trends. The sample size was 82 respondents. Simple percentage analysis and ranking scale analysis were the statistical tools used in analyzing the data. The study noted that the customers expected more offers and collections in kids wear section. Most of the customers were satisfied with the merchandise in Reliance Trends.

Somabhusana Janakiballav Mishra et al., (2021) undertook a study on the impact of online marketing of Reliance Trends in Bhubaneswar. The study aimed to examine how online media influenced the consumer decision-making process. Responses were collected from 250 respondents. The study found that impressive and attractive designs on the website influenced the customer to visit the Reliance Trends website for purchasing online. In addition to this, customers made their purchase decisions by watching online advertisements. The study was concluded by stating that the online marketing effort of Reliance Trends was more effective in reaching the customers.

Aravind Mallik et al., (2019) conducted an empirical study on consumer purchase behaviour and their preferences towards Reliance Trends. The main objective of the study was to understand the various factors influencing the customer perception towards Reliance Trends and Female expectations towards buying in Reliance Trends. The sample size was 150 respondents. The study showed that discounts, affordable prices, and quality were the various factors that attracted the respondents to buy apparel at Reliance Trends.

Yogesh Mahajan (2016) undertook a study on consumer behaviour and brand positioning of Reliance Trends. The main objective was to measure the level of satisfaction of customers and to study the promotional activities done at Reliance Trends. The study used 100 respondents as a sample. The study revealed that customers were very much satisfied with the ambiance and quality of products in the store. It was also found that the promotional activities through electronic media did not reach huge number of people so publicity was done through word of mouth. Sethuraman (2014) conducted a research on the influence of lifestyle in determining the brand value of Reliance Trends in Tamil Nadu. The study was carried out in Chennai, Coimbatore, Trichy and Madurai. The major objective of the study was to determine the brand equity of Reliance Trends. 400

samples were used for the study. Chi-square, factor analysis, Cronbach's alpha and ANOVA were the tools used to analyse the collected data. The study implied that brand loyalty, brand awareness, brand association and perceived quality were the factors that influenced the perception of brand equity of Reliance Trends.

RESEARCH METHODOLOGY

Convenience sampling technique, a type of non-probability sampling technique was adopted for this research. 106 people from Chengalpattu district responded to this survey. A structured questionnaire was designed and circulated to the respondents scattered in a wide area to get their responses. SPSS (Statistical Package for Social Sciences) is a software package used for analysing the data and objectives related to the research study.

STATISTICAL TOOLS APPLIED

- Percentage Analysis
- Friedman Ranking Test
- Chi-square Test
- Correlation
- Univariate frequency distribution

LIMITATIONS

- The study was restricted only to the respondents who visited Reliance Trends in Chengalpattu district.
- Respondents would have given biased answers rather than providing the exact information which was needed. But it was assumed that all the responses were true and unbiased.
- Time availability for the study was limited, so it was difficult to extract more information from the respondents.

DATA ANALYSIS AND INTERPRETATION

Percentage Analysis

TABLE - 1: Demographic profile of the respondents

Particulars	Majority	Percentage
Gender	Female	56.6
Age	16-20 years	24.5
Educational qualification	Undergraduate	27.2
Occupation	Student	39.6
Annual family income	Rs.1,00,000-Rs.3,00,000	42.5

Friedman Ranking Test

TABLE - 2: Rank of factors influencing the respondents to purchase at Reliance Trends

Particulars	Price	Quality	Brands	Comfort and fit	Discount and offers	Reputation
Mean score	2.77	3.11	4.16	2.81	3.63	4.51
Rank	VI	IV	II	V	III	I

By applying Friedman Ranking Test, it was found that reputation was the factor that highly influenced the respondents to purchase at Reliance Trends, followed by brands, discount and offers, quality, comfort and fit and finally price.

Chi-Square Test

Null hypothesis (H0) : There is no association between amount spent by the respondents on shopping at Reliance Trends and level of satisfaction of the respondents with the current services extended by Reliance Trends.

Alternate hypothesis (Ha) : There is an association between amount spent by the respondents on shopping at Reliance Trends and level of satisfaction of the respondents with the current services extended by Reliance Trends.

TABLE - 3: Association between the amount spent on shopping at Reliance Trends and the Level of

Level of Satisfaction	Amount Spent on Shopping (per month in Rs.)				Total
	Below Rs. 1,000	Rs. 1,000 - Rs. 4,000	Rs. 4,000 - Rs. 8,000	Above Rs. 8,000	
Highly dissatisfied	1	1	1	2	5
Dissatisfied	1	1	5	0	7
Neutral	9	4	4	0	17
Satisfied	16	21	5	4	46
Highly satisfied	4	14	7	6	31
Total	31	41	22	12	106

satisfaction (Cross Tabulation)

TABLE - 4: Chi-square test value

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.048a	12	0.003
Likelihood Ratio	28.880	12	0.004
Linear-by-Linear Association	0.040	1	0.841
N of valid Cases	106		

Since the chi-square value (0.003) is lesser than the level of significance (0.05), the alternate hypothesis (Ha) is accepted and the null hypothesis (H0) is rejected.

Correlation

Null hypothesis (H0) : There is no relationship between the age of the respondents and amount spent by the respondents on shopping at Reliance Trends.

Alternate hypothesis (Ha) : There is a relationship between the age of the respondents and amount spent by the respondents on shopping at Reliance Trends.

TABLE - 5: Relationship between the age of the respondents and amount spent on shopping at Reliance Trends

		Age of the respondents	Amount spent on shopping
Age of the respondents	Pearson Correlation	1	0.277
	Sig. (2-tailed)		0.004
	N	106	106
Amount spent on shopping	Pearson Correlation	0.277	1
	Sig. (2-tailed)	0.004	
	N	106	106

Since the p value (0.004) is lesser than the level of significance (0.05), the alternate hypothesis (Ha) is accepted and the null hypothesis (H0) is rejected.

Univariate Frequency Distribution

TABLE - 6: Number of brands preferred to be purchased by each respondent at Reliance Trends

Particulars	1 Brand	2 Brands	3 Brands	4 Brands	5 Brands	Total
Frequency	9	53	28	15	1	106

GENERAL FINDINGS

- Many of the respondents (22.6%) knew about Reliance Trends as it was an one stop shop.
- Most of the respondents (30.2%) purchased modern kind of attire at Reliance Trends.
- Majority of the respondents (38.7%) spent Rs. 1,000 – Rs. 4,000 in a month for shopping at Reliance Trends.
- Many of the respondents (51.9%) spent 30 minutes – 60 minutes for shopping at Reliance Trends.
- Ambience was considered as the highlight of Reliance Trends by most of the respondents (30.2%)
- Majority of the respondents (29.2%) made a purchase at Reliance Trends anytime.
- DNMX was the most preferred (53.8%) brand to be purchased by the respondents at Reliance Trends.
- Most of the respondents (38.7%) thought that Max was the competitor for Reliance Trends.
- Above all, majority of the respondents (43.4%) were satisfied with the current services extended by Reliance Trends.

SPECIFIC FINDINGS

Friedman ranking test

By applying Friedman Ranking Test, it was found that reputation was the factor that highly influenced the respondents to purchase at Reliance Trends, followed by brands which secured rank II, discount and offers which secured rank III, quality secured which rank IV, comfort and fit which secured rank V and price which secured the final rank VI.

Chi-square test

The chi-square value concluded that there was an association between amount spent by the respondents on shopping at Reliance Trends and level of satisfaction of the respondents with the current services extended by Reliance Trends.

Correlation

The correlation value concluded that there was a relationship between the age of the respondents and amount spent by the respondents on shopping at Reliance Trends.

Univariate frequency distribution

By applying univariate frequency distribution, it was found that 53 respondents preferred to purchase two brands at Reliance Trends, 28 respondents preferred three brands, 15 respondents preferred four brands, 9 respondents preferred one brand and 1 respondent preferred to purchase five brands at Reliance Trends.

SUGGESTIONS

- Social media platforms have billions of active users worldwide. So, Reliance Trends could utilize social media platforms to showcase the latest fashion trends available at the stores, to attract the consumers and to give more competition in the market.
- Since youth visited the stores more, Reliance Trends could come up with unique collection of dresses using various comfortable fabrics, more vibrant colours, skincare products, cosmetics and haircare products, along with the existing services, to connect with them easily.
- Everyone has changed their fashion choices. Since people started wearing face mask on daily basis for various reasons, Reliance Trends could try making reusable masks and gloves that matches with the print or colour of the dress.

CONCLUSION

The research helped to understand better about the retail industry and consumer behaviour when making purchases in the store. The consumers were attracted to purchase at Reliance Trends because of the reputation retained by it. Although there are many competitors for Reliance Trends, the consumers value the firm because they were pleased with both the quality of their purchases and quality of the services they get. The study revealed that majority of the consumers was satisfied with the current services extended by Reliance Trends. The company has a very bright future in the days to come. It can really grow strong in the competitive environment and make a mark in the fashion retail industry.

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A STUDY ON QUALITY LIFE AMONG SANITARY WORKERS

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ABSTRACT

The works in any link in the sanitation chain is considered a sanitation worker. They carry out one of the most crucial tasks in the society, and still, they remain unseen and unappreciated. The destiny of these workers is still largely determined by the stigmatized caste system in India. Primary data collected through a questionnaire administered to the sanitary staff forms the cornerstone of this study. Complementing this first-hand information, secondary data sourced from various publications, journals, and books enriches the research context. The total sample of the study 331.The statistical tools used in this study percentage analysis. The 65.4% of the respondents were 30-40 age group. The 65.6% of those surveyed say they are unaware of the work-related health risk. The sanitary workers need more awareness about health risk. They should be given more safety measures while executing their work. Public should also take responsible for their welfare.

KEYWORDS: *Sanitation workers, Health and safety, benefits of healthcare and stress.*

INTRODUCTION

Maintaining public health and hygiene is a major responsibility of sanitary workers, many of whom operate behind the scenes. Despite their essential contributions, they are often overlooked, and their challenging work conditions go unnoticed. For municipal employees doing garbage collection, sewage cleaning, drainage clearing and maintenance, and street sweeping, health should be in top priority for them. Due to their constant exposure to dangerous substances that involves in the process such as methane gas and hydrogen sulfide ($H2S$), which can be harmful and causes damages to respiratory function, these workers are exposed to an increased risk. Driving heavy duty vehicles such as trucks, bulldozers, and dumpers is extremely risky, especially while taking reverse, this increases the possibility of serious injuries. Health problems like fever, headaches, fatigue, skin diseases, skin irritation, and gastrointestinal problems such as diarrhoea, purluent sputum, and throat infections are some of the common health problems observed among sanitary workers.

The practice of “manual scavenging” is the worst among other sanitation processes. In which labourers touch human excrement with brooms, tin plates, baskets, or buckets without Proper safety wear, like masks, gloves,shoes, aprons, etc., is especially concerning. Workers who do this kind of risky profession would run into serious health problems. hazards when they collect, handle, and dispose of human excreta from sewage pits and open sewers drains, and dry latrine, and they also have a high risk of losing their lives.

REVIEW OF LITERATURE

SUKANYA RANGAMANI et al. (2015) conducted a study on the health issues of garbage collectors in a town in Karnataka. The survey was administered to 29 members of the garbage cleaners in Karnataka. This survey was taken by interviewing people in the age range of 20 to 58 years. In this interview, 18 men and 11 women participated, and they are 19 contract workers; the other persons are self-employed. The conclusion was that most sanitation workers report injuries and disease. The majority of workers faced chest pain. The social oppression of garbage employees has been a very responsible job, and their job in maintaining hygiene is most important.

Ajit Kumar Lenka (2019) focusing study on Health, Identity and Livelihood Status of Sanitation Workers in Bhubaneswar City in Odisha. In this study data collected from both primary and secondary data and the survey collected 232 data for those who have been engaged in garbage collectors Workes in the city. Primary data was collected through semi structured interview, 116 men and 116 women participated people in the age range of 22 to 55 years. The author found that most of sanitation workers are uneducated and 94% of sanitation workers were identified as belonging to the SC community. And most of the sanitation workers live in rented houses. 52% of sanitation workers indicated they were employed by government organizations, 12% reported working with NGOs, and 35% were self-employed in sanitation work. As for employment status, 76% of workers are temporary, with only 12% being permanent. The conclusion was that, the government provides services such as water supply and sanitation facilities, electricity, house facilities for garbage collectors and also government provides some safety equipment for garbage cleaners so it’s reducing deaths incident.

NEED OF STUDY

There is a notable dearth of comprehensive research conducted in India to thoroughly investigate the health hazards faced by municipal sanitary workers, encompassing drivers, loaders, sewage workers, and others. Due to the unhygienic circumstances, this group which makes up the most vulnerable segment of society faces increased risks of sickness and mortality. Hence their stress and problems are faced by them in day to day life which led me to select this subject.

OBJECTIVE OF THE STUDY

- To identify the level of awareness of work-related health risk.
- To identify the major health problem faced by sanitary workers while collecting soil waste
- To identify what are the safety measure used by sanitary workers while collecting the waste

RESEARCH METHODOLOGY

- Research design - Descriptive research
- Sampling – Convenience sampling
- Sample size – 331 respondents
- Data collection:
  - Primary data – Structured questionnaires
  - Secondary data – Journals and websites
- Tools of analysis:
  - Percentage analysis

ANALYSIS AND INTERPRETATION OF DATA

TABLE - 1: DEMOGRAPHIC PROFILE OF SANITARY WORKERS

CATEGORY	SUB CATEGORY	FREQUENCY (331)	PERCENTAGE (%)
Gender	Male	250	75.5%
	Female	81	24.5%
Age	20 - 30	84	25.4%
	30 - 40	217	65.4%
	40 - 50	25	7.6%
	Above 50	5	1.5%
Educational qualification	SSLC	69	20.8%
	HSC	71	21.5%
	Under Graduate	20	6%
	Post Graduate	10	3%
	Other	161	48.6%
Marital status	Married	95	28.7%
	Unmarried	223	67.4%
	Divorced /widow	13	3.9%
Working experience	Below 5 years	74	22.4%
	6 - 10 years	179	54.1%
	11 - 15 years	56	16.9%
	16 - 20 years	10	3%
	21 - 25 years	1	0.3
	Above 25 years	11	3.3%
Salary	Below 10000	141	42.6%
	10001 - 15000	111	33.5%
	16001 - 20000	60	18.1%
	Above 20000	19	5.7%
Family type	Nuclear family	89	26.9%
	Joint family	242	73.1%

Source: Primary data

INTERPRETATION

- Majority of the respondents were male with 75.5% followed by female with 24.5%
- The age distribution among respondents reveals that 65.4% are aged between 30 and 40, with 25.4% falling within the 20 to 30 age bracket, 7.6% between 40 and 50, and 1.5% above 50.

- Based on the degree 20.8% of respondents fall into the SSLC group, 21.5% fall into the HSC category, 6% fall into the undergraduate area, 3% fall into the postgraduate category, and 48.6% of all respondents are experts in the above-mentioned sources
- The Marital status factor reveals that 3.9% of respondents are divorced or widowed, 67.4% of respondents are unmarried, and 28.7% of respondents are married.
- Based on their work experience, 22.4% possess less than 5 years of work experience, while 54.1% have between 6 to 10 years of experience, 16.9% have 11 to 15 years' experience, 3% have 16 to 20 years' experience, 0.3% have 21 to 25 years' experience, and 3.3% have more than 25 years' experience.
- 42.6% earn less than Rs10,000, 33.5% earn between Rs10,001-Rs 15,001,18.1% of respondents make between Rs 15,001 - Rs 20,000 a year, and 5.7% of respondents make more than Rs 20,000.
- 26.9% of those surveyed were part of the nuclear family and 73.1% of the respondents belonged to the joint family.

TABLE - 2 : NATURE OF WORK

Nature of work	Frequency	Percentage
Garbage collection	185	55.9%
Cleaning road/ streets	33	10%
Cleaning drainages	14	4.2%
Public toilets	10	3%
Other	89	26.9%
Total	**331**	**100**

Source: Primary data

INTERPRETATION

55.9% of the respondents surveyed, as indicated in Table 2, 10% are employed in garbage collection roles, as the table demonstrates, are working as cleaning roads/streets. According to the table, 4.2% of the respondents are employed in drainage cleaning. The table, 3% of the participants are employed as public toilets cleaning. The table shows that 26.9% of the respondents are excluding the above-mentioned sources.

TABLE - 3 : AWARE OF WORK-RELATED HEALTH RISK

Aware of work-related health risk	Frequency	Percentage
Yes	114	34.4%
No	217	65.6%
Total	**331**	**100**

Source: Primary data

INTERPRETATION

In Table 3, 34.4% of respondents demonstrate awareness of the health risks linked to their occupation, indicating, whereas 65.6% of respondents are unaware of it.

TABLE - 4: SELF-HEALTH CARE AND SELF-HYGIENE WHILE EXECUTING THE WORK

Self-health care and self-hygiene	Frequency	Percentage
Yes	175	52.9%
No	156	47.1%
Total	**331**	**100**

Source: Primary data

INTERPRETATION

In table 4, 52.9% of respondents are aware of their self-health care and self- hygiene while executing the work and 47.1% of the respondents are not aware of their self- health care and self-hygiene while executing the work.

TABLE - 5: SAFETY MEASURE

Safety measure	Frequency	Percentage
Mask	179	54.1%
Gloves	35	10.6%
Hand wash sanitizer	20	6%
All the above	63	19%
None of these	34	10.3%
Total	**331**	**100**

Source: Primary data

INTERPRETATION

In Table 5, 54.1% of the respondents are using masks for their safety measures. According to the table, 10.6% of the respondents are using gloves for their safety measures. The table shows that 6% of those surveyed use hand sanitizer after washing their safety measures. According to the table, 10.3% of respondents use the safety procedures listed above, while 19% of respondents do not use any of these above mentioned safety measures.

TABLE - 6: HEALTH PROBLEM

Health problem	Frequency	Percentage
Stomach pain	45	13.6%
Asthma and bronchitis lungs	25	7.6%
Cough and cold	38	11.5%
Vomiting	178	53.8%
Hearing disorder	6	1.8%
Fever	19	5.7%
Typhoid	8	2.4%
Malaria	12	3.6%
Total	**331**	**100**

Source: Primary data

INTERPRETATION

In Table 6, 13.6% of the respondents are affected by stomach pain. The table shows that 7.6% of the respondents are affected from asthma and bronchitis lungs. The table shows that 11.5% of the respondents are affected by the cough and cold. The table shows that 53.8% of the respondents are affected by vomiting. The table shows that 1.8% of those surveyed reported having hearing issues. The table, 5.7% of the respondents reported having a fever. The table, 2.4% of respondents are affected by typhoid fever, and 3.6% of respondents are affected by malaria.

TABLE - 7: DIVERT THE STINK

Divert the stink	Frequency	Percentage
By Smoking	31	9.4%
By Drink Alcohol	24	7.3%
By Tobacco	10	3%
Others	266	80.4%
Total	**331**	**100**

Source: Primary data

INTERPRETATION

Table 7, 9.4% of the respondents divert the stink by smoking. The table shows that 7.3% of the respondents divert the stink by drinking alcohol. The table shows that 3% of respondents think tobacco stinks, and 80.4% of respondents are experts in the above mentioned sources.

TABLE - 8: REASON FOR CHOOSING THIS JOB

Reason for choosing this job	Frequency	Percentage
Family situation	216	65.3%
Inheritance job	21	6.3%
Due to pandemic	25	7.6%
Job satisfaction	69	20.8%
Total	**331**	**100**

Source: Primary data

INTERPRETATION

In Table 8, 65.3% of the respondents chose this job for family situations. The table shows that 6.3% of the respondents chose this for an inheritance job. The table shows that 7.6% of the respondents chose this job due to the pandemic and 20.8% of the respondents chose this job for job satisfaction.

SUGGESTIONS

- Design and implement comprehensive training programs tailored to empower sanitary workers with the essential skills and knowledge required to carry out their duties safely and effectively.
- Promote awareness and appreciation for the vital role played by sanitary workers in maintaining public health and sanitation standards.

CONCLUSION

The unsung heroes who are essential to preserving public health are sanitary workers. Their diverse contributions, from waste management to disease prevention, are essential for creating a clean and safe environment for everyone. It is imperative for society to recognize their efforts, address the challenges they face, and advocate for policies that promote their wellbeing and dignity. By doing so, we can ensure a healthier and more equitable future for all. It encourages readers to actively participate in fostering a society that values the contributions of these essential workers, ultimately contributing to an improved quality of life for all.

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A REVIEW - MEDICINAL BENEFITS OF BANANA LEAVES AND RED DACCA BANANA PEEL

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ABSTRACT

Traditionally, medicinal plants have been utilized to treat a wide range of ailments in various parts of the world. Among them are the banana leaves and Red banana peel which have been grown since ancient times. The anti-inflammatory, antibacterial, antifungal, anti-carcinogenic, anti-diabetic, and anti-hypersensitive qualities of polyphenols, which are abundant in banana leaves, are well-known for their beneficial health effects. The digestive qualities of banana leaves may be improved, perhaps preventing dysentery and diarrhoea. Consuming banana leaf juice in the morning may help prevent colds and coughs, and it may also help treat sunstroke and heat exhaustion symptoms. Banana leaf phytochemicals have antipyretic, antibacterial, and anti-inflammatory properties that may aid in the prevention or treatment of illnesses including fever. Antioxidants, flavonoids, and phenolic compounds were more abundant in red banana peels. Red banana peels also include a variety of other substances with potent antioxidant qualities, such as carotenes, tocopherols, ascorbic acid, dopamine, and L-dopa. Red banana peels have higher levels of antioxidants than pulps. Moreover. Additionally capable of scavenging DPPH and ABTS free radicals are red banana peels.The main medicinal benefits of the banana leaves and Red banana peel are highlighted in this review.

KEY WORDS: *Banana leaves, Red banana peel, Medicinal Benefits.*

INTRODUCTION

Medicinal plants are traditionally used to treat a wide range of ailments in various parts of the world. Banana leaves and red banana peels, which have been cultivated since ancient times, are among them. The different bioactive and phytochemical compounds present in plants are the reason for the growing demand for herbal therapies. These days, with so many drugs having undesirable physiological consequences, many choose the herbal cures derived from ethnomedicine. Banana leaves and red banana peel contains large amount of medicinal uses. The flavonoids present in banana leaves provide a number of health advantages, including hepatoprotective, anti-inflammatory, and anti-neoplastic properties. Additionally, they help reduce the quantity of acid secreted by the stomach's parietal cells. Red banana peel have been found in numerous investigations to have higher antioxidant activity than pulps. Red banana peels are also highly effective at scavenging free radicals like DPPH and ABTS.

Objectives of the study

To systematically review and analyze the 'Medicinal Benefits of Banana leaves and Red dacca banana peel.

Banana leaves medicinal uses

Herbal remedies are in high demand due to the various bioactive and phytochemical substances found in plants. Banana leaves also have numerous medical benefits since they contain flavon-3,4-diols. People choose herbal remedies originating from ethnomedicine in this technological age because many other medications have negative physiological effects. Leucoanthocyanidins are the primary polyphenolic substance found in banana leaves. A few medical benefits of the flavonoids found in banana leaves include hepatoprotective, anti-inflammatory, and anti-neoplastic effects. They are also useful in lowering the amount of acid secreted by the parietal cells of the stomach **(Beil et al 1995)**.

Banana leaf use in insect bite

Additionally, banana leaves have antiseptic qualities that help heal rashes, skin irritation, spider bites, bee stings, and deadly insect attacks. Banana leaves demonstrated antimicrobial characteristics **(Repon Kumer Sahaa et al., 2013)**.

Importance of banana leaf in skin health

Their high levels of antioxidants are also thought to ward off early indications of ageing, like dull, wrinkled skin. Banana leaf body wraps are a common component of natural therapy programmes. They are very beneficial to our appearance and well-being. It is a traditional spa product used in Bali and is excellent for skin care.Antioxidants called polyphenols are abundant in banana leaves (Dr. Pranita P. Kashyap 2018)

Banana leaf usage for diabetes

One of the main causes of disease and disability worldwide is diabetes mellitus, the most common metabolic condition.In addition to diet and exercise management, insulin therapy, oral anti-diabetic drugs, or a combination of the two are used to treat hyperglycemia in people with diabetes. Banana leaves also appear to have antidiabetic properties, according to studies **(Ponmurugan Karuppiah et al., 2013)**.

Throughout the world, diabetes mellitus is the most common metabolic illness and the main contributor to poor health. This condition is characterised by hyperglycemia, which is caused by insufficient insulin secretion or action. Rutin is a significant component found in crude extract of banana leaves that may have anti-diabetic effects. According to **(Viriginia D. Kappel et al. 2013)**, phytochemical study revealed that the primary ingredient in the crude extract of banana leaves was rutin.

Banana leaves for mending injuries

In addition, banana leaves have the most concentrated effect on wound healing; hence, an extract from banana leaves has been used to treat wounds and encourage healing **(Dimas Ariandi Candra Putra 2017)**. Banana leaf extract is a beneficial natural wound treatment.

Antibacterial properties of banana leaves

The leaves of the Musa paradiciaca plant, which belongs to the Musaceae family, are widely used as a common name for banana plants. According to **(Naikwade P.V. et al 2014)**, it has an antibacterial activity spectrum in its extracts and operates against pathogeneic, multidrug-resistant organisms. It may be helpful in antiseptic and disinfection formulations as well as chemotherapy.

Medicinal values of banana peel

According to a 2011 study by Baskar et al., which compared nine different varieties of banana peels, the red variety (Musa acuminata Colla) has greater quantities of flavonoids, anthocyanins, phenolic compounds, and antioxidant capacity than the yellow version. Red banana peels have a strong antioxidant content as well as high levels of catecholamines, carotenes, tocopherols, ascorbic acid, dopamine, and L-dopa **(C.V. Passo et al., 2015)** Numerous studies have revealed that red banana peels have more antioxidant activity than pulps **(Mathew, N.S et al., 2017)**. Additionally, red banana peels are very good at scavenging free radicals such as DPPH and ABTS **(González-Montelongo, R et al., 2010)**.

Characterization of phenolic substances from banana peels of red dacca

All types of banana peels were analysed for their total tannin, total flavanoids, and total polyphenolics contents. The measurement of phenolic compounds using high performance liquid chromatography in conjunction with a photodiode array detector revealed that red banana peels had a greater phenolic content.According to **(Yasmeen M. Bashmil's 2021)** study, these results verified that red banana peel extract contains significant amounts of phenolic chemicals and can be used in food.

Red banana peels are rich in potassium, dietary fibre, polyunsaturated fatty acids, and essential amino acids for protein. In instance, the antioxidant compounds called polyphenols that are present in banana peels may be advantageous to human health. The majority of dietary polyphenols in banana peels have well-known antioxidant properties that go beyond merely lowering oxidative stress. It is crucial in the prevention of degenerative illnesses, including cancer and cardiovascular disorders.

Antioxidant activity of red banana peel

Among the bananas that are widely distributed in the northern Sulawesi region is the red banana. Red banana peels are high in vitamins C and E, which function as antioxidants and reduce the risk of free radical damage, according to **(Christobal Anugerah Tanisa 2021)**. More antioxidants are found in red banana peels than in pulps. Moreover, red banana peels can scavenge free radicals like DPPH and ABTS **(Ramfrez Damian et al., 14 April 2022)**.

Oxidative stress's effects on red banana peel

Furthermore, compared to yellow banana peel extract, red banana peel extract has a higher biological value and has antibacterial, cytotoxic, and antioxidant properties on tumour cells. **(Ionela Avram et al. 2022)** found that red banana peels contain more polyphenols than their yellow counterparts.

Conventional medicine uses red banana peels

Numerous ailments, such as burns, ulcers, coughs, and diarrhoea, have been treated with herbal remedies derived from banana peels. According to **(Pereira and Maraschin 2015)**, ripe peel can be used to make a poultice that is applied to wounds to minimise pain and swelling. Similarly, banana peel can be used to aid in the healing process of burn wounds. Additionally, by inserting the interior of the peel, skin warts can be treated as an alternative.

CONCLUSION

This review study's conclusion revealed that red dacca banana peel and banana leaves have a wide range of therapeutic applications, including anti-diabetic, anti-cancer, anti-inflammatory, anti-obesity, anti-bacterial, and antioxidant effects. They can also be used as natural medicines to prevent disease in humans and their environment.

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PERCEPTION OF JOB SEEKERS TOWARDS ONLINE JOB PORTALS

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ABSTRACT

This study explores the perceptions of job seekers regarding online job portals. The primary objective is to identify the reasons job seekers use these platforms. Data was gathered using a structured questionnaire from a sample of 50 respondents, selected through a convenient sampling method. Both percentage analysis and the weighted average approach were used to analyse the gathered data. The results show that job searchers like online job portals over direct hiring practices, with LinkedIn being the most well-liked option.

KEY WORDS: *E-recruitment, Online job portals, Jobseekers, Awareness, Paid or free job portals.*

INTRODUCTION

Technological advancements and modernization have significantly contributed to the rise of remote work across various fields. Alongside this shift, Human Resource (HR) departments have evolved, embracing electronic Human Resource Management (E-HRM). One of the primary responsibilities of HR is recruitment, which involves identifying suitable candidates for various organizational roles. By employing effective recruitment strategies, organizations can generate a pool of applicants, enabling them to select the best candidates at the right time and place.

The recruitment process within organizations has been revolutionized by technological advancements. Traditional recruitment methods are being increasingly supplanted by e-recruitment, or online recruitment. This modern approach leverages the internet to post job vacancies and attract potential candidates. Organizations adopt e-recruitment to streamline the hiring process, advertising job openings on their career websites and online job portals to find the best candidates efficiently.

A job portal is a website or platform that facilitates the e-recruitment process by connecting employers with potential employees. Prominent career websites such as Glassdoor, Indeed, Naukri, and Career jet offer a wide array of job listings across numerous fields.

Using direct application connections, these websites usually enable job seekers to submit instant applications for openings. They also give job seekers access to the company website and the HR department's contact information, allowing them to speak with recruiters directly.

Employers may examine the resumes that candidates post onto their profiles on employment portals, which streamlines the application process. One of the top job platforms available nowadays is Naukri.com. The majority of job portals enable job searchers to create free accounts, from which they may look for job opportunities and upload resumes for potential employers to see. Job searchers can use the portal to apply for jobs directly after perusing through employer-posted job advertisements.

OBJECTIVES OF THE STUDY

1. To assess the level of awareness regarding job portals.
2. To examine the motivations driving the utilization of job portals.
3. To determine the factors that affects job seekers while using job portals.

REVIEW OF LITERATURE

Lakshija Navaratnam et al., (2023) conducted a study that highlighted "Job seekers' perceptions of the job portals in Sri Lanka". The study aimed to identify the factors influencing the opinions of young job seekers regarding job portals. A survey questionnaire was administered to collect data from a sample of 250 young job seekers, and the results were analysed using SPSS. The findings indicated that the quality of content, perceived ease of use, perceived utility, perceived reliability, and supplementary services significantly impacted young job seekers' views on job portals.

Dr. P. Rajmohan et al., (2022) published an article about "Influencing factors of Job Seekers' Perception towards E- Recruitment Portal." Examining how various factors affect job seekers' opinions on e-recruitment portals was the aim of this study. Employing descriptive analysis and a simple random sampling method, data were gathered from 115 respondents. Regression and correlation analysis were two statistical methods used to analyse the data. The results showed that there was a strong positive association between job searchers' willingness to use e-recruitment and perceived usefulness, as well as between perceived simplicity of use and job seekers' inclination to use e-recruitment.

Ikmal Bin Abd Malik et al., (2021) conducted a study on "Online Recruitment Website is Significantly Influence the Job-Seekers to Apply Job Online". The purpose of this study was to find out how excited job seekers were about using online job boards. Data from 200 respondents were collected from online survey questionnaire, employing both convenience and snowball sampling methods. Analysis was performed using a 5-point Likert scale. The study found a favourable correlation between job searchers' views of online recruitment websites' utility and trustworthiness and their propensity to use them for job searching.

RESEARCH METHODOLOGY

1. Research design - Descriptive research
2. Sampling – Convenience sampling
3. Sample size – 50 respondents
4. Data collection:
   - ❖ Primary data – Structured questionnaires
   - ❖ Secondary data – Journals and websites
5. Tools of analysis:
   - ❖ Percentage analysis
   - ❖ Weighted Average Method

LIMITATION OF THE STUDY

- ❖ The sample size consists of 50 respondents only.
- ❖ Time was a major constraint for the study.

ANALYSIS AND INTERPRETATION OF DATA

Table - 1: Gender

GENDER	NO. OF RESPONDENTS	PERCENTAGE
Female	**31**	**62**
Male	19	38
TOTAL	**50**	**100**

Source: Primary data

INTERPRETATION : From the above table 1, women made up 62% of the respondents, followed by men 38%.

Table - 2: Age

AGE	NO. OF RESPONDENTS	PERCENTAGE
20-25	**28**	**56**
26-35	8	16
36-45	8	16
45 & above	6	12
TOTAL	**50**	**100**

Source: Primary data

INTERPRETATION : From the above table 2, 56% of respondents were in the 20–25 age range, followed by 16% in the 26–35 age range, 16% in the 36–45 age range, and 12% in the 45 and above age range.

Table - 3: Educational qualification

QUALIFICATION	NO. OF RESPONDENTS	PERCENTAGE
Up to Higher secondary	6	12
Under graduate	**24**	**48**
Post graduate	16	32
Professional	4	8
TOTAL	**50**	**100**

Source: Primary data

INTERPRETATION : From the above table 3, 48% of respondents were undergraduates, 32% were postgraduates, 12% had completed higher secondary education, and 8% were professionals.

Table - 4: Awareness of job portals

AWARENESS	NO. OF RESPONDENTS	PERCENTAGE
Yes	**48**	**96**
No	2	4
TOTAL	**50**	**100**

Source: Primary data

INTERPRETATION : From the above table 4, 96% of respondents are aware of job portals, while 4% are not aware of them.

Table - 5: Field of employment

FIELD	NO. OF RESPONDENTS	PERCENTAGE
Accounting	**20**	**40**
IT	16	32
Teaching profession	5	10
Health and medicine	3	6
Others	6	12
TOTAL	**50**	**100**

Source: Primary data

INTERPRETATION : From the above table 5, the majority of respondents (40%) search for opportunities in the accounting sector, 32% search for opportunities in the IT sector, 12% search for opportunities outside of the job descriptions listed above, 10% search for opportunities in the teaching profession sector, and 6% find opportunities in the health and medicine sector.

Table - 6: List of job portals

JOB PORTALS	NO. OF RESPONDENTS	PERCENTAGE
Naukri.com	15	30
LinkedIn	**19**	**38**
Indeed	5	10
Job.com	4	8
Others	7	14
TOTAL	**50**	**100**

Source: Primary data

INTERPRETATION : From the above table 6, 38% of respondents use LinkedIn, 30% use Naukri.com, 14% use job portals other than those listed above, 10% use Indeed, and 8% use Job.com when searching for a job.

Table - 7: Version of job portals

VERSION	NO. OF RESPONDENTS	PERCENTAGE
Paid version	16	32
Unpaid version	**34**	**68**
TOTAL	**50**	**100**

Source: Primary data

INTERPRETATION : From the above table 7, the majority of respondents (68%) use free job sites, while 32% use premium versions.

Table - 8: Benefits from job portals

BENEFICIAL	NO. OF RESPONDENTS	PERCENTAGE
Yes	**44**	**88**
No	6	12
TOTAL	**50**	**100**

Source: Primary data

INTERPRETATION : From the above table 8, 88% of respondents said they had profited from job portals, while 12% said they had not benefited at all.

Table - 9: Reason for using job portal

(SA – Strongly Agree, A – Agree, N – Neutral, D – Disagree, SD – Strongly Disagree)

REASON	SA	A	N	D	SD	TOTAL	MEAN	RANK
Easy to apply	(22*5) 110	(13*4) 52	(12*3) 36	(3*2) 6	(0*1) 0	**204**	13.6	**II**
Saves time	(17*5) 85	(22*4) 88	(11*3) 33	(0*2) 0	(0*1) 0	**206**	13.7	**I**
Convenient to search jobs	(18*5) 90	(18*4) 72	(12*3) 36	(2*2) 4	(0*1) 0	**202**	13.5	**III**
More Job Opportunities	(15*5) 75	(12*4) 48	(19*3) 57	(4*2) 8	(0*1) 0	**188**	12.5	**V**
Accurate information about the job	(11*5) 55	(12*4) 48	(14*3) 42	(8*2) 16	(5*1) 5	**166**	11.1	**IX**
Confidential	(13*5) 65	(12*4) 48	(19*3) 57	(6*2) 12	(0*1) 0	**182**	12.1	**VII**
Friends/ Relative Referrals	(8*5) 40	(16*4) 64	(18*3) 54	(3*2) 6	(5*1) 5	**169**	11.3	**VIII**
Saves Recruitment Cost	(17*5) 85	(19*4) 76	(11*3) 33	(3*2) 6	(0*1) 0	**200**	13.3	**IV**
Popularity of Portals	(11*5) 55	(20*4) 80	(15*3) 45	(3*2) 6	(1*1) 1	**187**	12.4	**VI**

Source: Primary data

INTERPRETATION : According to the weighted average method Table 9, Rank I showed that most important reason for using job portal is it Saves time of the respondents, Rank II showed that job portals are easy to apply and finally Rank III showed that Job portals are convenient for the respondents to search jobs.

Table - 10: Factors which affects job seekers while using job portals

(SA – Strongly Agree, A – Agree, N – Neutral, D – Disagree, SD – Strongly Disagree)

FACTORS	SA	A	N	D	SD	TOTAL	MEAN	RANK
Security of Information being breached	(20*5) 100	(6*4) 24	(13*3) 39	(3*2) 6	(8*1) 8	**177**	11.8	**IV**
Charges for Registration	(7*5) 5	(21*4) 96	(17*3) 3	(3*2) 6	(2*1) 2	**142**	9.5	**V**
More Irrelevant Alerts	(12*5) 60	(14*4) 56	(20*3) 60	(2*2) 4	(2*1) 2	**182**	12.1	**III**
Poor response from employers	(11*5) 55	(15*4) 60	(19*3) 57	(5*2) 10	(0*1) 0	**182**	12.1	**III**
Fraudulent ads	(17*5) 85	(9*4) 36	(17*3) 51	(4*2) 8	(3*1) 3	**183**	12.2	**II**
Improper Job Description	(20*5) 100	(11*4) 44	(13*3) 39	(4*2) 8	(2*1) 2	**193**	12.9	**I**

Source: Primary data

INTERPRETATION : According to the weighted average method Table 10, Rank I showed that job portals are providing improper job description to the job seekers, Rank II showed that Fraudulent ads are there in the job portals and finally Rank III showed that employers response were poor in the job portals.

FINDINGS

By applying percentage analysis,

- 62% majority of the respondents were female.
- 56% majority of the respondents belonged to the age group of 20-25 years.
- 48% majority of the respondents were under graduate.
- 96% majority of respondents are aware of job portals.
- 40% majority of the respondents looks for opportunities in Accounting Sector.
- 38% majority of the respondents are using LinkedIn to search jobs.
- 68% majority of the respondents are using unpaid version of job portals.
- 88% majority of the respondents are benefited from the job portals.

By applying weighted average method,

- ❖ The most important reasons for using job portal are, it saves time of the job seekers, easy to apply and Job portals are more convenient for the job seekers to search jobs.
- ❖ Job portals are providing improper job description to the job seekers, Fraudulent ads and Poor response from employers are the factors which affects job seekers while using job portals.

SUGGESTIONS

- ❖ The job portals provide incomplete explanations of job facts such as salary, nature of work, job description, and corporate information. An unfinished job profile may discourage a worthy applicant from applying for that specific position. As a result, the employment portals must guarantee that these facts are accessible through them.
- ❖ Job portals could consider adding job postings in regional languages as an optional feature for users. This would cater to individuals more comfortable with languages other than English, enhancing accessibility and inclusivity in job searching.

CONCLUSION

Since technology has altered the world, internet mode is now a part of every industry. Even the human resources division has seen a significant influence from e-recruitment. Hiring the most capable, intelligent, and skilled candidates is becoming a crucial procedure. These days, this process is primarily digital due to technological improvements. Now, hiring through job portals is becoming more and more common.

The study's findings indicate that, as job seekers increasingly choose online job portals for job searching and application procedures, e-recruitment is replacing traditional recruitment techniques. The ease of use, effectiveness, and convenience of these portals are some of the aspects that affect how job searchers view them. Online job portals are often regarded by job seekers as useful and practical resources for their job hunt.

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MULTI-FUNCTIONAL ROBOT CAR USING ARDUINO

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ABSTRACT

Robotics is a multidisciplinary field encompassing electronics, communication, computer science, and engineering. Robotics include the design, manufacturing, operation, and use of robots. Robotics aims to develop devices that aid and support humans. Arduino is a microcontroller board that houses an entire computer on a single chip. The processor core, memory, and input/output controllers are all on a single chip. Arduino boards serve as the robot's brain. A Line Following A robot is an automated vehicle that follows a predetermined path on a surface. This article explains how to create a versatile robot automobile using the supplied components.

Keyword: *Linefollower, obstacle avoidance, Arduino board, servo and motor.*

INTRODUCTION

Robotics is an interdisciplinary field that encompasses electronics and communication, computer technology, and engineering. Robotics is the design, manufacture, operation, and application of robots. Robotics seeks to design machines that can assist and benefit people. Robots may be used in a variety of conditions for a variety of purposes; however, many are now used in risky environments (such as the inspection of radioactive substances, bomb detection, and deactivation), production processes, or in which people cannot survive (e.g., in space, underwater, in extreme heat, and the easy up and containment of dangerous Substances and radiation. Robotics encompasses mechanical engineering, electrical engineering, records engineering, mechatronics engineering, electronics, biomedical engineering, computer engineering, manipulative structures engineering, software programme engineering, mathematics, and so on.

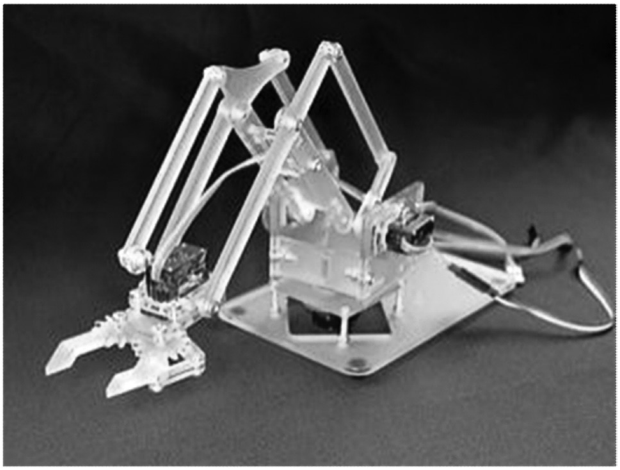
ROBOTICS USING ARDUINO

Using Arduino, an open-source hardware development platform, one may design and build electronic devices that communicate with their surroundings. Arduino is essentially a microcontroller board that houses an entire computer on a single chip. The input and output controllers, memory, and computational core are all housed on a single chip. An Arduino microcontroller includes the microcontroller chip itself, as well as power management, timing modules, input and output connectors, and other components. The robot's brain is composed of Arduino boards. Arduino robotic code allows you to control and programme buttons, motors, switches, lights, and other electronic components. Another option for using the Arduino Kit is to link it to a computer. Arduino may accept computer programmes written on it. There are two components in the Arduino Kit: software and hardware. Simple to sophisticated instructions can be programmed for the Arduino board to execute. To load the code onto traditional programmable circuit boards, additional hardware is needed. Hardware is not necessary with Arduino. All you need to load code onto the board is a USB cord.

COMPONENTS OF MULTIFUNCTIONAL CAR

1. MECHANICAL ARM

Robotic arms are mechanical arms that have been programmed to execute things that a human arm cannot. The robotic arm can be used to build an Arduino or a vehicle. It's widely employed in automated industrial processes including welding, assembling, and packing. Robotic arms are widely employed in a range of applications because of their capacity to perform repetitive tasks repeatedly. The Arduino robotic arm may be controlled wirelessly using an Android app or a smartphone.



2. ARDUINO UNO AND MECANUM WHEELS

The ATmega328P microcontroller board is the foundation of the Arduino Uno board. Six analogue inputs, fourteen digital input/output pins (six of which are PWM outputs), a reset button, a power jack, an ICSP header, a USB connector, and a 16 MHz ceramic resonator (CSTCE16M0V53-R0) are among its features. It comes with everything needed to support the microcontroller; all you need to do to get going is power it with a battery, an AC-to-DC adapter, or a USB cable to connect it to a computer. The Arduino robot car known as the Mecanum Wheeled Robot has mecanum wheels instead of regular wheels, so it can go in whatever direction it wants. The wheels are equipped with four stepper motors that are individually regulated. The wheels can move in any direction while the motors rotate them in a certain pattern since the rollers are positioned diagonally around them.

Arduino Uno Board

3. MOTOR DRIVER AND SERVO DRIVER

- An integrated circuit (IC) called a motor driver is used in embedded electronics and autonomous robots to control motors. The purpose of the motor drive is to take electrical energy from the source and supply it to the motor so that the motor produces the required mechanical output.

- The servo driver, also referred to as a servo amplifier, provides power to the servo motor. The servo amplifier receives commands for torque, speed, or position and transforms them into a powerful format that the servo motor can use. A PWM signal is sent over the control wire to drive a servo motor when electricity is applied to it. In other words, the duty cycle determines the final position of the shaft; the rotor of the servo motor can rotate at a particular angle depending on the pulse width. Servo motors can be powered by either DC or AC energy, and if an encoder signal is provided, the driver and CPU feedback loop is closed.

4. IR SENSOR AND ULTRASONIC SENSOR

- A photodiode plus an infrared LED make up an IR sensor. The infrared LED will continuously emit infrared rays, which the photodiode will act as a receiver for. Every time the IR rays from the IR LED come into contact with an object, they are reflected back (the surface shouldn't be black). If the photodiode is able to capture the infrared photons that are produced by the infrared LED, then the infrared sensor's output will be digitally high. If the photodiode absorbs none of the infrared radiation that the infrared LED emits, the output will be digitally low. Both the IR sensor's 5V operating voltage and the output of the IR sensor module matter.

- The distance and velocity of an item can be measured with a non-contact ultrasonic sensor. This sensor measures an object's distance and velocity using the characteristics of sound waves. Irrespective of the form, hue, or surface roughness of an object, ultrasonic sensors are capable of estimating its distance. Additionally, they are able to gauge an object's approach or retreat. The formula is used to determine the distance [90–93]. Consequently, the trig pin of the HC-SR04 remains high for a minimum of 10 microseconds. We use eight 40kHz pulses at a time to transmit a sound beam. The signal is detected by the receiver echo pin of the HC-SR04 when it strikes the surface and returns.

FUNCTIONS OF THE ROBOT CAR

1. LINE FOLLOWER

A Line-Following A robot is an autonomous vehicle that travels along a line that is inserted into a surface. Many novices and students utilise this robot for their first robotics experience. Robots are used by large line-following industries to assist automated production operations. The Line That Follows The fundamental function of the robot is to identify lines in its immediate surroundings and on the road. After the Arduino receives the information collected by the line-detection sensors, the robot may use programming to follow the line. An autonomous self-driving car that follows lines is called a line follower. In general, there are two types of line followers. In one form of line follower, the black line is followed on the white surface; in another type, the white line is followed on the black surface. Many businesses, including the food delivery sector, the medical field, and the distribution of medication to patients who require it, use these types of queue followers.

APPLICATIONS:

- Industrial Applications: These robots can be utilised to transport automated equipment in industries where traditional conveyor belts are being replaced.
- Vehicle applications: These robots can function as self-driving cars on magnetic roadways.
- Domestic use: Ideal for cleaning floors in the home.
- Guidance apps provide directions in public spaces such as shopping malls, museums, and public places.

2. OBSTACLE AVOIDING

Avoiding Obstacles Robots are capable of automatically identifying impediments in their path and reversing course to avoid them. Any autonomous mobile robot must be able to avoid collisions, and our architecture makes this feasible. With so many applications, the bulk of military organisations today deploy obstacle-avoiding robots to carry out risky operations that soldiers would never be able to. This research investigates mobile robotic navigation systems' ability to avoid obstacles. The navigation system is important because the robot needs to be controlled from its starting point to its destination without running into anything.

APPLICATIONS

- Robots that avoid obstacles can be incorporated into almost all mobile robot navigation systems.
- They can be employed in dangerous situations where human intervention would be lethal.
- They can be utilised for home tasks like automated vacuuming.

3. ROBOTIC ARM

Robotic arms are mechanical appendages that act similarly to human arms and are frequently programmable. The arms may function as stand-alone units or as parts of a more complex, larger robot. An articulated robot can move in a rotating manner or in a translational (linear) manner thanks to the joints connecting its linkages.[1-2] The manipulator may construct a kinematic chain through its links. The endpoint of the manipulator's kinematic chain is the end effector, which resembles the human hand. However, it is customary to refrain from referring to a "robotic hand" as a synonym for a "robotic arm."

- Cartesian/gantry robots: Applied in machine tool handling, pick-and-place, assembly, sealant application, and arc welding. This robot has an arm with three prismatic joints, and each axis of the robot is coincident with a Cartesian coordinator.
- Cobots, or collaborative robots, are robots that assist humans in their job. In contrast, normal industrial robot applications involve autonomous robots that work without human intervention. Cobot has a variety of applications, such as material handling, dispensing, assembly, finishing, quality inspection, robotic research, and commercial applications. Cobot safety could rely on software and sensors that ensure safe conduct, or it could rely on rounded edges, lightweight materials, and the force and speed limitations inherent in the design.
- Spot welding, die casting machines, machine tool manipulation, and assembly duties are all performed by cylindrical robots. It is a robot whose axes create a cylindrical coordinate system. Articulated robot: Used in diecasting, fettling machines, spray painting, gas welding, arc welding, and assembly procedures. It's a robot whose arm has at least three rotating joints.
- A mobile platform for operating flight simulators in the cockpit can be created by utilising a parallel robot. It is a robot whose arms have prismatic or simultaneous rotary joints.
- A robot with autonomously moving fingers and thumbs, resembling a human hand, is called an anthropomorphic robot.

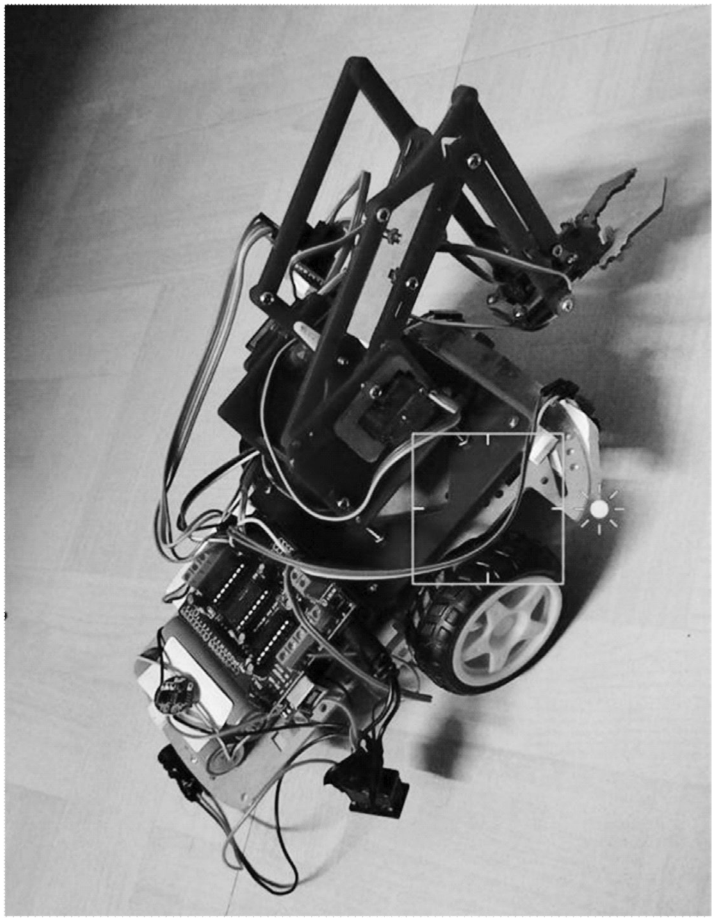
APPLICATIONS OF ROBOT CAR

1. It has the potential to become a viable means of transportation in the real world.
2. The robotic vehicle can be used in places where humans can hear but cannot reach, such as a small pipeline, a fire, or a particularly hazardous situation.
3. When paired with wheelchairs, it can help those with disabilities.
4. It is suitable for carrying and storing small goods.
5. Military applications, such as monitoring an enemy camp with these cameras.

CONCLUSION

The Multifunctional Robot Car project includes a wide range of current and potential applications. In the future, enhancements can be made to the project to increase its effectiveness. The project offers a variety of uses, including military, home security, rescue missions, industry, and medical support. Because of its small size, this robot can operate in areas where humans cannot. This robot can be used to spy on individuals. It has the potential to be used for surveillance. We can install a webcam into this robot for further safety. Overall, the project has several useful things to examine.

FINAL OUTCOME IMAGE :



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SHORT SELLING AND ITS IMPACT

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ABSTRACT

On 24th January 2023, New York's the Hindenburg Research published a report after what it called a two-year investigation accusing the Indian Business conglomerate, the Adani Group of companies of "brazen stock manipulation and accounting fraud over the course of decades". Since then, the market cap of the conglomerate plunged to deep lows despite a few surviving the grave impact of the report. The release was strategically timed just 2-3 days prior to the date on which the follow-on public offer(FPO) of ₹20,000 Cr by the Adani Enterprises was slated to hit the market. The report and the allegations involved created ripples in the market forcing the conglomerate to decide the withdrawal of the FPO. The group also went a step ahead in ensuring investor confidence by promising to repay the subscribers of the FPO. This issue averted the focus of all to a stock market practice named short selling, the activity that the Hindenburg Research claims to indulge in. This article delves into the practice of short selling and its legality followed by an analysis of the Adani-Hindenburg row.

KEYWORDS: *Short selling, legality, the Hindenburg Research, Adani Group's exposure.*

WHAT IS SHORT SELLING?

Short selling occurs when an investor borrows a security and sells it on the open market, planning to buy it back later for less money. Short sellers bet on, and profit from, a drop in a security's price. This can be contrasted with long investors who want the price to go up. Short selling has a high risk/reward ratio: It can offer big profits, but losses can mount quickly and infinitely due to margin calls.

With short selling, a seller opens a short position by borrowing shares, usually from a broker-dealer, hoping to buy them back for a profit if the price declines. Shares must be borrowed because you cannot sell shares that do not exist. To close a short position, a trader buys the shares back on the market—hopefully at a price less than at which they borrowed the asset—and returns them to the lender or broker. Traders must account for any interest charged by the broker or commissions charged on trades.

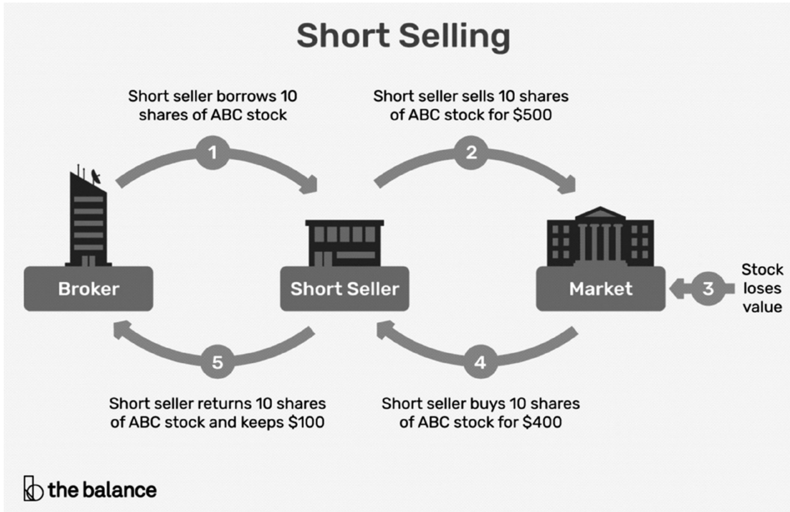

FIG 1: SHORT SELLING

Source: the balance

LEGALITY OF SHORT SELLING

Short selling fell under heavy scrutiny during the global financial crisis of 2007 and 2008 when Australia, Canada and several European nations placed bans on short selling of financial stocks. Since that time, regulations have been lifted or amended in some countries, but generally speaking, the United States has more liberal laws on short selling than most of the world.

Most economists and investors believe short selling is an important part of the price discovery process and helps highlight flaws in company fundamentals, which send important signals into the market. For example, short selling can assist with more efficient price discovery, hedging other investments, increasing market liquidity and lessening the impact of bubbles. Nevertheless, short selling is often misunderstood and therefore considered a risk, not unlike options trading, futures markets or margin accounts.

For decades, certain politicians and prognosticators have alleged that short selling can actually help cause market declines and recessions. There are several reasons why a country might ban short selling. Some believe short selling en masse triggers a sale spiral, hurting stock prices and damaging the economy. Others use a ban on short sales as a pseudo-floor on stock prices.

As per SEBI norms, short selling shall be defined as selling a stock which the seller does not own at the time of trade. All classes of investors, viz., retail and institutional investors, shall be permitted to short sell. The securities traded in the F & O segment shall be eligible for short selling. Naked short selling is not permitted in the Indian securities market and all investors would be required to mandatorily honour their obligation of delivering the securities at the time of settlement. SEBI may review the list of stocks that are eligible for short selling transactions from time to time.

ANALYSIS OF THE ADANI-HINDENBURG ROW

Hindenburg Research prepares its investigation report on a target company in six or more months by going through its public records and internal corporate documents, as well as talking to its employees. The report is then circulated to Hindenburg's limited partners, who, together with Hindenburg, take a short position in the target company. Hindenburg takes profits if the target company's share price declines.

Questions to ponder on: How does this research firm have access to the 'internal corporate documents' of the target companies? Who are the so-called 'limited partners' of this firm besides the 9 employees(as of 2022)?

The U.S. Department of Justice is targeting dozens of prominent short-selling investment and research firms in a sweeping federal investigation with prosecutors probing potentially illegal trading tactics. Several of the illegal trading tactics under investigation, include "spoofing"—essentially flooding the market with fake orders to drive a stock price up or down—and "scalping," wherein activist shareholders cash out positions without disclosing it. Prominent firms and short-sellers also mentioned in DOJ requests for information include Melvin Capital and founder Gabe Plotkin, researcher Nate Anderson and Hindenburg Research, as well as Sophos Capital Management and Jim Carruthers, among others.

The report turned the spotlight on the exposure of financial institutions to the Adani conglomerate. Global brokerage firm CSLA in its report said that bank fund to the overall Adani group debt is less than 40 per cent. The Indian banks exposure to the debt is less than 40 per cent and that of private banks is less than 10 per cent. RBI allows for no more than 25% of a bank's available eligible capital base to be exposed to any one group of connected companies.

Another remarkable achievement by the group, a few weeks before the release of the report was the unprecedented takeover of the Haifa port marking its official entry into Israel. The Port of Haifa is the second largest port in Israel in terms of shipping containers and the biggest in shipping tourist cruise ships.

CONCLUSION

The face-off between the Adani group and the Hindenburg Research was given a political hue with allegations of the ruling Government patronizing such capitalists. It is significant to realize that with India's ambition of growth to a $5 trillion economy, embracing every sector under the public umbrella will not be beneficial in the long run. It is, therefore necessary to provide some leeway to the private players to enter the market with innovations paving the way to the target. While it is reasonable to claim that "the Government has no business to be in business", it is also essential to ensure appropriate checks and balances to avoid instances of crony capitalism stemming from such associations.

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A STUDY ON HEALTH MONITORING AMONG SMARTWATCH USERS

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ABSTRACT

Smart watches are computerized wristwatches with features that go much further than keeping track of time. Smart watch is a convenient device; it has various features which are very useful in daily life. The goal of the research is to learn about the user's preference on general and health monitoring features of smart watches. The study concentrated more on health monitoring features. Quantitative research is used in the study and 100 responses were collected through questionnaires. The data are collected from respondents by using the convenient sampling and the tool used in the study for analysis is percentage analysis. The health monitoring feature has to be improved so it will provide accurate data on health and wellness. The study concluded that smart watches are very useful because of their general as well as health monitor features.

KEYWORDS: *Wristwatch computers, Health monitoring features, General features, Health and wellness.*

INTRODUCTION:

The recent development in technology has changed a lot, in electronic devices. The improvement in Internet of Things (IoT) allows connecting any device through the internet. Mobile phones became smart phones similarly ordinary watches were turned into smart watches. Smart watch is a simple and convenient tool for everyday use. In today's era, smart watches have obtained a lot of people's attention due to their advanced features. Smart watches enable you to know notifications, alerts, make or attend calls, etc., it also has some other health monitoring features like heart rate, blood pressure, oxygen level, stress level, sleep monitor, etc. The smart phone is connected via Bluetooth even if the smartphones are far away. The idea behind the research is to know about the user's preference regarding smart watches general features and health monitoring features.

SCOPE OF THE STUDY:

The research study concentrates on the smart watch users. The scope of the study is to analyze the general and health monitoring features in the smart watches.

OBJECTIVE OF THE STUDY:

- To identify the most preferred brand of smart watch used by the respondents.
- To identify the number of years or months users have been using a smart watch.
- To ascertain the data provided by the smart watch on health and wellness is reliable.

LIMITATIONS OF THE STUDY:

Since the questionnaire was sent within the Chennai city, overall conclusion cannot be drawn from it and sample size also has some limitations and it may not get valid results.

RESEARCH METHODOLOGY:

- Research design – Quantitative research
- Sampling – Convenience sampling
- Sampling size – 100 respondents
- Period of study – 1st February, 2024 – 1st March, 2024.
- Data collection
  - Primary data – Questionnaire
  - Secondary Data – Journals and articles.
- Tools of analysis – Percentage analysis

REVIEW OF LITERATURE:

- Abi D S (2022) conducted a study on preference on smart watches among students. In this study, the author used both the primary and secondary data. The sample size of the study was 106 responses. Percentage analysis, One - Way Analysis of Variance test and Chi square test are used as the tools in the study. The study concluded that the students wanted to purchase smart watches. The study result that, number of companies beginning to introduce more advanced features in smart watches.
- Amina Almarzouqi et al., (2022) conducted a study on the factors that determine the factors of smartwatch for medical purposes using dual - stage structural equation modeling and artificial neural network analysis. The author collected data from medical fields including doctors, nurses and 489 responses were used in the study. Single-stage linear analysis, Cronbach's alpha coefficient, p-values and t-values were used as analysis in the study. The study found that smartwatches create high demand in the medical field and are useful in transmission of information between doctors and patients.

- Ammar Jasri et al., (2022) emphasized a research investigation using the methods of structural equation modeling and neural networks with artificial intelligence explore how AI may enhance physician experience. The study was done with 1418 respondents as the sample size. Structural Equation Modelling analysis, Cronbach's Alpha test and Harman's test were used as analysis tools for the study. This study concluded as Artificial Intelligence technology progresses and health services turns more accessible, self – management of health becomes increasingly important.

- Nina Anggraini et al., (2019) conducted a study on usability and perception of smart watch users in Indonesia. In this study 116 smart watch users were surveyed and 10 users interviewed as a sample for the study. Regression analysis was performed by using statistical program Statistical Package for Social Sciences 24. The study found that most respondents adopted their smart watch predominantly on the basis of the brand name of their smartphone and that consumers are less concerned with the benefits of their smart watch.

- Ramin Ramezani et al., (2023) explored an opinion to consider for developing a health care application through smart watches. The author explained the hurdles which are faced during the evolution of apps and detailed information on the design decisions as well as details of implementation was also provided. The study provided a certain note to be considered, such as standalone or smartphone - dependent, background execution limit, handling time without paired smartphone, control Wi-Fi switch, file write, dual communication between the administrative app and patient monitoring app.

DATA ANALYSIS:

TABLE - 1 : GENDER

GENDER	NO. OF RESPONSES	PERCENTAGE
Male	32	32%
Female	68	68%
TOTAL	**100**	**100%**

GENDER

INFERENCE: The above table 1 showed that 68% of the respondents were Female and 32% of the respondents were Male.

TABLE - 2 : AGE (IN YEARS)

AGE	NO. OF RESPONSES	PERCENTAGE
Below 20	6	6%
21-40	90	90%
41-60	3	3%
Above 60	1	1%
TOTAL	**100**	**100%**

INFERENCE: The above table 2 showed that 90% of the respondents were 21 - 40 years, 6% were below 20 years, 3% of the respondents were 41 – 60 years and 1% of the respondents were above 60 years.

TABLE - 3 : EDUCATIONAL QUALIFICATION

EDUCATIONAL QUALIFICATION	NO. OF RESPONSES	PERCENTAGE
School	1	1%
Diploma	4	4%
Under Graduate	32	32%
Post Graduate	45	45%
Professional	18	18%
TOTAL	**100**	**100%**

INFERENCE: The above table 3 showed that 45% of the respondents were post-graduate, 32% of the respondents were under-graduates, 18% were professional, 4% of the respondents were diploma and 1% of the respondents were school.

TABLE - 4 : EMPLOYMENT STATUS

EMPLOYMENT STATUS	NO. OF RESPONSES	PERCENTAGE
Public Sector Employee	3	3%
Private Sector Employee	58	58%
Self- Employed	24	24%
Professional	15	15%
TOTAL	**100**	**100%**

INFERENCE: The above table 4 showed that 58% of the respondents were private sector employees, 24% of the respondents were self-employed, 15% of the respondents were professional and 3% of the respondents were public sector employees.

TABLE - 5 : FAMILY MONTHLY INCOME (IN RS.)

FAMILY MONTHLY INCOME	NO. OF RESPONSES	PERCENTAGE
Below 20000	24	24%
20001 – 40000	40	40%
40001 – 60000	19	19%
Above 60000	17	17%
TOTAL	**100**	**100%**

INFERENCE: The above table 5 showed that family income for the month 40% of the respondents earns Rs. 20001 – Rs. 40000, 24% of the respondents earns below Rs. 20000, 19% of the respondents earns Rs. 40001 – Rs. 60000 and 17% of the respondents earns above Rs. 60000.

TABLE - 6 : BRAND OF SMART WATCH

BRAND OF SMART WATCH	NO. OF RESPONSES	PERCENTAGE
Apple	4	4%
Boat	45	45%
Casio	2	2%
Fastrack reflex	5	5%
Samsung	10	10%
Titan	3	3%
Others	31	31%
TOTAL	**100**	**100%**

INFERENCE: The above table 6 showed that 45% of the respondents used Boat brand, 31% of the respondents used other brand, 10% of the respondents used Samsung brand, 5% of the respondents used Fastrack reflex brand, 4% of the respondents used Apple brand and 2% of the respondents used Casio brand.

TABLE - 7 : NO. OF MONTHS/YEARS USING SMART WATCH

NO. OF MONTHS/YEARS	NO. OF RESPONSES	PERCENTAGE
Less Than 6 Months	27	27%
6 – 12 Months	28	28%
1-2 Years	27	27%
More Than 2 Years	18	18%
TOTAL	**100**	**100%**

INFERENCE: The above table 7 showed that number of months or years smart watch used, 28% of the respondents used smart watch for 6 – 12 months, 27% of the respondents used smart watch for less than 6 months, 27% of the respondents used smart watch for 1- 2 years and 18% of the respondents used smart watch for more than 2 years.

TABLE - 8 : NO. OF HOURS USING SMART WATCH IN A DAY

NO. OF HOURS USED	NO. OF RESPONSES	PERCENTAGE
Less than 5 Hours	43	43%
5 – 9 Hours	41	41%
9 – 15 Hours	13	13%
More than 15 Hours	3	3%
TOTAL	**100**	**100%**

INFERENCE: The above table 8 showed that 43% of the respondents use smart watch for less than 5 hours in a day, 41% of the respondents use smart watch for 5 - 9 hours in a day, 13% of the respondents use smart watch for 9 - 15 hours in a day and 3% of the respondents use smart watch for more than 15 hours in a day.

TABLE - 9 : ARE THE FEATURES OF SMART WATCH EASILY UNDERSTANDABLE?

PARTICULARS	NO. OF RESPONSES	PERCENTAGE
Yes	97	97%
No	3	3%
TOTAL	**100**	**100%**

INFERENCE: The above table 9 showed that 97% of the respondents easily understand the features in the smart watch and 3% of the respondents felt difficult to understand the features in the smart watch.

TABLE - 10 : NO. OF TIMES DETECT HEALTH IN A DAY

NO. OF TIMES	NO. OF RESPONSES	PERCENTAGE
Less Than 2 Times	64	64%
2 – 5 Times	29	29%
More Than 5 Times	7	7%
TOTAL	**100**	**100%**

INFERENCE: The above table 10 showed that 64% of the respondents detect health less than 2 times in a day, 29% of the respondents detect health 2 – 5 times in a day and 7% of the respondents detect health more than 5 times in a day.

TABLE - 11 : DO YOU THINK SMART WATCH GIVES ACCURATE DATA ON HEALTH AND WELLNESS?

PARTICULARS	NO. OF RESPONSES	PERCENTAGE
Yes	51	51%
No	49	49%
TOTAL	**100**	**100%**

INFERENCE: The above table 11 showed that 51% of the respondents think smart watches provide accurate data on health and wellness and 49% of the respondents think smart watches do not provide accurate data on health and wellness.

FINDINGS:

- 68% of the respondents were Female.
- 90% of the respondents were aged between 20-40 years.
- 40% of the respondents earn Rs. 20001 – Rs. 40000 as family income in a month.
- 45% of the respondents used boat brand.
- 28% of the respondents used smart watch for 6 – 12 months.

- 43% of the respondents use smart watch for less than 5 hours in a day.
- 97% of the respondents were easily understand the features in the smart watch.
- 64% of the respondents detect health less than 2 times in a day.
- 51% of the respondents think smart watches provide accurate data on health and wellness.

SUGGESTIONS:

- Many people think smart watch does not provide the accurate data on health and wellness. So, these features can be improved.
- The users have also believed that the price of the smartwatches, can be sold at affordable price. Since many people started to buying it.
- The battery life of the smart watch can also be improved.

CONCLUSION:

- The above study helps to know about the smart features and its benefits. Smart watch features were being improved according to the user's preference.
- Most of the respondents were satisfied with the health monitoring features and it is easy to use. Smartwatch is a more convenient device. But the health monitoring feature has to be improved so it will provide accurate data on health and wellness.
- The study concluded that respondents consider buying smart watches are very useful as it contains general and many health related features.

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THE ECONOMIC IMPACT OF FLOATING UNDERWATER TRAIN FROM MUMBAI TO DUBAI

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ABSTRACT

India and United Arab Emirates have shared the trade link through the centuries. Trade was dominated by dates, pearl and fishes. Dubai positioned it as a trading hub in 1990s at the very same time India got liberalized its economy. India -UAE economic and commercial relation contribute to stability and strength bilateral relation. The India -UAE total trade merchandise has been valued at $52.76 billion for the first nine month of the fiscal year 2021-22. The UAE's investment in India is estimated to be around $11.67 Billion which makes it as 9th largest investor in India.

KEYWORDS: *India, UAE, economy, Dubai.*

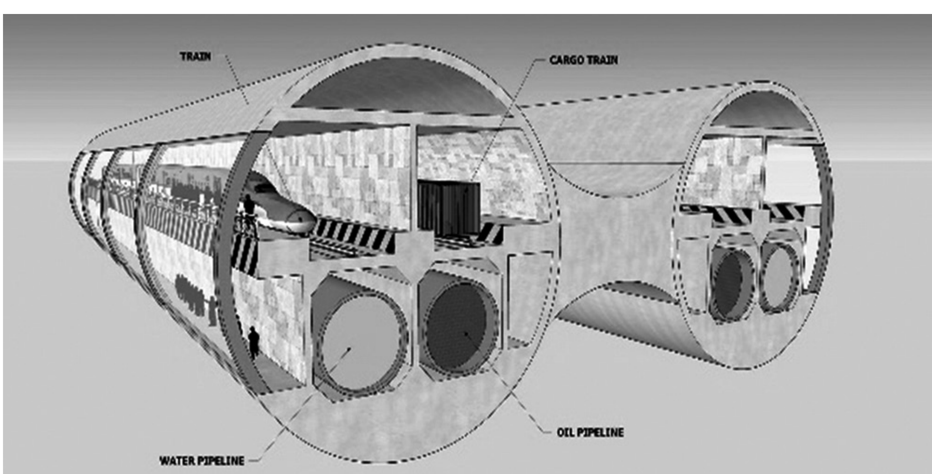
INTRODUCTION:

India and UAE established its diplomatic relation in 1972. Bilateral defense interaction between India and UAE are steadily growing. UAE is the 3rd largest trading partner of India. The greatest push has been achieved in bilateral relations when the visit of India's Prime Minister to the UAE in August 2015 marked the strategic partnership between two countries. On January 2017 crown prince of Abu Dhabi Mohammed bin Zayed Ai Nahyan has been invited as the chief guest of Republic day this results to give a momentum to launching negotiations for an India-UAE comprehensive economic partnership agreement.

Source : themachinemaker.com

UNDER WATER TRAIN AND PIPELINE PROJECT:

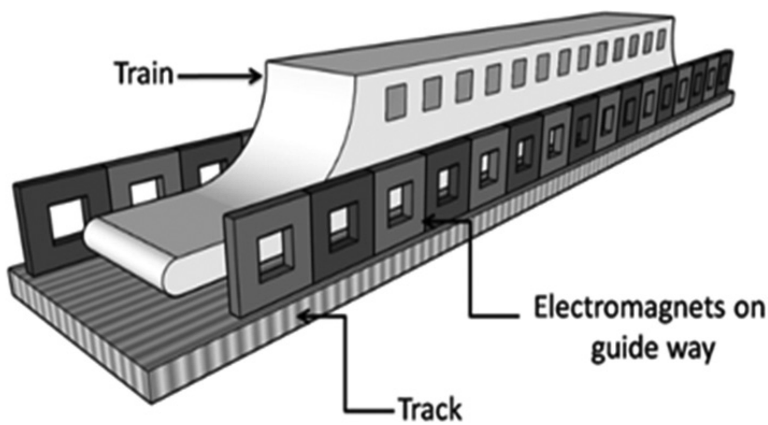
Abdulla Alshehhi the National Advisor Bureau Limited Managing Director and Chief Consultant has introduced the concept of connecting Mumbai city in India with Fujairah city in Dubai this is to boost the bilateral trade between both the countries. National Advisor Bureau plans to build an underwater rail network between Fujairah and Mumbai in the near future to provide high-speed rail travel between the two countries.A tunnel will be created under the Arabian Sea that will be divided into four parts one will be consists of passenger bullet train and other is for goods train. Below these two pipelines will be created to import oil from UAE and export fresh water from India. Floating trains or 'Maglev' use magnet repulsion system to move the 'train' at a great speed taking advantage of the lack of friction. The high-speed Maglevs trains are currently under operations in China and Japan, but several countries like Australia, US, Israel and UK has plans to introduce the rail system.



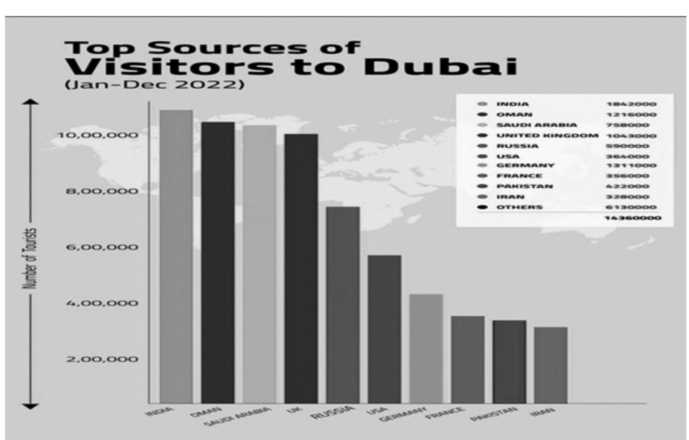
Source : The UAE-India Subsea Train Network (photo Courtesy: Abdulla Alshehhi/NABL)

THE BULLET TRAIN:

The plan is to develop an underwater direct rail network that will let you travel non-stop from Mumbai to Dubai underwater. The total distance of over 1862 kilometers beneath the Arabian Sea will be covered in a record two-hour time. Getting a train from London to Paris takes two hours and fifteen minutes, and those two cities are only 302 miles apart. To cover this distance, the speed of the train will be probably set to the range of 600 to 1000 km/h that will certainly beat the speed of a plane in terms of its speed. Apparently, the NABL are planning to make the tubes completely airtight, so that the trains will operate in a vacuum to reduce air resistance. This bullet train not only benefits Indian but also other Asian countries to travel in short term period to Dubai. Majority of Indians are working in Middle East countries. So it will be helpful for them too.This generates huge profit for both the countries.



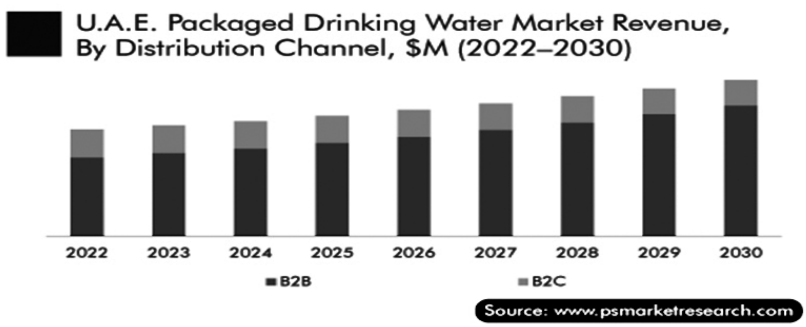
Source : Jerine Victor, via Wikimedia Commons



Source : globalmediainsight.com

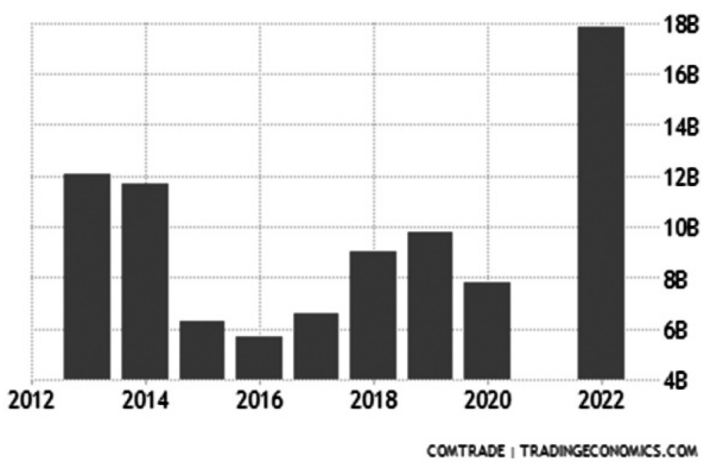
THE UNDERWATER PIPELINE FOR FRESH WATER:

Desalinated seawater and groundwater are the only two sources of water in the UAE. While groundwater is used for agriculture in Al Ain and Liwa, drinking water is provided entirely from desalinated seawater across the Emirate.Turkey, Italy and France were the main suppliers of bottled water imports to the United Arab Emirates, together comprising 47% of total imports. So India will be getting a huge profit by supplying fresh water to UAE.In India Narmadha river is the largest river in Madhya Pradesh which often causes floods this affects that particular area heavily during rainy days. Through this underwater pipeline water from Narmadha river. Will be exported.



THE UNDERWATER PIPELINE FOR OIL:

UAE is a country with huge oil resources.The UAE is the fourth-largest source of crude oil and the second-largest source of liquefied natural gas and liquefied petroleum gas for India. India imports its majority of oil from UAE. Both the countries have started trading with their own local currencies. These oil barrels are exported through ship which is costlier. This process nearly took 30 days. But through this underwater oil pipeline it can be imported easier and at low cost, and India can sell this oil to other Asian countries.



BILATERAL TRADE RELATION BETWEEN INDIA AND UAE:

Indian and UAE both are in I2U2 Group. Majority of UAE's residents are Indians. Nearly up to38% of their population. . UAE's one of the largest exporter and trading partner is India. The bilateral trade turnover of both these country during 2021 is US$ 68.4 billion . UAE's exports to India stood at US$ 43.04 billion while India's exports to UAE stood at US$ 25.4 billion. Comprehensive Economic Partnership Agreement (CEPA) is signed between India and UAE in the year 2022 with an aim of taking bilateral trade to US$ 100 billion within 5 years.. The UAE has made substantial investments in the following sectors such as construction development, power, air transport, tourism, and metallurgical industries receiving significant investment in India.

CONCLUSION:

The bilateral relation between UAE and India will have huge enormous impact on both of its economy. In line with the priorities identified in the trade and investment track at the G20, India and the UAE have been collaborating closely within the WTO. These priorities have gained significance, particularly as the world grapples with the repercussions of the COVID-19 pandemic, which disrupted global supply chains.

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Quantum Computers : Unlocking the potential of the future

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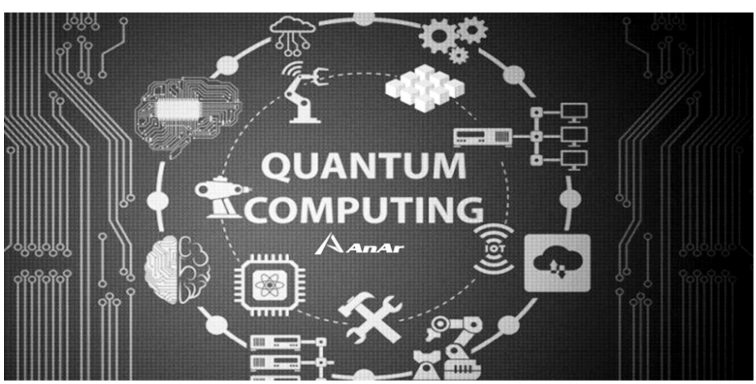
ABSTRACT

Quantum computing represents a dynamic interdisciplinary domain merging computer science, physics, and mathematics, offering unparalleled prospects for computational prowess and problem-solving prowess. Diverging from classical computing's binary bit paradigm, quantum computers harness quantum bits, or qubits, capitalizing on quantum phenomena like superposition and entanglement for computational tasks. This abstract delves into the foundational principles of quantum computing, its manifold applications spanning machine learning, optimization, and simulation, alongside ongoing strides in hardware evolution and algorithmic innovation. Furthermore, it addresses the inherent challenges and opportunities intrinsic to this transformative technology, while outlining pathways for future research and pragmatic deployment.

KEYWORDS: *What is Quantum Computing?, How Do Quantum Computers Work?, Applications of Quantum Computing, Challenges and Advancements, The Road Ahead.*



Quantum computers have emerged as a ground breaking technology that promises to revolutionize the way we process information. With their immense computational power and the ability to solve complex problems, quantum computers are poised to transform various fields, including cryptography, drug discovery, optimization, and machine learning. This article delves into the principles underlying quantum computers, their potential applications, and the present state of research in quantum computing.

What is Quantum Computing?

Quantum computing, drawing from computer science, physics, and mathematics, harnesses the principles of quantum mechanics to tackle complex problems more efficiently than classical computers. This interdisciplinary field encompasses both hardware advancement and software application development. Leveraging quantum effects like superposition and interference, quantum computers excel in accelerating solutions for specific problems, such as machine learning, optimization, and simulating physical systems. Potential applications range from optimizing portfolios in finance to simulating chemical systems, addressing challenges currently beyond the reach of today's most powerful supercomputers.

How Do These Quantum Computers Works?

Quantum computers leverage the probability of an object's state prior to measurement, allowing them to process exponentially more data compared to classical computers, which operate on binary logic. Classical computers rely on definite physical states, typically represented as 1s or 0s, known as bits. In contrast, quantum computing utilizes the quantum state of an object, known as a qubit, which encompasses undefined properties before measurement, such as electron spin or photon polarization. These qubits exist in a mixed 'superposition' state, akin to a spinning coin before it settles. Moreover, qubits can be entangled with others, leading to mathematically correlated outcomes even if specific values are unknown. By harnessing specialized algorithms tailored to exploit these entangled states, quantum computers excel in solving complex mathematical problems, generating robust security codes, and predicting intricate particle interactions within chemical reactions, tasks that pose significant challenges for classical computing systems.

Applications of Quantum Computing

Quantum computing possesses vast potential for solving problems that classical computers find intractable. Here are a few areas where quantum computers could have a significant impact:

Cryptography: It is enables users to communicate more securely compared to traditional cryptography.

Optimization: It has already indirectly benefited optimization problems, inspiring and enabling new research directions.

Drug Discovery: It can simulate interactions between molecules more authentically, enabling us to predict the activity and safety of drug molecules more precisely during the drug design stage.

Machine Learning: It forms how to learn algorithms for the analysis in integration of quantum algorithms within machine learning programs.

Types of Quantum computers

Presently, various approaches exist for the development and manufacturing of quantum computers, with several companies engaged in this endeavour. It's important to note that the companies mentioned are just a few examples and not an exhaustive list.

1. **Superconducting:**

   Among the most prevalent variants of quantum computers are those based on superconducting qubits, which leverage electrical circuits to generate and manipulate qubits rapidly. Noteworthy companies engaged in the research and production of superconducting quantum computers include Google, IQM, IBM, and Rigetti computing, among others.

2. **Photonic:**

   In the realm of quantum computing, photonic-based systems utilize photons for the transmission and processing of quantum information, a concept elucidated by Richard Murray, CEO of ORCA Computing. Photonic qubits offer a promising avenue for large-scale quantum computing, presenting an alternative to methods like trapped ions and neutral atoms, which necessitate cryogenic or laser cooling. Numerous companies are actively involved in advancing photonic quantum computing technology, including Xanadu, ORCA Computing, Quantum Computing Inc., and Psi Quantum. Notably, photonics serves as a broad category encompassing various quantum computing approaches, with Xanadu's "squeezed light" methodology differing significantly from Psi Quantum's approach.

3. **Neutral atoms:**

   Quantum computing utilizing neutral atoms entails suspending atoms within an ultrahigh vacuum using arrays of tightly focused laser beams, known as optical tweezers, although not all companies in this domain employ this technology. These neutral atom systems demonstrate reduced sensitivity to stray electric fields, rendering them a favourable choice for quantum processors.

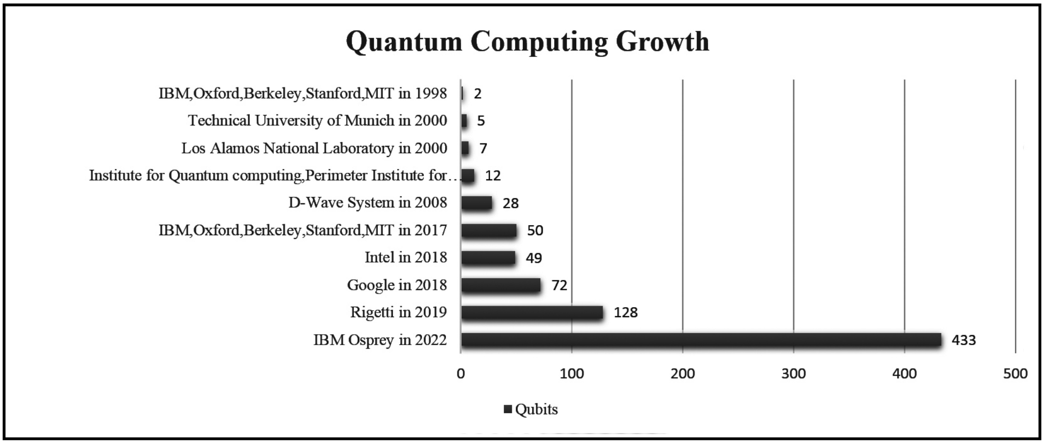
4. **Trapped ions:**

   Trapped ion quantum computing utilizes charged atoms or molecules, known as ions, which are confined and controlled using electric and magnetic fields to store and manipulate quantum information. This method offers high stability and precision for applications such as precise measurements. Additionally, the qubits can maintain superposition states for extended periods before de coherence. This technology stems from the merger between Cambridge Quantum Computing and Honeywell Quantum Solutions.

5. **Quantum dots:**

   Companies such as Diraq, SiQuance, and Quantum Motion are focused on utilizing silicon qubits composed of paired quantum dots in quantum dot quantum computers, aiming to harness their potential as robust qubits.

Growth of Quantum Computer



Challenges and Advancements

Building and maintaining stable qubits is one of the biggest challenges in quantum computing. Qubits are highly sensitive to environmental disturbances, such as temperature fluctuations and electromagnetic interference, which can cause errors in calculations. Researchers are continuously developing new techniques to improve qubit stability, including error correction codes and better qubit materials, such as superconducting circuits and trapped ions.

Another significant challenge is scaling up quantum computers to a practical size. Currently, quantum computers with a few dozen qubits are available, but for many applications, hundreds or even thousands of qubits are needed. Various approaches are being explored, such as topological qubits, silicon-based qubits, and photonics-based qubits, to achieve scalability and overcome the limitations of existing technologies.

The Road Ahead

Quantum computing is experiencing early-stage development, yet notable advancements have occurred in recent years. Both academia and industry are making substantial investments in quantum research and development, with companies such as IBM, Google, Microsoft, and startups like Rigetti Computing and IonQ vying to create more potent quantum computers. Despite the promise shown by quantum computers, the realization of practical and dependable quantum systems that surpass classical computers across diverse applications remains elusive. Nevertheless, as research progresses and quantum technologies mature, we anticipate a transformative evolution in computing capabilities, paving the way for breakthroughs in science, engineering, and industry.

CONCLUSION

Quantum computers mark a ground breaking shift in computing, offering vast potential for tackling complex problems that exceed the capabilities of classical computers. Despite enduring significant challenges, researchers are achieving notable progress in enhancing qubit stability and developing scalable quantum computing frameworks. With advancements in the field, the transformative impact of quantum computers on diverse industries is inevitable.

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