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Message From Director

Achieving sustainable development through innovation and ensuring holistic development are the focus areas of current-day businesses. Sustainability is an opportunity to create and enrich values in all dimensions of business and development, embracing technology and transformation. Systematic strategies are needed to achieve corporate sustainability, as solutions are interwoven in every element of business activity. At this juncture, the role played by technology, industry, corporations, and government are vital for practically implementing sustainable solutions in the most fitting manner.

Businesses. Government and society look into innovation and sustainability as a panacea for achieving growth and development. Adaptability and acceptance to new norms need acceptance from all players involved so as to pass on the positive benefits to all stakeholders. This should also be supported by a stable policy and governance environment. At a time when the world is facing more fragility, foreseeing changes and unlearning and relearning from new challenges are essential for achieving business success and customer satisfaction.

The Twelfth volume of "Annual Research Journal of SCMS", Pune wishes to bring into focus the challenges for the business world. The theme for this edition of the Journal is "Emerging Market Trends and Innovative/Sustainable Business Practices." The Journal is indexed by J gate and ICI (Indian Citation Index) and archived on academia.edu. The present volume is an attempt to contribute towards building an academic body of knowledge based on the compilation of well-researched and peer-reviewed articles. The articles are well articulated and substantive and have tried to address the broad theme of the journal. I also extend my gratitude to all authors, editors and reviewers who have provided support at all stages. I also welcome suggestions that would help us improve the quality of our Journal.

Dr. Adya Sharma

Professor and Director,

Symbiosis Centre for Management

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From the Editorial Desk

Today's world looks forward to innumerable innovative and sustainable solutions to successfully overcome many gaps and effectively address multiple challenges. Innovations must be sustainable and ensure the long-term well-being of humans and other resources. Multiple stakeholders' involvement is needed to implement these solutions practically. Sustainability is an opportunity for business entities and governments to create value in business.

The role of technological change and Industry 4.0 are key to flourishing more sustainable business practices. Companies that are quick to adapt to new norms will have an early-mover advantage in the market. Considering the accelerating adoption of innovative practices and sustainability in current business scenarios, the Annual Research Journal of SCMS, Pune, proposed the Twelfth volume focusing on the theme, "Emerging Market Trends and Innovative/Sustainable Business Practices", inviting original research papers, case studies, reflection papers, short-term papers, and review papers. Our current issue addresses a few of these challenges in different areas like human capital management, performance analysis, financial inclusion, pricing, interplay of technology, sustainable campus practices, digital hygiene, student perceptions, and digital learning.

Paulo Henrique Aguiar De Souza, Sadhana M & Shwetha Krishna study the different sustainability practices conducted on campuses in India and Brazil, and the government initiatives taken to enforce them and addresses the niche areas of study that highlights sustainable campus practices in the two countries like renewable energy, water conservation, societal development, community work, etc.

Pratik Talawdekar and Nehajoan Panackal propose a conceptual model linking sustainable human capital management with sustainable business practices focusing on significant areas like talent management, organizational culture and employee engagement. Their findings indicate the alignment of human capital management strategies with that of sustainability goals, with a focus on employee well-being, job satisfaction and organizational commitment.

Suhani Agarwal, Devikaa Brijesh, Sheryasi Meharia, & Naavya Bhartiya examine the performance of Nestle India Limited, a foreign subsidiary functioning in India.

Yashasvee Bhandhari, Songa Navya Shree, Harshita Kakar, and Arushi Malhotra reviews study explores digital hygiene among youth, highlighting the potential consequences and implications for individual well-being and social dynamics. Study results indicate a comprehensive understanding of the challenges posed by neglecting digital hygiene in youth practices and advocate for proactive measures to ensure a safer and secure digital future for the younger generation.

Ruchika Mehra reviews various approaches adopted in business using artificial intelligence in line with the United Nations Sustainability Development Goals and looks into areas like energy consumption, balancing innovation, and equity in digitization.

Mohit Goyal, Jigyasa Rangare & Humzah Alam compare the performances of Hindustan Unilever Limited and Marico Industries based on their financial performances and indicate the advantages of common size financial analysis.

Chirag Gupta, Ipsita Ladia, Hardika Sawhney, Kashyap Mavadhiya, Aishwarya, Shreeya Goel, and Elrich Saldanha study the different dimensions of online education, E-learning, and online educational tools by taking qualitative study.

Sudeepthi Vulisetty & Deepika Chittella conducts a study to identify the importance of decentralised finance on financial inclusion among Generations Y and Z, considering financial and technological literacy.

Yashraj Taose & Deepraj Taose study the factors responsible for the growth in land prices and its growth immediately after the pandemic.

Hena Shaw & Mahnaz Shaw's study indicates the importance of massive open online courses in India, considering the different perspectives and attitudes of college and university students in Pune.

Shubhi Rathore & Anandini Gupta review the decentralized finance among Generation Z in India

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A Comparative Study Of Sustainable Campus Practices In India And Brazil

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ABSTRACT

An environmentally conscious university or college campus embraces eco-friendly measures to diminish its environmental impact and champion sustainability. These measures encompass minimising paper and plastic usage, enhancing recycling and reusing programs, employing sustainable energy sources, and advocating eco-friendly transportation alternatives. This paper aims to study the different sustainability practices conducted on campuses in India and Brazil and the different government initiatives taken to enforce them. The paper attempts to address the niche area of study that highlights sustainable campus practices in India and Brazil. The two countries are at the forefront and similar in social and economic biodiversity aspects. Sustainable campus practices are aligned with the sustainable development goals, and campuses in both countries have

unique practices to achieve them. The paper is a compilation of data collected from both primary and secondary sources and has resulted in a variety of practices enforced in both countries towards achieving sustainability goals. This includes renewable energy, water conservation, societal development, community work, etc. These insights would be useful in adopting new sustainable practices.

Keywords: Sustainability, Renewable energy, India, Brazil, Universities

JEL Classification Code - Q42, JEL – Q56.

1. INTRODUCTION

As per the United Nations, renewable energy is harnessed from nature's constant replenishment, like sunlight and wind, in contrast to non-renewable fossil fuels, which take millions of years to form. The use of fossil fuels emits harmful greenhouse gases, contributing more to emissions than renewable energy sources. Addressing climate change entails transitioning from fossil fuels to renewable energy, which is crucial for sustainability. Renewable energy relies on continually renewed resources like sunlight, wind, and water offering a sustainable solution and cleaner, longer-lasting energy compared to finite fossil fuels. This approach ensures that energy needs are met without depleting resources or exacerbating climate issues. This is one of the major approaches taken by governments across the world. The developing countries of the world, especially when they have a higher population and a broader diversity to cater to, choose a variety of ways to serve their population and meet sustainable development goals.

Brazil and India, two countries on the road map to development, have different approaches to development. Since these two countries have a lot in common in terms of economic development, colonial history, cultural diversity, and agricultural dependency, it is important to understand and learn the differences in their sustainable practices. Given that colleges were among the first to sign international statements endorsing sustainability, such as the Stockholm Declaration in 1972 and the Declaration of Talloires/France in 1973, which was the first official statement by college administrators reaffirming their commitment to sustainability in higher education (Wright, 2002), It is deemed essential to look into the methods undertaken within the universities, hence the subject of this paper.

1.1 Objectives of the Study:

1. To study the sustainable practices done in university campuses in India and Brazil.
2. To analyse the steps taken by the government to promote these sustainable practices in both countries.

2. LITERATURE REVIEW

India is making significant investments in renewable energy, but we still rely significantly on fossil fuels, especially coal. India's focus is on energy security. There is a need for greater coordination among various ministries in India to ensure a coherent approach to energy policy. Small and Modular Reactors (SMRs) could be a viable option for India's energy needs, particularly in the context of smart city projects and Special Economic Zones (SEZs). A study by Janardhanan (2017) notes that India is addressing climate change while also addressing their energy demands. The research points out areas where the energy policies need improvement and offers suggestions for how to do so. Umamaheswaran (2019) studied a combination of methods for data collection and analysis, including interviews, surveys, and expert input, utilising descriptive statistics and Monte Carlo simulation models to understand the barriers to financing such as capital intensity, revenue certainty, policy design, economic viability, smaller market size, immature financial sector, and project risk. Joshi et al (2023) stated that India can demonstrate international leadership and create momentum on climate action as the President of the G20 in 2023. The G20 economies account for 75% of global greenhouse gas emissions and 80% of GDP. India has made progress on climate goals, including energy transition and net-zero emissions. Opportunities for the G20 include accelerating renewable energy deployment, strengthening grids, and increasing investments in EMDE. Their work highlighted India's potential to drive global climate and energy actions as G20 President in 2023, offering recommendations for energy transition, climate finance, and climate-resilient development.

India can achieve near-complete energy independence by 2047 by deploying clean technologies like renewables, electric vehicles, and green hydrogen. (Abhyankar and Mohanty, 2023) This transition can save consumers, prevent premature deaths, and reduce energy expenditure. The three most energy-intensive sectors - power, transport, and industry - account for over 80% of India's energy consumption. Challenges include technical feasibility, grid reliability, tax impacts, fairness, and supply chains. Cross-sectoral investment l investment planning is crucial for energy independence, and the regulatory framework should capture all energy storage assets. Gaps in clean energy transition include technical feasibility, grid reliability, tax impacts, fairness, supply chains, institutional, market, and regulatory changes, political, societal, consumer-adoption issues, and sectoral analysis to evaluate public health and environmental impacts.

Electricity use and consumer income have a positive correlation (Nandy et al, 2016). In India, fossil fuels currently dominate the energy landscape; however, their rising costs and increasing scarcity are prompting a shift towards non-conventional energy sources. Solar energy emerges as a viable substitute for fossil fuels, presenting the potential to generate residential power. The integration of renewable energy resources, such as

solar energy, alongside energy-efficient devices like CFLs holds promise in aiding consumers to curtail energy usage and decrease their electricity expenditures. Mohan Sai Kumar et al. (2022) proposed the use of low-cost solar energy in the agriculture industry and that researchers, engineers, and decision-makers should collaborate to reduce capital expenditures for successful solar energy adoption across a variety of industries. Sen et al, (2015) discussed the opportunities and challenges of renewable energy in India, including technological advancements, regulatory policies, tax rebates, and efficiency improvements resulting from R&D efforts. The authors additionally emphasise the urgency of conserving energy and the environment, as well as efficiently harnessing vast, untapped clean resources. This evaluation aims to determine the feasibility of India sustaining its growth and societal needs through renewable resources.

Moura Et al, (2019) studied the ways in which Brazilian Higher Education Institutions (HEIs) implement sustainable practices to enhance their impact on society. The study aimed to clarify to the general public, including prospective and present students, the university's activities and sustainability concerns. The findings of the study revealed that universities were implementing sustainable initiatives to become greener. However, despite reducing waste generation and increasing water consumption, the study highlights the need for sensitization to reduce water consumption. The findings encouraged organisations to take environmental actions towards greener universities, fostering a better world. Barros et al, (2020) presented environmentally sustainable practices at a federal university in Brazil. According to their report, colleges were going green by putting sustainable strategies into practice. The findings promoted a better society by motivating organisations to take environmental steps toward greener colleges. Klein, L. L.et al, 2022 studied the perception of Lean management practices and their influence on sustainability practices in Higher Education Institutions (HEI). This research delved into how public servants in a Higher Education Institution (HEI) perceive Lean management practices and how these practices affect the organisation's performance.

3. RESEARCH METHODOLOGY

This research paper attempts to investigate sustainable practices in India and Brazil. Thus, it could be categorised as descriptive and applied research. The data collection method used in this study includes both primary and secondary data. The research design chosen for this study involves conducting in-depth interviews. This was collected from administrators, related individuals, and campus visits. The other content of the research topic was collected through various sources, including research papers and websites. The data collected includes the details of the solar panels, the billing data, the capacity and production of electricity, etc. The data relates to the capacity of biogas plants and their production. The sample population is 12 campuses in India and 13 federal universities in Brazil. The data was collected from 2019-2023. The variables of this paper are sustainable practices, their method of execution, and the measures taken by both governments.

4. RESULTS AND DISCUSSIONS

4.1 Biogas Plants Installations:

Campus-specific capacities and gas consumption rates vary widely, with capacities ranging from one ton to 300 kg per day. This diversity reflects a tailored approach, wherein campuses align their biogas solutions with waste generation and energy consumption requirements. The integration of biogas into daily operations on Indian campuses, such as cooking and water heating, showcases practical and impactful energy utilisation. These efforts contribute to environmental sustainability by reducing food waste in landfills and diminishing reliance on conventional fossil fuels, leading to a notable reduction in carbon emissions. The installation and operation of biogas plants demonstrate a proactive approach to achieving SDG 7 by generating affordable and clean energy through organic waste treatment.

4.2 Solar Panels Installed at a Sample Campus:

Solar energy emerges as a more cost-effective choice compared to conventional sources. Globally, rooftop solar photovoltaics (RTSPV) showcase substantial cost advantages, with India leading at USD 66 per megawatt-hour, undercutting China's USD 68. The deployment of RTSPV offers reduced implementation costs, with a 42-79% drop in 2019 alone. This contrasts with rising electricity costs over the past decade. RTSPV's potential to provide up to 49% of global electricity consumption by 2050 positions it as a reliable and economical alternative. With India's solar rooftop potential exceeding current demand, solar power has become a financially viable solution that outperforms conventional electricity sources.

Solar energy was used to heat the water used in hostels for bathing purposes. Solar panels have been installed over the hostel buildings for heating the water, and insulated tanks have been installed to collect this solar heated water. In the sample campus, all the energy generated is fed to the MSEB grid, thereby first consuming energy generated by the solar panels and then the balance requirement of the MSEB grid, i.e., net metering.

4.2.1 Benefits of Using Solar Energy in Institutions:

Installing solar panels on university campuses offers several key benefits, such as optimal roof conditions for efficient placement, substantial cost reductions in electricity expenses, potential enrolment boosts from eco-conscious appeal, reliable and limitless energy generation, and driving the solar industry forward through increased exposure. This sustainable initiative aligns campuses with innovation and appeals to environmentally aware stakeholders.

Also, solar energy emerges as a more cost-effective choice compared to conventional sources. Globally, rooftop solar photovoltaics (RTSPV) showcase substantial cost advantages, with India leading at USD 66 per megawatt-hour, undercutting China's USD 68. The deployment of RTSPV offers reduced implementation

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Filho, W.C. et al(2019) highlights the positive impact of Sumy State University's solar power plant on reducing carbon emissions and enhancing its global image. The research findings indicate that implementing a solar power plant is economically feasible and reduces the ecological footprint substantially by replacing conventional energy. John R. Yasayi (2021) discusses the factors influencing renewable energy investments and the impact of national energy policies. Their findings indicate that solar installations offer long-term cost savings and generate revenue from surplus energy sold back to the grid. They're efficient on rooftops, saving land use, and contribute to energy independence by reducing reliance on imported fuels. Additionally, they improve energy access in remote areas, enhancing quality of life.

Meanwhile, Lottu O.A et al. (2023) emphasize that educational institutions worldwide are increasingly adopting solar power to reduce carbon emissions, enhance sustainability, and improve learning experiences. Notable examples, like the University of California, Irvine's Solar Farm, and IIT Madras, demonstrate the transformative impact of such initiatives. Initiatives like India's "Solar Schools" program equip rural schools with solar panels, ensuring uninterrupted learning with a constant power supply, providing better lighting, enhancing technology access, and fostering rural development. Pandey, A. et al (2015) acknowledged the initial high cost but emphasized significant long-term savings of PV modules. Beyond the technicalities, it underscores the importance of raising awareness among students about resource use and promoting sustainable strategies. As per Host et al. (2021), Boston College stands to realize substantial annual savings exceeding $100,000 by leveraging the proposed system. This estimate is derived by multiplying the system's annual output by the current electricity rate of $0.165 per kW at the university. In adherence to a front-loaded investment and ownership model, the school could consistently save $103,059 annually on its electricity expenses, a benefit that would persist throughout the 25-year warranted lifespan of the solar system. The cumulative savings over this period would amount to $2,576,499.75. These research studies are proof of the already existing benefits of using solar power.

Energy Audit and Consumption:
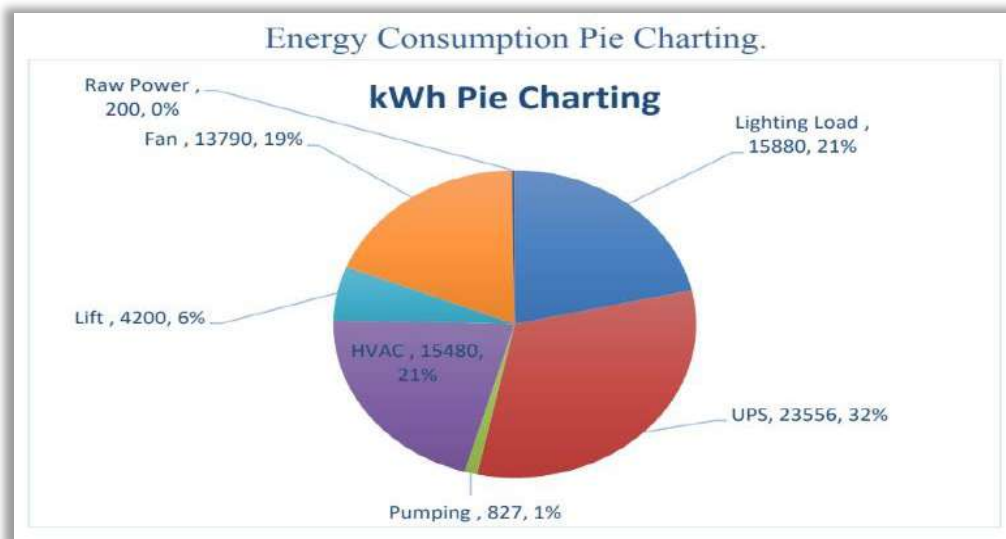
Figure 1 - Pie chart showing energy consumption in a sample campus

Observations:

- ❖ 19% of energy is utilised by fans. Replace existing fans with BLDC fans. BLDC fans
- ❖ consume about 50% less energy than conventional fans.
- ❖ 21% of energy is used for illumination. All light fixtures are LED. Close Controls using Active
- ❖ Controls and efficient light fittings can bring this down.
- ❖ 1% of energy is used for water pumping. Use of Star BEE Star pump and adequate
- ❖ Automation will keep this at an optimum level.
- ❖ 21% of energy is used for HVAC. Preventive Maintenance and Servicing should be done as per
- ❖ Guidelines are included to maintain this consumption at an optimum level.

Monthly Energy Consumption Trend:
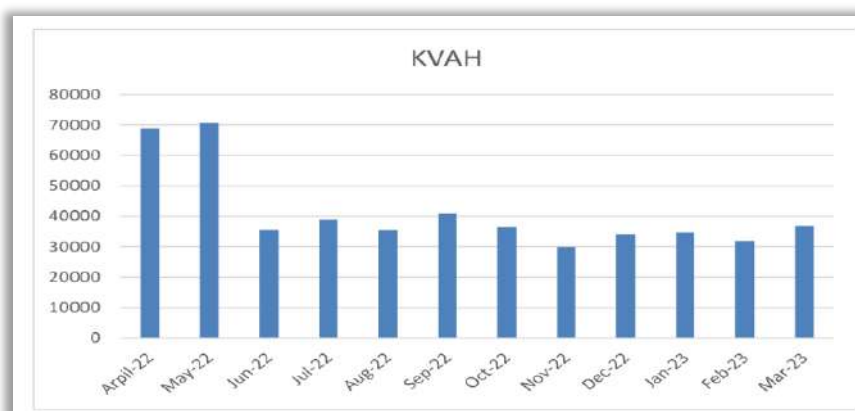
Figure 2 - Energy consumption over months from April-22 to March-23 (Source: Energy Audit Report for a sample campus)

This graph shows the variation in total Energy Consumption for the last 12 Months

Maximum energy consumption is in the month of April 22.

Strategies for Efficient Energy Utilization:

Proper installation of APFC/RTPFC to maintain a power factor at unity can minimize the difference between kVAh and kWh, with an expected saving of 16,353 Rs/Month. Implementing active lighting controls in common areas and maximizing the use of ambient light in classrooms can lead to energy savings. With 884 installed ceiling fans and 65% diversity, they consume 45.968 kW. Switching to BLDC fans can save 50% of energy without compromising comfort. Expected savings: 6,895 kWh per month, or Rs. 103,428 per month. Recommends operating water pumping systems with maximum automation and considering hydropneumatics systems for optimized energy consumption.

4.3 Sustainable Practices in Brazilian Campuses:

Education: a top-notch university education (sustainable development goal 4)

The incorporation of its sustainable commitment—which includes teaching, research, and extension—into the organisational mission and vision served as the foundation. Put differently, the incorporation of sustainability as an institutional value facilitated the development of a sustainable policy that acted as a roadmap for addressing the organisation's environmental concerns. As a result, UTFPR-Universidade Tecnológica Federal do Paraná (2017) awarded its UTFPR campus the "SESI SDG Label" in recognition of the development of SDG-related practices. This was done by SESI (Serviço Social do Indústria).

From a pedagogical perspective, UTFPR is paying attention to certain initiatives. An instance of this can be seen in an industrial engineering course that uses an LCA-based Eco-design teaching approach through industry-university collaboration (Piekarski et al., 2019).

Undergraduate students used Life Cycle Assessment (LCA) to create eco-design solutions for a product based on an industry case study. The industry saw potential contributions from students to enhance the environmental performance of its products, in addition to the students' newfound knowledge and abilities about environmental sustainability challenges. By presenting students with an actual case from the industry and questioning established teaching strategies, the institution gained Furthermore, it was discovered that this strategy benefits students, instructors, and businesses, and it is related to SDG 4, which is about high-quality education.

Water: lowering the university's water use (sustainable development goal 6)

At the university, using water was also considered a sustainable approach. Rainwater collection systems were constructed in university buildings, and timed taps were inserted in place of the traditional ones. Additionally, a number of stickers are used in restrooms to educate and increase public awareness about the need to save water (SDG 6).

Electricity: Reducing the university's electricity usage is one of the sustainable development goals. In addition to UTFPR's water-related initiatives, further energy-related projects linked to SDG 7 (affordable and sustainable energy) are now under development. They include not just awareness-raising activities involving instructors, staff, and students but also the substitution of fluorescent light bulbs with LED ones, which have a longer lifespan and use less energy. The secondary goal of switching to LED light bulbs from fluorescent ones was to lessen the amount of hazardous waste (found in fluorescent products). Furthermore, in order to provide clean and renewable electricity, photovoltaic panel systems were erected on six campuses: Campo Mourão, CornélioProcópio, Curitiba, Medianeira, Pato Branco, and Ponta Grossa. This project's goal was to determine which type of solar panel performs best in various environments. This project had a $1.5 million budget and was implemented in collaboration with COPEL (Companhia Paranaense de Energia) (UTFPR-Universidade Tecnológica Federal do Paraná, 2019b).

Waste: reducing the production of waste by using paper products and throwaway plastic cups, as well as by implementing a program for selective collection (sustainable development goal 12).

Every year, the institution's student body has grown, and this has resulted in a corresponding increase in the quantity of disposable cups. Reusable cups were developed as a method to address the large amount of waste produced by plastic cups. Disposable cups were replaced with reusable ones. The standardization of solid waste collection was one of the initiatives developed at UTFPR. In the beginning, the primary locations for waste generation on the Ponta Grossa site were targeted for the placement of 27 recycling bins. Recyclable (paper, plastic, aluminium cans, and other items to be recycled), organic (mostly food leftovers), and refuse (anything that cannot be recycled or classified as organic) are the three types of cans that make up each recycling bin.

Furthermore, in order to virtualize administrative operations that had previously been done on paper, an electronic information system was implemented. This led to a 57.5% reduction in printed paper usage in 2018. This figure is anticipated to rise even further in 2019. A few processes were digitalized in 2018 and others were added in 2019. All of the organization's campus locations have adopted the electronic information system.

With the implementation of the electronic information system across all campuses, the university as a whole did away with the need for paper in administrative procedures.

Student collaboration is crucial to raising success rates for this SDG. As a result, a sustainability board encourages informative talks that aim to increase public awareness at the start of each academic semester. New undergraduate students at UTFPR (Ponta Grossa campus) are welcomed with a lecture at the start of the semester. The sustainability board gives a presentation during this welcoming lecture with the goal of increasing students' understanding.

Since solid waste management was deemed a top priority, UTFPR also established an initiative to do away with single-use plastic dessert plates and cups across its 13 campuses. As a result, complimentary reusable plastic cups were given out to faculty, staff, and students at the same time as desserts were served in stainless steel bowls. On every campus, there were no longer any throwaway plastic bowls or mugs. In some UTFPR campuses, those two initiatives saved 960,000 plastic cups in 2018. It is anticipated that this amount will increase to more than 1,920,000 in 2019. This growth resulted from the adoption of such practices by an increasing number of other UTFPR schools. When disposable cups were bought in 2017 at the Ponta Grossa campus, a significant amount of waste was produced. The amount of waste from disposable cups was reduced by 87.92% in 2018 after the introduction of reusable plastic cups. The decrease was much higher in 2019 (92.86%). From a financial perspective, between 2017 and 2019, savings totaled 53.96%. Regarding the single-use cups utilised in the university eatery, these were bought by the establishment itself. As a result, the university restaurant saved 100% of its money because of UTFPR's distribution of reusable cups to students. Although UTFPR brought up this idea with all campuses, the LCA approach was only used on the Ponta Grossa campus to measure the possible environmental effects of a single-use plastic cup. SDG 12 (ensure sustainable consumption and production patterns) is in line with all of those practices.

Emissions: decreasing atmospheric emissions associated with the modes of transportation that instructors and students take (sustainable development objective 13) Additionally, a different study conducted by Barros et al. (2018) helped quantify and comprehend the origins and emissions of greenhouse gases at the UTFPR site in Ponta Grossa. The study looked into how instructors and students transfer from home to the university for an industrial engineering course. An LCA was used in that study to calculate the carbon footprint associated with each mode of transportation. Researchers discovered that 90.67% of professors drive their cars to work, which results in a monthly output of 51.91 kg CO_2 equivalent per professor. Due to the fact that 63.32% of students take public transportation to get from their residences to the university and back, each student's monthly output was 6.97 kg CO_2 equivalent. The study presented options for decision-making on air quality

and pollutant emissions in relation to SDG 13 (climate action). The institutionalisation of sustainable initiatives, programs, and actions is now possible thanks to the recent approval of a sustainable policy for the entire UTFPR. As a result, it is anticipated that UTFPR will support new sustainability initiatives to build sustainable communities and campuses and that graduating engineers and other professionals will be equipped to address global environmental issues in the future.

Food: initiatives to promote food recycling and the addition of organic produce from small farms to the university restaurant's menu.

Nature: Look for ways to safeguard the environment, like riparian forests and preventing endemic illnesses; take part in environmental preservation efforts both on and off campus; plant trees; and use aerated flooring to provide natural drainage on campus.

Social Activities:

Education includes the free use of social technologies that support high-quality basic education, the development of disciplinary activities by students of educational institutions with students from public schools, social inclusion of solid waste collectors to make their rights possible, access to technology for underprivileged communities, and young adults' literacy.

Health: Blood donation projects and biotechnology collaborations with government and private organisations are also conducted to better understand social needs in the fields of medicine, pharmaceuticals, sustainability, bone marrow donation drives, and recommendations for the prevention of HIV and other STDs. Additionally, some HEIs collaborate by providing blood pressure checks, blood glucose tests, breast exams, and other tests along with weekly physical activity programs for the elderly.

Advice and services to the community: free legal advice in the particular prison; legal defence of vulnerable populations, such as recyclable material pickers and agro-extractive communities; advice on income tax provided by accounting students; legal counsel, community communication, and psychological care. Financial help includes revenue-generating programs, financial incentives and technical support for Rio Grande do Norte towns in the fields of industrial production and civil construction, as well as infrastructure and financial support for partner groups that implement social projects.

Social well-being: Efforts to make the lives of college staff members and hiring services and professionals who reside close to school better in order to foster a stronger sense of community integration among students. The curriculum should include sustainability; it should also offer research groups, specialised courses on sustainability, academic journals that are open to publications on sustainability, Brazilian higher education centres or labs to study and promote sustainability, community-focused and campus-focused sustainability

projects, staff and student sustainability training, sustainability inclusion in the strategic plan, and an organizational structure with a dedicated seat for sustainability.

4.4 Nationwide Perspective:

4.4.1 Steps Taken By The Government Of India:

The government of India has introduced various policies to promote and fund renewable and clean energy sources and to reduce our dependence on fossil fuels. The Union Budget 2022-23 lays down the agenda for clean energy and climate mitigation, which will be the top development goals for the next 25 years The budget also funds programs covering the environment, renewable energy, and electric vehicles. It is one of the eight missions set by the National Action Plan on Climate Change (NAPCC). The mission seeks to improve energy efficiency in energy-intensive industries through creative systems.

One of the Sustainable Development Goals targets is to make affordable, reliable, and modern energy available to all people worldwide. To achieve this, India has prioritized the availability of power to all inhabitants. The total number of villages electrified in the state as of 31.03.2022 has reached 100% as compared to the 2011 census data.

4.4.2 Steps Taken By The Government Of Brazil:

According to the World Economic Forum, three major steps should be taken through programs like the use of creative power purchase agreements (PPA), market modernization, and the replacement of fossil thermal plants, to accelerate the spread of non-hydro renewables. By investing in smart grid technology and a basic distribution network, transmission and distribution can be digitalized to address issues with resilience and reliability. Brazil ought to think about updating its transmission and distribution grid infrastructure in order to facilitate the uptake of distributed energy resources, or DERs, and deeper penetration of renewable energy sources.

Investing in distributed generation, electric mobility, energy efficiency, and public services like traffic management, public lighting, security, and vegetation management can all be made possible by the creation of a digital energy network.

To encourage the implementation of sustainable practices in the management of public organizations, the Brazilian Federal Government has created instruments connected to public administration. One such voluntary adoption is the Environmental Agenda in Public Administration (A3P), which was released in 1999 (Brasil, 2009). The Sustainable Logistics Management Plan (PLS) has been released by the government as well. The PLS was established on November 12, 2012, by the Ministry of Planning, Budgeting, and Management's Normative Instruction 10/2012 (Brasil, 2012b), and it was governed by Decree 7.746 on July 5, 2012. All

direct, autonomous, and foundational public administration agencies and institutions, as well as dependent state-owned companies, including FUs, are required to implement it (Rissato et al., 2018). Seven mandated issues are listed in the decree that federal public organisations need to address: Supplies, 2) power, 3) sewage and water, 4) selective collection, 5) workplace well-being, 6) environmentally friendly contracting and procurement, and 7) personnel transportation (Brasil, 2012b). Crucially, the directive only covered matters pertaining to campus operations in the context of FUs.

4.5 Challenges And Barriers:

4.5.1 India:

Most Indian states already have a larger share of variable renewable energy than other countries worldwide. As a result, several governments are already grappling with system integration issues. Even though the necessity remains unchanged. One significant challenge is the intermittency and variability of renewable sources like solar and wind, which can strain the stability of the power grid. Additionally, the high initial capital costs associated with setting up renewable energy infrastructure can be a barrier, despite long-term cost savings. Land acquisition and environmental concerns can lead to delays and disputes in project development, while regulatory and policy inconsistencies can create uncertainty for investors. Grid integration and infrastructure upgrades are also necessary to accommodate the increasing share of renewables, posing logistical challenges. Furthermore, financing and funding constraints, along with the need for skilled labour, can impede the rapid deployment of renewable projects. Addressing these obstacles requires a concerted effort from the government, private sector, and international partnerships to create a conducive environment for sustainable renewable energy growth in India.

4.5.2 Brazil:

After reviewing the literature, Amaral et al. (2020) discovered that obstacles to implementing sustainable practices in university operations are common to many sustainability dimensions, including a lack of funding, human and technological resources, administrative support, and opposition from staff, students, or directors. That is to say, performance is impacted by internal social variables as well as political, organizational, and financial restraints, even in technical areas like campus operations. The authors discovered that financial backing, community involvement, and management support were the key factors influencing success. Seventy-five Brazilian universities' environmental management practices were investigated by Engelman et al. (2019). According to the authors, organisations that put an emphasis on environmental management, put in place environmental management systems (EMS), and designate particular departments for this purpose have a higher.

The implementation of the transdisciplinary concept of environment and sustainability in education faces several challenges, many of them due to the holistic nature of this approach. Because of this, the education imparted is more superficial which in some instances provides in-depth knowledge in certain aspects and loses in others. This gives unsatisfactory results in student's training. The overemphasis on environmental issues is notable in this regard. This is particularly crucial when taking social sustainability into account. In engineering curriculum, social sustainability has traditionally received minimal attention. When weighed against the other dimensions of sustainability, the social dimension has inherent drawbacks due to its simplicity of explanation and instruction. For example, the environmental effects of human activity are easier to quantify than the social effects, and from an educational standpoint, the professor may explain these effects more concretely in the classroom. The requirement for professors' professional growth and training is another crucial topic to emphasise, as it enables them to impart to their students the knowledge they need to always take sustainability into account. Professors of other subjects who do not receive this training become insecure and lose interest in SD-related issues.

5. CONCLUSION

To realize SDG 7, Affordable and Clean Energy, individuals can play a pivotal role by making sustainable choices across various aspects of life. From opting for e-vehicles to adopting solar-powered housing, these conscious decisions contribute to a substantial impact. By embracing these clean energy alternatives, the demand for renewable resources gains momentum, thereby setting a positive cycle into motion. As demand surges, the supply of Renewable energy aligns accordingly. This symbiotic relationship between demand and supply stimulates innovation and catalysis development in the renewable energy sector. Consequently, the cost of renewable energy sources becomes more accessible and affordable to a broader population. Simultaneously, directing increased funding into renewable energy research will spark innovation, efficiency, and affordability, propelling us toward clean energy goals.

Increasing the use of pedagogical practices as a success factor for sustainable education could foster intellectual dialogues across campus, foster a feeling of community, motivate people to alter their behaviour and social policies, advance scientific understanding, make connections between local environmental issues and values, and inspire people to change. This kind of awareness involves common vision and communication across various contexts and encourages participation and input from all stakeholders, both on campus and in the community. Extracurricular activities are an essential resource that Higher Education Institutions (HEI) should take advantage of. Students can use them to complement what they learn in the classroom by developing sustainable actions they can carry out beyond graduation. Extracurricular activities give students a chance to comprehend and carry out practices from their functions in a way that benefits society and the

environment. These activities also help students apply their knowledge of the subject to practice. Leal Filho and colleagues support this claim about extracurricular activities.

Engineering courses offer a plethora of opportunities for extracurricular activities, with a particular emphasis on sustainability-focused ones that aim to enhance the quality of life in nearby areas. Institutions may use this type of activity, sometimes known as service learning, to get students involved in community service. However, obtaining the senior management's commitment from the university is vital to achieving satisfying results for all stakeholders. This will enable the initiatives' efficacy and continuation. Notwithstanding the difficulties, collaboration between the local community and the institution can be advantageous to both. More exposure to real-world problems can be beneficial for university teaching and research. On the other hand, colleges can help nearby communities reduce or get rid of their problems.

Renewable energy sources have a lower carbon footprint and are more reliable than fossil fuels which get depleted over time therefore sustainable in the long run. Numerous government-affiliated colleges in India and Federal Universities in Brazil have already taken the initiative to implement solar power systems. As a result, these institutions will enjoy the advantage of a consistent on-site power supply, alleviating concerns related to volatile oil prices and the ecological ramifications associated with oil consumption. Therefore, there is a need to shift from using these conventional energy sources to cleaner ones on college campuses, not just because of the environmental impact but also because of the cost-benefit. Even though the initial cost of solar panels is quite high, the long-term benefit of using solar energy outweighs the cons. In similar terms, biogas could also be implemented on residential campuses to reduce the use of liquified petroleum gas. This, in turn, will impact the emission of greenhouse gasses. The use of LED bulbs is also one of the key points to be focused on. If this is implemented, it can have a significant impact on carbon emissions. Implementing these across institutions will revolutionize consumption at a higher rate and reduce consumption.

On the other hand, the implementation of sustainable practices includes societal and economic goals as well. It is important to establish a strong relationship between all three pillars of sustainability - environment, economic, and social. Promotion of a proper waste management system, and social services that include education, health, legal defence, social well-being, etc is also a necessity for a healthier sustainable ecosystem. A balance between them ensures the leap of nations towards sustainable development goals. Both countries are still in the phase of developing nations and have undertaken efforts to enforce these goals. Balanced short-term goals backed with policies and enforcement can help take these countries more towards sustainability.

5.1 Limitations of the Study:

This paper only focuses on a sample private university in India and on federal universities in Brazil, which could be considered a limitation. This paper has focused on the data collected and published between 2019 to

2023 and a paper in 2016. Due to the time period, there could have been additions and new developments in the policies of both countries.

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A Study Of Human Capital Management Practices For Sustainable Business

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ABSTRACT

Human Capital Management (HCM) is an important field that looks at the strategic link between the human resource department and business functions. Sustainability is the buzz word now a days and businesses are on the lookout for initiatives that would help them engage with sustainable development. Human Capital Management practices are linked with sustainability. Employee well-being is of utmost priority in sustainable HCM practices. These practices result in high job satisfaction, improved motivation, better employee commitment and better employee morale. There are diverse HCM practices such as talent acquisition, talent management, talent retention, employee engagement, sustainable organizational culture, etc. In this research paper, the authors have closely looked at sustainable HCM practices such as talent management, organizational culture and employee engagement. The authors have proposed a model that attempts to link these practices with sustainable business processes. The findings of the study will have implications for business and would provide a roadmap to align HCM practices to achieve sustainable business outputs.

Keywords: Human Capital Management, Sustainability, Talent management, culture, employee engagement.

1. INTRODUCTION- HUMAN CAPITAL MANAGEMENT

Employees are an important asset of an organization. An organization invests its time and resources to get maximum productivity from an employee. An employee on the other hand values organizations that invest in them, provide opportunities for growth and development. This helps to create a positive mindset towards the organization and builds a sense of motivation and loyalty that results in organizational citizenship behavior. The development of research from Personnel administration to personnel management to human resource management to human capital management has laid emphasis on the ever-changing dynamics between the employee and the organization. Literature has shown that human resources are vital for an organization and have an impact on sustainable advantage of the organization. (Hendricks, 2012). Human capital approach views employees as productive assets of an organization. Human capital is an extensive term that comprises of the knowledge, intellectual abilities, physical abilities, skills of employees. It also covers education levels, competence, tangible and intangible experience of employees. (Namasivayam & Denizci, 2006).

A study by Bassi and McMurrer in 2007 broadly discussed five dimensions to human capital namely leadership practices, knowledge management practices, learning and development practices, workforce optimization practices and employee engagement practices. Leadership styles and practices help to develop organizational culture. (Yahaya & Ebrahim, 2016) There are multiple theories of leadership that lay emphasis on different leadership styles. A leader may be task oriented or people oriented. An ideal leadership practice is a balance between the two. Typically, supportive leadership style provides opportunities for employees to develop and grow promoting sustainable practices in an organization. Knowledge is vital in an organization. (Farooq,2019). Modern organizations are termed as learning organizations. It is important to capture both tacit and explicit knowledge of employees in an organization. Human capital approach looks at practices to capture knowledge, transfer knowledge effectively as well as store important knowledge. Growth and development are important for an employee. Human capital management looks at providing learning and development opportunities to employees that would help them stay updated with the latest knowledge and skills that their jobs command. Workforce optimization practices revolve around efficient manpower planning, talent acquisition and talent management. (Kaliannan et al, 2023).The connecting link to all these practices is an engaged workforce. Employee engagement is crucial for employees to stay motivates and achieve organizational goals. (Sun & Bunchapattanasakda, 2019).

Both human resource management and human capital management are crucial aspects of a business organization. Human capital management acknowledges, anticipates and accordingly acts on human aspects.

It is an organizations ability to effectively use the potential of employees through practices such as creativity, innovation, rewards, recognitions that help in improving the productivity of an organization.(Kluþka, 2011). Many organizational theorists have proposed a positive relation between human capital management practices and organizational effectiveness. (Pasban and Nojedeh, 2016). Ready and Conger, 2007 in their study stated that talented employees are vital for an organization. They are important to sustain the competitive advantage of an organization. Sustainable business practices look at practices that are environmentally responsible, preserve cultural aspects of society and are also economically viable. Employees are an important pillar of organizations, investment in employees is a strategic step towards sustainability. (Shah and Bandi, 2003). Sustainable business practices include providing employment to locals and job creation, improving the standard of living of neighboring areas, being sensitive towards the neighborhood and environment, providing fair and equitable wages, which form a crucial part of human capital management.

1.1 Research Objectives:

Human capital management is an upcoming area of research that looks at a holistic view of integrating organizational and employee requirements. It looks at sustainable practices in the field of human resource management that would enable sustainable business practices. With this philosophy in mind, the current research focuses on attaining two objectives:

O1: To study the sustainable practices in human capital management

O2: To propose a model that outlines with link between human capital management and sustainable business processes.

The study found ~~find~~ its implications in modern day organizations that strive to achieve sustainable development goals through sustainable processes. The paper is divided into subsections. The next session termed as literature review discusses the various human capital management practices adopted by organizations, the research methodology section dwells into the approach adopted. The results and discussions section discuss the findings of the research. This is followed by the limitations of the study and scope for future research.

2. LITERATURE REVIEW

2.1 Sustainable Employee Culture:

A sustainable employee culture recognizes and gives importance to sustainability goals. This culture cannot be achieved overnight. It represents a set of concentrated and focused efforts to achieve sustainability. It

represents an environment that priorities long-term well-being of employees by aligning them with the broader sustainable development goals. (Bertels, Papania & Papania,2010). A sustainable organizational culture appreciates the interconnectedness between employee contentment, organizational success, and responsible stewardship. The physical, emotional and social well-being of employees are the prime focal points of sustainable cultures. Practices revolve around providing a safe and healthy work environment, promoting work-life balance, and addressing employee stress and burnout. These organizations follow a democratic format where employees are encouraged to take part in the decision-making processes, contribute their ideas and take ownership of their work. (Fareed et al,2016). Organizational culture is important in defining the ethos of a company. Culture is deep rooted in the fundamental assumptions, values and beliefs of the company. Culture is quite often aligned with sustainability values, responsible and ethical business practices and a commitment to social responsibility. The goals of sustainable cultures are long term and actions are outcome oriented. A unique feature of sustainable cultures is the continuous desire to invest in the learning and development of their human resources. (Margaretha & Saragih,2013) This in turn provides opportunities for skill enhancement and career growth. Inclusive workplaces that value are trademarks of sustainable employee cultures. It is common to find employees from diverse backgrounds working in synch compatibility and respect with each other. Such cultures promote eco-friendly practices, encouraging employees to reduce waste, conserve resources, and minimize their ecological footprint.

Trust is important which is driven by open and transparent communication channels across the organization. (Greengrove, 2008). There are multiple forums of communication with employees through which employees are kept informed about organizational sustainability goals and the impact of their individual contributions. These cultures recognize and appreciate eco-friendly practices, contributions to social causes, and exemplary ethical behavior.(Awadh & Saad, 2013).Sustainability-minded organizations adopt a long-term perspective, considering the impact of decisions on employees, the environment, and society for years to come. This approach goes beyond short-term profits and emphasizes responsible growth. Metrics and key performance indicators (KPIs) related to sustainability and employee engagement are tracked and reported regularly. Accountability for achieving sustainability goals is shared across different levels of the organization. Such cultures embrace initiatives taken towards continuous improvement of both employees and organization. They seek feedback from employees and stakeholders to adapt and evolve their practices over time.

2.2 Sustainable Talent Management:

Human capital management approach focuses on talent acquisition, management and retention over traditional approaches of recruitment and selection. Sustainable talent management practices are characterized by ESG

i.e. environmental, social and governance considerations. The primary objective is to have a diverse workforce that embraces the sustainability initiatives of the organization. Responsible leadership has a role in supporting employee growth and integrating sustainability goals into performance evaluation. (Hongal & Kinange,2020). This helps to sensitize employees towards realizing sustainability objectives which has a long-term positive influence on society and the environment. Sustainable talent management practices are important in higher education institutions as well. The Global Education Context recognizes the worldwide financial instability that affects the higher education systems which has resulted in various institutions resorting to cost-cutting measures. These cost cutting measures include drastic staff reductions, salary freezes, ceasing growth opportunities and resource constraints. There is an ongoing need for adaptable talent management in Higher Education globally. These practices will help achieve stability and effective management (Al Aina & Atan,2020). Talent management as a universal process encompasses the recruitment, selection, retention, appraisal, motivation, training, and development of all employees in an organization. It is looked at as a mandate rather than a specialized HR concept reserved only for a few in the organization. Critical talent management practices include a vast range of initiatives such as talent attraction, practices of enhanced knowledge sharing, employee learning and development, and career enhancement, which are vital for the success of organizations. Talent management system as a universal framework encompasses of processes that enhance and retain the skills and capabilities of talented employees in organizations. (Anlesinya & Amponsah-Tawiah,2020). The objective of talent management globally is to create an environment where employees across borders are motivated, content, and retained. Sustainable talent management is essential for organizational success in today's global, competitive landscape. Growth of a firm has links with the growth of its employees. Firms must invest in staff learning and development. (Kehinde, 2012).

2.3 Sustainable Employee Engagement:

Sustainable employee engagement is the foundation of a flourishing and enduring organization. Sustainable employee engagement includes initiatives that keep an employee motivated and committed to the organization. (Albrecht, Green & Marty,2021) Such initiatives aspire to create a workplace where employees are aligned to the organization's overall mission and values. The aim is to increase employee affective commitment. This helps to bring an emotional attachment with the organization. This attachment brings about a sense of loyalty and pride in being associated with the organization. (Ababneh,2021). This is nurtured through continuous feedback, clear career path, career development opportunities, and a healthy work-life balance. Competency development and mapping is important for employees. Employees who understand their career path are more likely to remain engaged over the years. Some other features of employee engagement include participation in management, rewards, recognition, gatherings, celebrations. (Santoso, Sulistyaningtyas & Pratama,2022).

Sustainable employee engagement also includes practices adopted by the organization to create an inclusive and diverse workplace. This is where employees from all backgrounds are valued and respected. Employees value open communication and involvement in decision-making processes. Leaders and leadership style are pivotal for setting the tone and being role models for employee engagement. A team leader is crucial for an employee. It is important that the employee trusts the team leader. They should inspire employees by demonstrating a genuine concern for their well-being. Continuous feedback, communication and focused efforts of the team leader towards the team members are integral to sustainable engagement. This would help to ensure that the organization evolves continuously at par with the changing needs of its workforce, which would result in long-term success and resilience. Employee engagement is widely acknowledged as a fundamental driver of workplace performance. The concept of employee engagement can vary in its interpretation, with organizational definitions often emphasizing engagement with the company and its goals, while academic definitions tend to emphasize engagement with job roles and tasks, viewing engagement as a cognitive state.

3. RESEARCH METHODOLOGY

The research objective of the paper was to find out the practices of human capital management that enable sustainable business practices. To achieve this objective, the researchers have studied papers published in journals of repute. The researchers have gone through papers in Ebscohost, Scopus, emerald, Web of Science. Keyword identification and search criteria were crucial in this research. The guidelines laid down by qualitative research have been followed in this paper. Indian and foreign papers were referred to get a global perspective on this phenomenon. The research articles were thoroughly studied to identify repetitive factors. This showcased the significance of the identified factors for the research.

4. RESULTS AND DISCUSSIONS

Figure 1. Represents the key finding of the study. The model comprises of three sub parts. The first represents sustainable human capital management practices, followed by the role of key personnel to achieve the goals of sustainable business practices.
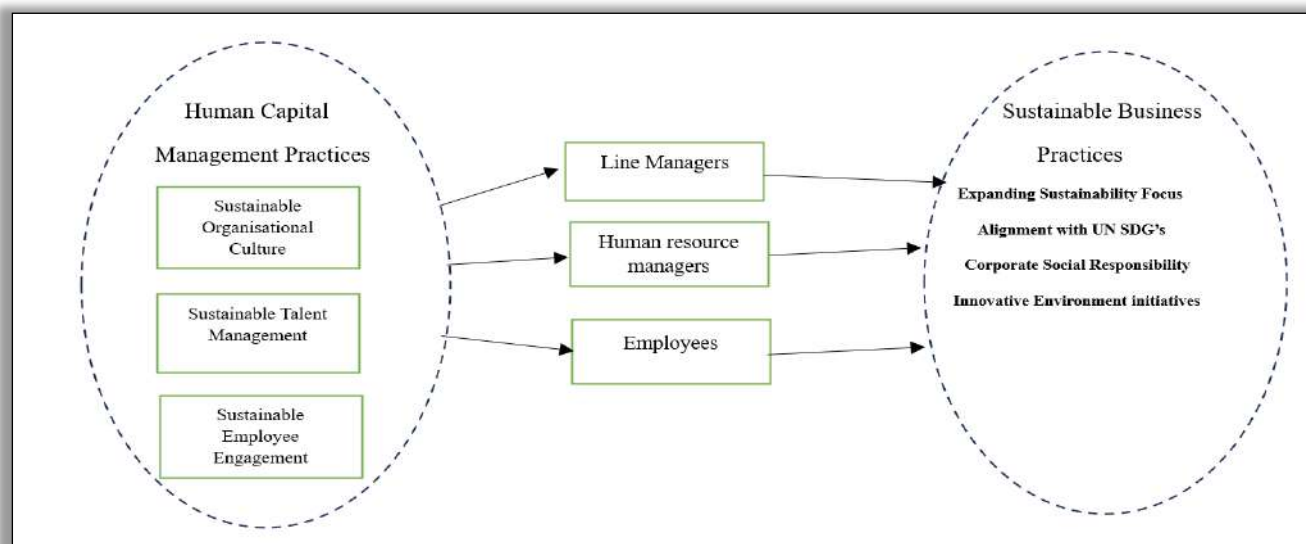
Figure 1: Hypothetical Model of Human Capital Management and Sustainable Business Practices

4.1 Human Capital Management Practices And Sustainability:

An understanding of the sustainability and its interlinkages with culture is important to define a "culture of sustainability". Sustainability, as commonly defined by the World Council on Economic Development, "involves conducting activities in a way that meets current needs without compromising the ability of future generations to meet their own needs.". A translation of this meaning for businesses highlights the need to effectively manage the triple bottom line i.e. the financial, social, and environmental aspects in decision-making. It is important to maintain a fair balance between these three to ensure sustainable business operations. Sustainable organizations are characterized by a culture that aids in value creation, healthy ecosystems, strong communities and committed workforce. (Roscoe at al, 2019).

Organizational culture, similarly, has various definitions, often involving "shared assumptions, values, expected behaviours, and symbols". This culture guides how members of an organization make decisions based on underlying beliefs and values. The culture is also responsible for setting employee expectations. Culture that encourages sustainability encourages environmental sensitivity among its employees. Employees become more conscious about environmental practices. It shapes an organization's identity and daily practices. Employees feel motivated to contribute towards the environment. They collectively recognize the importance of balancing economic efficiency, social equity, and environmental responsibility which helps to maintain long-term sustainable success of business processes.

According to Shaikh (2010), Green Human Resource (HR) practices play an important role creating a green mindset that helps in the adoption of management philosophies. It is important to have HR policies and

practices that encourage green initiatives, adequate training should be provided to employees to be environment sensitive and the execution of environmental protection regulations should be closely monitored. This will help to promote use of eco-friendly products and raise awareness among all involved about the more economical use of natural resources. (Goleman et al., 2002). A study by Kim and Kim, 2021, looked at combining individual and organizational variables to examine how employees perceive and participate in their companies' initiatives towards pro-sustainability. A key finding of the study was the concept of social identity. This social identity has an impact on workers' sustainable behaviour. Talent management practices are important to assess the affective and intellectual dimensions of employees. These practices are guided by employee engagement initiatives which impact employee commitment to sustainable business goals. The affective dimension includes synergy between an employee's emotions and personal values. They represent an employee's cognitive ability and norms.

A sustainable employee culture places a premium on employees' long-term wellbeing while fitting with more general sustainability goals. It reflects a fundamental shift in company beliefs and practices. This culture is aware of the deep relationships that exist between worker pleasure, business success, and prudent use of the planet's natural resources. Employee well-being, engagement, values alignment, training and development, diversity and inclusion, environmental stewardship, transparency, community engagement, recognition, and a steadfast focus on the long-term are just a few of the components that make up the principles and features of a sustainable employee culture. Together, these elements foster an atmosphere in which people may flourish, develop, and advance humankind and the environment.

Another crucial aspect is the adoption of talent management practices that are sustainable in nature. Attrition, employee dissatisfaction are haunting realties of today, it is important for organizations to come up with effective strategies to tackle these problems. Organizations must address talent loss, which varies by size, sector, and industry. Effective talent management includes practices of participatory leadership, affective organizational commitment, sustainable employee engagement, and development of talent metrics. It is important for organizations to reconsider the talent management approaches. Inadequate implementation of talent management practices will pose challenges to attaining sustainable business goals. There has to be a reset of the current mindset of leaders towards talent management implementation. Talent management is now a critical element in the strategic planning and cannot be ignored.

Another crucial input in human capital management is sustainable employee engagement practices. Engaged employees have a positive impact on productivity of organizations. Engaged employees provide a competitive edge to organizations. These employees stay motivated and want to achieve organizational goals. On a

macroscopic level, engaged employees contribute to enhanced operating income, revenue growth, productivity, innovation, profitability, retention, customer service, reduced absenteeism, and safety at the organizational level. Engaged employees experience higher job satisfaction and better emotional wellbeing.

4.2 Key Personnel Involved:

The second part of the model focuses on key people involved in achieving sustainable business practices, Research has shown that line managers are crucial central figures in sustaining employee engagement and well-being. They influence both engagement levels as well as the overall health of employees. Thus, a key strategy for achieving sustainable engagement is to enhance the skills and relationships of line managers. Human resource managers are key in maintaining practices that promote sustainability. They are vital for policies and practices that look at sustainable development goals and promote action in this direction. They are responsible for reconsidering Traditional HR metrics like 'job satisfaction' to include social and environmental metrics from sustainability departments. They should take up initiatives that boost employee engagement in sustainability. The workforce is shifting toward millennials, studies show that millennials will comprise 75% of employees by 2025. Research further shows that these millennials priorities social and environmental change, they are more aware of environmental issues and are sensitive towards them. This generation is keen to adopt practices that are seen in line with the environment and are open to rejecting opportunities conflicting with these values. (Simon & Zhou, 2018).

The external environment in today's business world is characterized as VUCA. VUCA stands for Volatility, Uncertainty, Complexity, and Ambiguity and this refers to uncertainties in the external environment which quite often cannot be predicted and is beyond control. This has become a buzzword in the corporate world and is a prominent topic of discussion. It is important to have sustainable business operations to survive in the VUCA world. In this tumultuous business environment, HR managers must employ the VUCA model as a framework for developing leaders.

Sustainable human capital management practices should be linked to the mission and vision of the business organization. Strategic Cascading practices help to align individual employee goals with the overall organizational goals of the company.

It is important for organizations and management to recognize this transition in the mindset of employees. They should examine attitude, behaviour, and results while engaging employees. They should encourage a two-way communication process, more of their potential and capabilities may be developed to inspire them to

work hard. In order to incorporate a better degree of confidence and excitement for learning and innovation in order to succeed in successful job positions, firms must implement specialized engagement plans and establish an inclusive workplace. The degree of job satisfaction, dedication, participation, emotional attachment, and feelings of empowerment are some of the factors that may be used to evaluate engagement.

4.3 Sustainable Business Practices:

A sustainable business is characterized by the initiatives that they adopt. Transitioning to sustainability may require adopting new business models or unconventional approaches, breaking away from traditional practices. These initiatives help to bring about a sense of responsibility towards the environment, these business practices are defined by

- ❖ **Societal Focus:** The focus of sustainable business is mainly on giving back to the society. The initiatives are channeled towards upliftment of the standard of living around the neighboring area. Providing employement opportunites to the locals, adopting nearby villages, upskilling and reskilling locals are some focal areas. There is a concentrated effort in aligning all business operations with the broader societal agenda. Efforts towards the society are viewed as the morally the right thing to do and is encouraged.

- ❖ **Collaboration with External Forces:** Sustainable business organizations strive to continuously collaborate with their key stakeholders in the external environment to achieve sustainability goals. They adopt capacity building initiatives for the external stakeholders and engage in ethical practices with stakeholders that are known for environment friendly initiatives and products.

- ❖ **Expanding Sustainability Focus:** Businesses have started relooking at goals and targets set for employees. They have included goals that encourage environment friendly initiatives. Further performance metrics have to be focused towards sustainable goals.

- ❖ **Alignment with UN SDGs:** It is important for business organizations to identify and align with specific United Nations Sustainable Development Goals (SDGs) that are most relevant to their sector. To cite a few examples, initiatives can be directed towards addressing issues of climate change, renewable energy sources, ensuring fair and decent working conditions, building sustainable communities, and encouraging responsible consumption.

- ❖ **Corporate Social Responsibility (CSR) Strategies:** Another important aspect of sustainable business is the corporate social responsibility initiatives that they invest in. This is a manner of directly engaging with society and a concrete step towards sustainable development.

5. CONCLUSION

This research emphasizes the critical role of Human Capital Management (HCM) practices in fostering sustainable business processes. The study delves into sustainable HCM practices such as talent management, organizational culture, and employee engagement, proposing a model that establishes a link between these practices and sustainable outcomes. The findings underscore the importance of aligning HCM strategies with broader sustainability goals, emphasizing employee well-being, job satisfaction, and commitment as essential components. The literature review explores sustainable employee culture, talent management, and employee engagement, highlighting their significance in achieving long-term organizational success. The research methodology involves a thorough analysis of reputable journals, while the results and discussions present a hypothetical model illustrating the connection between HCM practices, key personnel, and sustainable business practices. Key personnel, including line managers and HR managers, are identified as pivotal in sustaining employee engagement and well-being. The paper concludes by outlining sustainable business practices characterized by a societal focus, collaboration with external forces, alignment with UN SDGs, and corporate social responsibility. The limitations include reliance on secondary research, suggesting potential for further validation through primary research, such as interviews with organizational leaders to assess the extent of sustainable practices. Overall, the study underscores the imperative of integrating sustainable HCM practices for organizational success in today's dynamic and uncertain business environment.

5.1 Limitations and Scope for Further Research:

The researchers have attempted to identify sustainable human capital management practices that lead to sustainable business. The study is based on secondary research which is a limitation of the study. The study can be further validated through primary research. Leaders of organizations can be interviewed to understand the extent of sustainable practices in business.

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Performance Assessment of Nestle India

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ABSTRACT

This research paper examines the performance of Nestle India Limited, a foreign subsidiary functioning in India. The study will help to understand the brand nestle with their key skills. We have used their company data from 2017 to 2021 and analysed different financial, managerial and technical developments of Nestle.

Keywords: Performance Analysis, Foreign Subsidiary

JEL Classification Code: D21, D22

1. INTRODUCTION

As a multinational corporation from Switzerland, Nestle has Nestle India Limited (NIL) as a subsidiary, headquarters is in Gurugram, Haryana (Gurgaon), and offers products like food, drinks, chocolate, and confections, showing significant presence in many countries as a result of competent performance across all areas. In the Indian FMCG market, Nestle India is a significant player. One of India's most valuable firms and a leading employer in the nation. The United States, Japan, Russia, and other nations are also key markets for Nestle products, which are also sold to India. Being a major instant coffee exporter to Russia and the CIS nations earned Nestle India the "Top Exporter Award." The company has been able to concentrate on adding value for the customer because of its concentration on high value and affordability. The organization gives

increasing operational effectiveness a high priority. The profitability of working capital, the income tax rate, the cost of capital, and the length of value growth have therefore been consistently prioritized along with expanding sales. Nestle India aspires to offer a variety of high exceptional quality, safe food items at affordable prices to give long-term value for customers. The company is continually attempting to enhance its product offerings in terms of convenience, taste, nutrition, and wellness, as well as to better understand modern Indian lives and anticipate consumer demands.

2. LITERATURE REVIEW

It is found from the current analysis that Nestle India Limited has not been able to manage its working capital very effectively. In contrast to the current obligations, the current assets have grown more rapidly. There hasn't been any further evidence outside of existing liabilities to support this rise. The causes of this growth in current assets of Nestle India Limited over the course of six FYs would be revealed by further analysis of the balance statements of Nestle India Limited for the period under review. It has been determined that Nestle India Limited has mismanaged present assets and more of their numerous components (Shrotriya, 2019)

While political economy and the Westernization of urban India helped Nestle India's instant noodles grow, they struggled with escalating media corporatization, activist pressure, and the erratic nature of regulatory enforcement (KrishnamurthySriramesh, 2018). In order to examine the negative working capital and its effects on the profitability and earning potential of the businesses, Nestle India Limited, a well-known FMCG company, is used as an example. Finally, it is discovered that businesses with negative working capital are more profitable and provide shareholders with greater dividend and capital appreciation, thereby maximizing their worth over time (Chaudhary, 2015)

(B. Navaneetha K. Punitha, 2017) analyze Nestlé (Ltd. Costs,) analyzes the volumes, and profits from 2012 to 2016. It has been determined from the aforementioned findings that Nestle Ltd.'s total cost volume profit is well accomplished. Nestle's overall sales are doing well. Therefore, they should keep it up. Cost volume profit analysis looks at how variations in a product or service's output level, selling price, variable cost per unit, and fixed cost behaviour. FMCG firms prioritize product innovation and employ techniques like multi- brand strategy and new product development (Ambrose, 2018). (Rajain et al., 2019, 7) in their study stated that when MSG and Lead were found beyond the prescribed levels in Maggi noodles, the Bombay High Court directed to destroy all the types of Maggi across the country which affected the brand value. This crisis has changed their perspective.

(A., 2020, 52) Using different business strategies and introducing new product lines, Nestle increases employee engagement across its operations, as their aim is to lead the food market areas like nutrition, wellness, and health. With improvement in technology, organizational structure, marketing mix, operations, and human resource management the company is enhancing its performance areas. Due to the market's dynamic, Nestle tends to embrace change and develop items suitable for its clients while enhancing the quality of its core product line. Improvements in technology, organizational structure, marketing mix, operations, and human resource management led to more profit margins for the company. Even though Nestle's popularity increased due to many Indians following different lifestyles, the company had to deal with many challenges from the public, media, regulatory compliances and cultural nationalism. This phenomenon indicates that global companies will have to pay a heavy price if they choose to neglect the host country's cultural practices and implications (Dhanesh & Sriramesh, 2018, 10).

(Derashri et al., 2018) This research aimed to learn how happy Nestle's customers are with the company's marketing efforts. The study found that consumers generally know about the brand's product line. The research also shows that buyers are content with the business's items. The level of customer satisfaction varies greatly depending on factors including product quality, flavour, and cost. Accordingly, the study participants agreed that the price made a clear and significant difference in their overall pleasure. Keeping track of consumer tastes and habits in India's rural and urban areas is crucial if Nestle successfully enters the country's vast untapped market.

(P J, 2021) One of the most successful and rapidly expanding private sector companies in the world is Nestle Ltd. Over the course of several years, the company's financial status has demonstrated a pattern of ups and downs. You won't notice any kind of consistent growth, but you'll also never be in a position where you're losing money. It's possible that swings in the market are due to managerial concerns as well as the pandemic year. The company is working to find solutions to these problems, but their efforts have not yet reached their full potential. It is imperative that further efforts be made to ensure the uninterrupted operation of the organisation. It is possible to draw the conclusion that the liquidity and solvency positions of the company are satisfactory; nonetheless, the company does need to enhance its position regarding profitability.

(David & Dharani, 2021) The analysis of financial performance is used to have a better understanding of the concern's financial performance. The purpose of this research is to analyse the financial performance of NESTLE INDIA LTD over a period of five years and provide a report on those findings. The primary objective of the study is to carry out an evaluation study of the company's current financial state by employing ratio analysis and financial statement analysis, considering the company's financial statements from the preceding five years. This will be the primary focus of the study. The short-term financial position of Nestle India ltd is

indicated by the current and liquid ratio. Similar to the situation with the cash position ratio, due to the fact that it is low, it is required to pay off the short-term debt. The analysis of the firm's financial performance over the past five years reveals that the company maintains a good position in profitability, which is proof that the company is financially sound.

(UK Essays, 2018) The challenges faced by consumers of Nestlé Company products are primarily nutritional in nature. From our Internet investigation, we've learned that many individuals have nutrition-related complaints. The first issue is nutrition for the elderly, which is mostly determined by a person's diet and nutrition intake. Inadequate nutrition and an imbalanced nutrient intake can raise the risk of disease. Second, children's obesity is primarily due to their excessive consumption of chocolate and sweets, which causes them to develop diseases at a young age. Lastly, according to the analysis, Nestle is making fewer energy drinks.

(Chaturvedi & Prasad, n.d.) Nestle conquered the world with its food and beverage products. Due to neglect and errors, Maggi lost its standards after 34 years in India. The corporation tried a good return, but it realizes it takes time. It's hard to return to high standards in today's competitive corporate world. Nestle is trying to gain consumers by advertising on Indians' sentiments. Maggi's quick preparation time drew working women and vacationers. Maggi was popular in India's Himachal Pradesh and Himalayan areas. Maggi was cooked and sold in mountain areas and cities. Maggi dominated the Indian instant noodle industry for 25 years. After the prohibition, the share was 60% on January 28, 2017. (as reference to Times of India). Nestlé's reputation in India is long-standing. When NGO's and customers complained about MSG and lead in Maggi Noodles, the government didn't take prompt action, and the company's leadership misinterpreted a fast-moving issue at every turn. Maggi's case study will be studied by MBA students and public relations & marketing executives for years to come.

3. ANALYSIS
Analysis of the Key Financial Results:

	2021	2020	2019*	2018	2017
Results					
Sales	146,337	132,902	122,953	112,162	101,351
Profit from Operations	32,548	28,775	25,940	23,509	18,305
as % of Sales	22.2	21.7	21.1	21.0	18.1
Profit after Tax	21,449	20,824	19,684	16,069	12,252
as % of Sales	14.7	15.7	16.0	14.3	12.1
Balance Sheet and Cash flow statement					
Shareholders Fund	20,845	20,193	19,189	36,737	34,206
Return on Average Equity (%)	104.5	105.8	70.4	45.3	36.6
Operating Cash Flow	22,714	24,545	22,953	20,525	18,178
as % of Sales	15.5	18.5	18.7	18.3	17.9
Capital Expenditure	7,308	4,741	1,522	1,628	1,959
as % of Sales	5.0	3.6	1.2	1.5	1.9
Data per Share					
Earnings per share (₹)	222.5	216.0	204.2	166.7	127.1
Dividend per share (₹)*	200.0	200.0	342.0	115.0	86.0
Market capitalisation, end December	1,899,925	1,773,312	1,425,983	1,070,913	766,381
Number of employees	7,910	7,747	7,649	7,604	7,527

Table 1. Financial Highlights of Nestle India over the last 5 years (Source: Nestle India Annual Report)

Analysis of the Profits Earned by the Company:

The overall profits of Nestle India after tax are growing at an exponential rate as visible in the table above. Profits in 2017 stood at Rs 12,252 million which was a result of the company being able to revive themselves after the Maggi-based lead incident considering that this was one of the most popular products manufactured by Nestle India. It continued to grow to Rs 23,509 million in 2018 mainly due to the focus on diary-based items by the brand and moreover, the profit as a percentage of sales from operational profits also rose from 18.1 % in 2017 to 21.0% in 2018 which shows a major change in the profit matrix as well. However, upon analyzing the profit from operations, it is evident that Nestle India performed extremely well in terms of their operational activities as the rise was significant (from Rs 18,305 million in 2017 to Rs 23,509 million in 2018) which depicts an extremely positive trajectory for the operational activity profits as well.

The profits of the company rose in the following years however the growth in operational profits as a percentage of sales was extremely slow since in 2019 it was only 21.1 which was a 00.1 growth as compared to the 2018 amount of 20.0 however when the profit after tax is analyzed at an independent level separate from the percentage earned from sales the growth from the year 2018 (Rs 16,069 million) to Rs 19, 189 million in 2019 is commendable since this depicted the positive growth in terms of the financial position since profits are one of the most important factors when assessing the growth of the company.

This continued even in 2020 wherein Nestle India registered profits of Rs 20, 824 million after tax which depicted a continuous growth across the years analyzed as well as in 2021 as in this year the profit from operations was the highest recorded amount with Rs 32, 548 million and even upon comparing the percentage of this from sales there is a significant growth over the last 5 years from 2017 since while the growth from 2018-2019 was very poor there was better growth in 2019-2021 of 00.6% which experienced a drop in the year after, 2021 but was relatively stable throughout which is a good sign considering the effects of the pandemic on the possible profit earnings the company may have had.

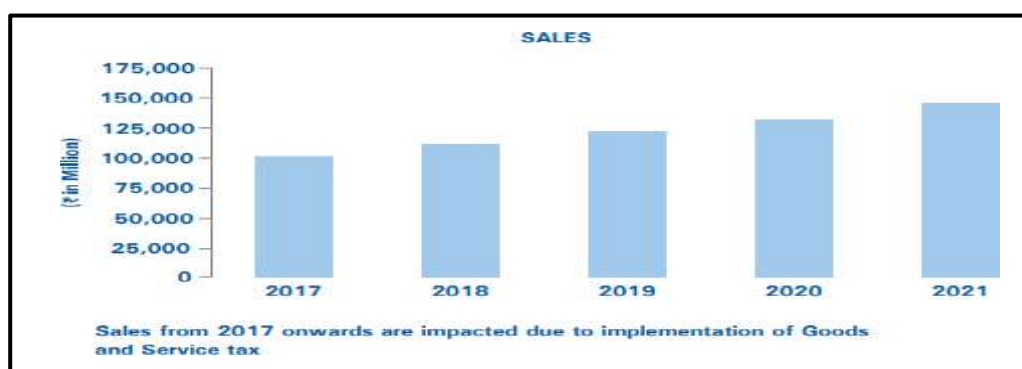## Total Sales and Domestic Sales (Within the Country):

Figure 1. Showing the revenue earned by Nestle India over the last 5 years

Source: Annual Report of Nestle India 2021

As visible from the table above, the sales of Nestle India have shown a positive rise over the last five years. There is an approximate growth of over Rs 100, 000 million across the years which depicts a stable growth rate as well.

Upon further analysis the growth of sales year-on -year grew in terms of total sales which includes exports as well as domestically. The sales growth from 2017 to 2018 domestically was 10.9% whereas the total sales grew by 10.7% this was a good growth rate however, when comparing the growth of total sales from 2018-2019 it was only 9.6% and 10.9% domestically which shows a fall in growth rate in 2019.

The sales growth rate further fell even more as reported in 2020 to only 8.1% in total sales and 8.5% in domestic sales. This shows that this particular financial year was not profitable, the pandemic was the major reason for a poor growth rate in this year. This is because the company was unable to sell a major amount of its produce due to transportation restrictions, shutdown of processing units for a short period of time, employee cuts among other reasons.

However, considering the recent trend, they were able to regain their general trend and sales from 2020 to 2021 grew by 10.1% in total sales and by 10.7% in domestic sales as well. Upon analysis of the annual report, it was revealed that this was because of the large volume production which could be linked to the new factory established in 2021 in Gujarat as this helped improve the volume as well which in turn helped the sales of Nestle India as well in terms of production as well. Considering that a higher number of sales will help the company in terms of total profits as well this is one of the most crucial financial aspects for Nestle India and looking at the growth rate as well with the most recent being over 10%, it is justifiable to conclude that in terms of the financial aspect of sales, the company is performing well in this regard.

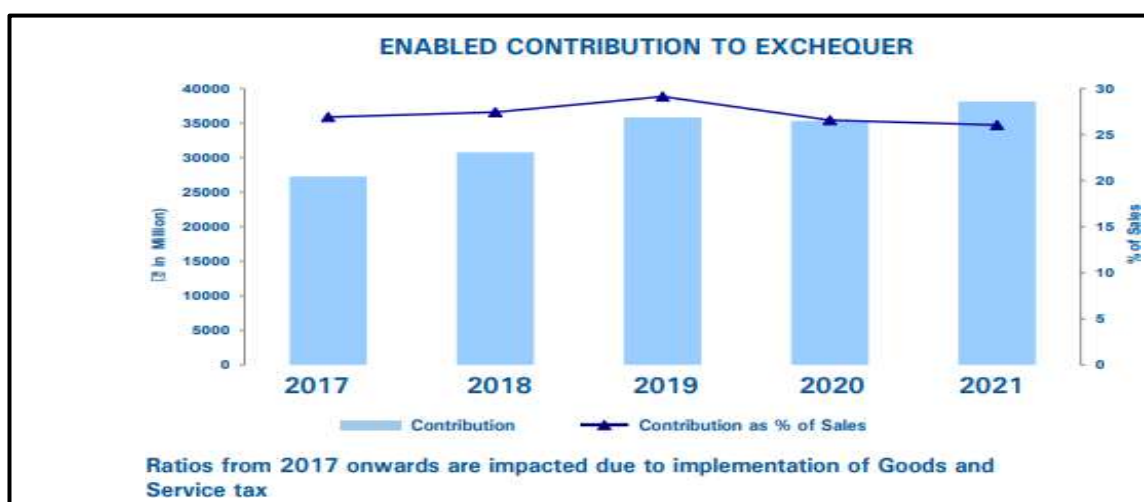**Financial Analysis of the Exports and Enabled Contribution to Exchequer by Nestle India:**

Figure 2. Showing the enabled contribution paid to the exchequer by Nestle India over the last 5 years

Source: Annual Report of Nestle India 2021

In 2017, Nestle's exports accounted for Rs. 6,626.6 million which was an extremely high amount mainly due to the coffee exports and the enabled contribution to the exchequer stood at Rs 27.3 billion which is a large amount that includes both Central and State taxes from their branches across the country. From 2017 to 2018 the exports grew at 6.9% and the total amount of export sales saw an improvement after the Maggi ban since this year Maggi was one the key export items as Maggi was now exported to 13 more countries which was one of the major reasons for the export growth. This was one of the main reasons of higher amounts of money being paid to the exchequer as well since the large international volumes led to a lot of indirect taxes at the Central level, hence the amount was Rs 30.76 billion.

2019 was a year of poor performance for Nestle India's export and the sales volume from exports as well, the exports fell by 9.9% and when analyzed, the most crucial reason for this detrimental effect was the fall in coffee exports in various countries especially Turkey which wherein coffee exports by the company was usually in high demand. Even though South Asian exports grew tremendously mainly in countries like Bangladesh, Bhutan and Sri Lanka, the overall exports had a poor effect on the company's financial gains as they did not expect a fall in the growth rate by such a significant percentage. However, due to positive domestic sales the contribution to exchequer rose by a small amount as well, since it stood at Rs 35.8 billion as compared to the 2018 contribution of Rs 30.76 billion. A major reason of the current success of the company is their volume growth of exports in 2020. While it is understood that the pandemic restricted the growth of the exports of the company for a short period, their revamp led to a huge success. In this year, Nestle India had a 4.8% volume growth owing to their highest ever recorded exports of their MAGGI range, including the instant noodles as well as the sauces that are marketed under the Maggi name in western regions such as the European region, Canada, the United States of America as well as other countries such as Australia and New Zealand.

This was seen as extremely positive for the company's overall revenue and is considered to be one of the main reasons Nestle India recorded an overall increase in profits in the year 2021 despite the supply chain restrictions caused by the COVID-19 pandemic. However, the contribution to exchequer decreased by a relatively negligible amount since it was Rs 35.3 billion however considering the changes in policies in the year and the Rs 35.8 billion that was contributed to exchequer the previous year, the overall amount seemed relatively stable thus not being a major cause of concern either and moreover, there was a Rs 38.1 billion contribution to exchequer in 2021 which showed their success at least from domestic markets since there was a poor performance of exports in 2021 since there was a fall of 1.2% and this was mainly due lesser coffee exports. However, the company made amends and already launched POLO in the middle East, launched other products in ASEAN nations to increase their product base in those countries as well which is expected to stabilize the export and the income earned from the exports.

Analysis of the Balance Sheets of Nestle India:

As per the information derived from the Annual Report of Nestle India from 2017-2022, there has been a rise in Property plant and equipment on account of additions to Building and Plant and Machinery. The net value has risen from Rs. 8,251.6 million (31 December 2017) to Rs. 9,041.4 million (31 December 2021) and Rs. 16,053.4 million (31 December 2017) to Rs. 16,896.1 million (31 December 2021) respectively. The total Equity and liabilities rose from Rs. 73,625.9 million in 2017 to Rs 80,880.8 million in 2018. Apart from the above mentioned there were major additions and deletions in Right of Use Assets in the year ended 31 December 2020 and 2021. The Company incurred Rs. 4.3 million (2020: Rs. 12.2 million) for the year ended 31 December 2021 towards expenses related to short term leases, leases of low value assets & variable leases.

In the FY ended 31 December 2020, the company made non-current investment in equity shares of Sahyadri Agro and Dairy Private Limited amounting to INR 188.8 million, hence the rise in non-current investment. In the same year the company made Investment in Insurance plan amounting to INR 13,262.9 million. The investment has 'Reimbursement Rights' as defined under IndAS 19 Employee benefits. Other than the above mentioned there has been an increase in payments under protest with government activities, the amount has nearly doubled from FY 19-20 to FY 20-21.

The company saw an increase in inventory mainly due to packing material and stores and spares. The total inventory valuation has increased from INR 9,024.7 million (2017) to INR 15,802.2 million (2021). There has been a significant drop in cash and cash equivalents majorly due to fall in Balance with banks – on Deposit account. The balance in FY2020 stood at INR 17,217 million whereas in FY 2021 it fell to INR 6,796.9 million whereas the other years were stable as depicted above.

Analysis of Shares and Market Capitalization:

Figure 3. Showing the growth in Market Capitalization for Nestle India

Source: Nestle India Annul Report 2021

As understood from the above graph as well as the financial highlights table, there has been a relatively consistent growth in the market capitalization of Nestle India. Between the last two years 2020 and 2021 the figures stood at Rs. 1,773,312 million and Rs. 1,899,925 respectively therefore showing a steady growth and when compared to previous years, there was an immense growth from the Rs. 756,381 million in 2017 to the Rs. 1,070,913 million in 2018, this was a huge jump, and it was associated with the high demand in shares due to the incorporation of better products in the product mix as Nestle had started to focus on other diary and confectionary segments as well during this time which could have contributed to the same. The earnings per share and dividend per share also showed a rise especially during this period of 2017 to 2018 as it increased from Rs. 86.0 to Rs. 115.0 (dividend per share) and the earnings per share showed a growth from Rs. 127.1 to Rs. 166.7. The trends of 2019, 2020 and 2021 also depict a stable growth as well however the dividend per share was stagnant from 2020 to 2021 as it was the same level on amount during both years as the end of year share analysis shows Rs. 200.00 for both years.

The earnings per share from 2020-2021 did not show any major fluctuation, it had a relatively good amount of growth at Rs. 216.0 in 2020 and Rs. 222.5 in 2021 however, the rise of the same from 2019 at Rs. 166.7 to the 2020 amount was significant and the Covid impact on the stock market was considered the main influencing factor for the same. Since the market was highly dynamic with a sharp fall at a certain period and started correcting itself for Nestle India only towards the end of the year and mainly in 2020, the market capitalization also improved significantly during this period.

Overall, the rise in market capitalization and stable growth of the earnings per share and divided per share has shown as favourable for Nestle India since the steady growth has a positive impact on the shareholders of Nestle India and adds to the value of the company from a financial perspective as well.

Analysis of the Cash Flow Statement of the Company:

As per the information derived from the annual reports of Nestle India from 2017-2021, the net cash generated from operating activities rose to Rs. 20,524.5 million in 2018 from Rs. 18,177.9 in 2017. One of the major reasons for the same was the rise in interest on bank overdraft and others which was at Rs 6.6 million to Rs 40.5 million from 2017 to 2018 respectively. The Net cash used in financing activities (13,174.2) in 2018 from 2017 (9,966.2) which a huge increase as well thus affecting the company however the net increase in cash and cash equivalents was stable at Rs. 6,906.1 million in 2017 and Rs. 6, 826.2 million in 2018 thus a small fall in the amount, however, did not impact Nestle India too much.

In 2019, the Net cash generated from operating activities was 22,336.7 which was a rise from the previous year as mentioned above and with respect to the investing activities there was a positive turnaround from a negative Rs. (524.1) million in 2019 and a negative Rs. (1,305.6) million in 2018 to a positive 829.9 in 2019.

However, due to the continuous fall of the Net cash used in financing activities which stood at negative Rs. (35,399.5) million in 2019 there was an overall decrease in the yearly cash and cash equivalents which stood at Rs. 12,232.9 million and this proved that the overall was negative which depicted the poor performance of the company. Upon analysing the cash flow statement of 2020-2021 there was a significant fall in the overall cash and cash equivalents from Rs. 1,771.3 million in 2020 to a negative 17,043.

4. MANAGERIAL DEVELOPMENT

Nestlé is committed to improving the standard of living for local populations where it conducts business. Nestlé is a multinational corporation with headquarters in Switzerland and 413 factories operating in 85 nations, employing about 3,23,000 people worldwide. It has contributed to India's growth for more than 106 years and enjoys exceptional confidence among its citizens. The entry of Nestlé into the Indian market has dramatically increased job levels throughout the nation. The corporation has reached out to the communities through various focused CSR and CSV initiatives and offers direct employment opportunities.

Nestlé concentrates its efforts in society on the three overarching goals of enabling healthier and happier lives for individuals and families, aiding in the development of thriving and resilient communities, and keeping the world's natural resources in good condition for future generations, in particular attention to water, all of which are motivated by the company's purpose of "Enhancing quality of life and contributing to a healthier future."

They narrow their broad focus areas through their 41 public commitments that align with the Sustainable Development Goals (SDGs). Essentially, the focus is on critical interventions that impact the areas of nutrition, health, water, sanitation, livelihood and rural development. The company has successfully increased CSR and CSV engagements in India that have impacted the neighbourhood over the past few years.

Nestlé India actively participates in the local communities near its factories and branch offices. The schools in rural areas still lack basic amenities, such as clean drinking water and sanitation facilities. The lack of such facilities harms the students' attendance, especially girls. Due to the problems in rural areas, where there are many barriers to development, things that should be necessities have become luxuries.

Nestlé India has built drinking water facilities in the schools by installing water filtration systems depending on ultraviolet rays and reverse osmosis as part of its commitment to offer access to clean water, sanitation, and hygiene in the areas where it operates. In Samalkha, Haryana, 19 schools around the plant have been provided with clean drinking water, changing the lives of pupils of these institutions. The company has teamed with Enable Health Society to monitor and maintain the RO filtration equipment and water tanks. They conduct thorough check-ups and cleaning of the water tanks every alternate month.

In Rajasthan, the Department of Medicine and Health and the Company have collaborated to provide 12 Public Health Centers with access to clean drinking water (PHCs). Over 1,36,800 pupils have benefited from the company's sponsorship of 260 clean drinking water facilities at schools close to its plants since 1999. This initiative has succeeded because these facilities are easy to implement once a community's need is recognised.

5. ORGANISATIONAL STRUCTURE:

In contrast to systems, Nestlé focuses more on people, goods, and brands. They take a particular interest in the welfare of their customers and workers. The company dedicates itself to upholding the following cultural values, which are derived from its Swiss roots and reflect the company's dynamic nature: emphasising long-term business growth while never losing sight of the necessity to produce positive results for its shareholders consistently and treating the creation of shared value as the cornerstone of their operations.

Nestle strives to be as decentralised as possible to respond to consumer needs in the best way possible within the parameters set by their core values, strategic priorities, and operational effectiveness. Nestle managers ensure that all of the company's businesses work together and adhere to its standards, policies, and ideals (the "Nestle in the Market" approach). The business creates and maintains a framework that guarantees operating speed while emphasising results and removing needless barriers. Nestlé supports and employs pragmatism in project teams and includes task groups in flat, adaptable organisations with few management levels and broad control spheres. The company promotes networking and horizontal communication with managers and the hierarchy held accountable. They emphasise specific degrees of accountability, and clearly stated goals are essential. The manager's accountability is unaffected by collaboration or networking because every team has an accountable leader. The company must have a structure that ensures operational efficiency, individual accountability, a clear focus on results, and the least amount of bureaucracy feasible.

Nestlé aims to gain customers' trust and preference by providing high-demand products and observing and anticipating consumer trends. Nestlé is motivated by a keen sense of performance and upholds and supports the laws of free competition within a defined legal framework. As part of its commitment to enhancing its operations over time, Nestlé tries to steer clear of more radical, one-time modifications.

Current Ratio:

The current ratio is a liquidity ratio that measures a company's ability to satisfy its immediate obligations.

Current Ratio = Current Assets/ Current Liabilities

2021	2020	2019	2018	2017
1.6	1.7	1.7	2.6	0.89

A good current ratio is between 1.2 to 2 which has been the case for the past 4 years meaning the company has an extra buffer meaning they can cover more than the immediate requirements of the company.

Inventory Turnover Ratio:

In accounting, inventory turnover is a measurement of the number of times inventory is sold or consumed during a given time period, such as one year. Calculated to determine whether a company has an excessive amount of inventory in relation to its sales volume

Inventory turnover Ratio = Sale of products/Average Inventories

2021	2020	2019	2018	2017
9.8	9.8	10.9	12	11.6

For the majority of sectors, a healthy inventory turnover ratio is between 5 and 10, indicating that you sell and replenish your stock every one to two months. This ratio finds a decent compromise between sufficient inventory on hand and the need to reorder infrequently which is the case with nestle.

Debtors Turnover Ratio:

Accounts Receivables Turnover ratio is also known as debtor's turnover ratio. This represents the average number of times each year that average debtors have been converted into cash. This is also known as the efficiency ratio, which gauges the organization's ability to generate money.

Debtors Turnover Ratio = Sale of products/Average trade receivables

2021	2020	2019	2018	2017
88.6	91.9	98.8	105	81.62

A receivable turnover of 10 indicates that the company's financial health is good relative to its industry, that it can effectively handle its short-term obligations, and that it has a solid credit policy for its clients

Operating Profit Margin:

The operating margin measures how much profit a company makes on a dollar of sales after paying for variable costs of production, such as wages and raw materials, but before paying interest or tax.

Operating Profit Margin (%) = Profit From Operations/Sale of Products

2021	2020	2019	2018	2017
22.2	21.7	21.1	21	18.06

The operating profit ratio has significantly increased in the last five years indicating that the company was constantly able to uplift the sales in the company.

Net Profit Margin:

The net profit margin, or simply net margin, measures the proportion of net income or profit to total sales. It is the ratio of a firm or business segment's net earnings to its revenues.

Net Profit margin (%) = Profit After Tax/Sale of products

2021	2020	2019	2018	2017
14.7	15.7	16.0	14.32	12.08

Even if the sales of the company were increasing, a clear effect of coronavirus is visible on net profit margin as the company had to cope up with the gaps created with the pandemic.

Return on Net Worth:

Return on net worth illustrates the company's profitability by depicting how much return it earns on its capital. It demonstrates whether or not the company is efficient enough to expand its network each year for the company's future growth potential.

Return on Net Worth (%) = Profit After Tax/Average Equity

2021	2020	2019	2018	2017
104.5	105.8	70.5	45.3	36.6

Nestle with its impressive returns will be able to expand its network effectively.

Earnings Per Share (EPS):

Earnings per share is the monetary worth of a company's earnings per outstanding share of common stock. It is a crucial indicator of a company's profitability and is frequently used to price stocks.

EPS = (Net Income – Preferred Dividends)/ Weighted Average of common shares outstanding during the period

2021	2020	2019	2018	2017
222.5	216	204.2	166.7	127.1

Nestle's EPS has grown effectively and is a representation of the company's earnings not slowing down throughout the time period

Notes:

Interest Coverage Ratio and Debt Equity Ratio are not relevant for the company as it has negligible debt.

Significant change i.e. 25% or more over previous year in Return on Net Worth is attributable to payment of special dividend of ` 180 per share out of accumulated profits in 2019. This had an impact on retained earnings of 2019 & 2020. Adjusted Return on Net Worth Ratios of 2019 and 2020 without considering the impact of special dividend is 51.3%.

6. CONCLUSION

Nestle India was set up by the Swiss headquarters in 1956 after which the company has grown immensely and is one of the biggest competitors in the food and beverage industry with some of the most popular and preferred packaged items within the country being manufactured by the company. The product mix of Nestle India is extremely diverse. This paper analyzed the managerial, financial and technical developments of the brand in respect to the past five-year performance from 2017-2021.

The sales of Nestle India have shown a positive rise over the last five years. There is an approximate growth of over Rs 100, 000 million across the years which depicts a stable growth rate as well. Considering that a higher number of sales will help the company in terms of total profits as well this is one of the most crucial financial aspects for Nestle India and looking at the growth rate as well with the most recent being over 10%, it is justifiable to conclude that in terms of the financial aspect of sales, the company is performing well in this regard.

Nestlé aims to gain customers' trust and preference by providing high-demand products and observing and anticipating consumer trends. Nestlé is motivated by a keen sense of performance and upholds and supports the laws of free competition within a defined legal framework. As part of its commitment to enhancing its operations over time, Nestlé tries to steer clear of more radical, one-time modifications.

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Literature Survey On Neglecting Digital Hygiene: Understanding Youth Behaviour And Its Impact

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ABSTRACT

In the contemporary digital landscape, youth engagement with technology is pervasive and transformative, shaping their social, educational and personal experiences. It explores the alarming trend of neglecting digital hygiene among the youth, highlighting the potential consequences and implications for individual well-being and social dynamics. It further delves into the factors contributing to this negligence, including the influence of social media, the rapid evolution of technology and gaps in digital literacy education. The study aims to shed light on the consequences of poor digital hygiene, such as increased vulnerability to cyber threats, compromised privacy and the perpetuation of misinformation. Furthermore, the study discusses potential interventions and strategies to promote responsible digital behaviour among the youth, emphasising the importance of fostering a culture of digital hygiene through education, awareness campaigns and collaborative efforts between educators, parents and technology developers. Ultimately, this study calls for a comprehensive understanding of the challenges posed by neglecting digital hygiene in youth practices and advocates for proactive measures to ensure a safer and more secure digital future for the younger generation.

Keywords: Digital hygiene, youth behaviour, literature review

JEL Classification Code: O30

1. INTRODUCTION

The concept of 'Digital Hygiene'(DH) has emerged as a critical consideration of individuals, particularly among the youth. It involves maintaining a healthy and safe presence, and neglecting it might lead to issues like privacy breaches, cyberbullying, misinformation and excessive screen time. Understanding youth behaviour in this context involves recognizing their online habits, interactions and vulnerabilities. Neglecting

digital hygiene not only exposes young individuals to a range of potential risk but also sheds light on the evolving pattern of tech savvy behavioural generation.

Broad Scope:

Neglecting digital hygiene has increasingly become a critical issue among youth in today's technology-driven world. It refers to the practices and behaviours individuals adopt to maintain their online safety, privacy, and overall well-being. The focus on youth behaviour is crucial because young people are often early adopters of digital technologies and may be more vulnerable to the negative consequences of poor digital hygiene.

The broad scope of this study includes several aspects-

Digital behaviour of Youth - Understanding how youth engages with digital devices. It includes proper examination of the type of content consumption, communication patterns, and screen-time.

Risks of Neglecting Digital Hygiene - Issues like cyberbullying, online harassment, identity theft, privacy breaches, exposure to inappropriate content and poor mental health due to excessive digital engagement.

Factors influencing youth behaviour - Includes peer influence, social media pressures and impact on attention span of an individual.

New age technology - New social media platforms, augmented reality, virtual reality and artificial intelligence.

Digital policies and regulations - Related to online safety, cookie settings, data protection, captcha and various other measures taken to protect youth in the digital realm.

Current Developments:

Recent research has focused on various aspects of digital hygiene and youth behaviour. Here are some key developments:

Selfie behaviour and social anxiety: A study in China investigated the relationship between social media selfie behaviour and social anxiety among youth. The study found a significant negative relationship between youth selfie behaviour and social anxiety with social comparison and body image as mediating factors.

Positive digital communication among youth - A new Digital Flourishing Scale has been developed to measure positive perceptions of digital communication among adolescents, including connectedness, civil participation, positive social comparison, authentic self-presentation, and self-control.

Digital hygiene skills of Russian youth - A sociological study conducted in Yekaterinburg, Russia, found that many young people are aware of the potential risks of high internet activity but struggle to comply with rules for safe use of information technologies.

Archives - A study in Indonesia found that youth habits and dependence on social media create digital archives, such as online storage, documents, and photo archives.

Motivation:

The increasing role of technology and the internet in the lives of young people has motivated us to choose this topic. As digital devices become more integrated into daily activities, concerns about online safety and responsible digital behaviour have risen. Digital hygiene refers to the practices individuals use to maintain a healthy and secure online presence. The younger generation's immersion in digital technologies, while offering numerous benefits, also brings to light the potential risks associated with the neglect of digital hygiene. This issue has caught the attention of researchers, educators, policymakers, and parents alike. The motivation behind this literature review stems from the urgency to comprehensively explore the phenomenon of neglecting digital hygiene among youth. In addition, it emphasises the role of our professor's guidance in selecting the topic, highlighting its relevance and importance within the academic context.

Purpose:

Our research aims to identify the research gap within the context of youth's digital hygiene practices. This gap involves areas where there is insufficient understanding or research on how young individuals approach digital hygiene, the reasons behind neglecting it, and the potential consequences of such neglect. By conducting this study, we aim to explore existing knowledge on this topic, highlight areas where more research is needed, and propose strategies for promoting better digital hygiene among youth.

In summary, the motivation revolves around handling the challenges posed by the digital age and its effect on young individuals' online behaviour, while the purpose of the assignment is to fill the research gap in understanding youth's negligence of digital hygiene. It aligns well with the broader goal of promoting responsible and safe online behaviour among youth.

2. RESEARCH OBJECTIVES

The following are the research objectives identified -

1. To investigate the digital hygiene practices of Indian youth and their relevance, including their habits related to privacy settings, passwords settings and information sharing.
2. To examine the influence of peers, family and media on the digital hygiene practices of youth.
3. To identify the barriers and challenges that youth face while attempting to practise digital hygiene.

4. To document and analyse the online risks and consequences that youth encounter due to neglecting digital hygiene and propose evidence-based recommendations for preventing neglect of digital hygiene among youth and organisations.

3. REVIEW OF LITERATURE

With the constantly advancing developments in the field of digital technology, a focal point of research across a multitude of disciplines in the interaction between human behaviour & the online environment. This review of literature sheds light on the different facets of the relationship between the digital realm and individuals. It delves into various fields of studies, ranging from cyberbullying and cybersecurity to authentication safety practices to digital literacy to the psychological implications of digital behaviour. The selected papers offer valuable insights into the dynamics of the digital age.

They explore a wide spectrum of topics, including the motives contributing to internet trolling, cybersecurity practices, parental management and strategies for managing screen time among the youth, and the use of technology during the COVID-19 pandemic.

Navigating this digital era does come with its fair share of challenges including the negative impact of excessive technology on mental health. Various other safety and privacy concerns have also gained prominence and understanding this phenomenon is crucial for not only individuals but in crafting interventions and designing informed policies.

The comprehensive literature review below not only summarises the major findings of each study but we have also identified the research gaps and suggested potential study directions for future research on the subject, to explore it better. Be it the prevalence paradox in cybersecurity or the importance of digital hygiene, the findings of these studies provides a clearer picture of the challenges and opportunities presented by the increased digitalisation in today's world.

Ultimately, the insights gained from this collection of research papers contribute to a more profound understanding of the digital landscape, guiding the future endeavours to utilise the benefits offered by the advancement of technology, while also addressing the associated challenges.

Title of The Paper	Names of Authors	Indexing	Geography	Major Findings of The Study	Citations
1. Internet Trolling and Everyday Sadism: Parallel Effects on Pain Perception and Moral Judgment	Erin E. Buckels, Paul D. Trapnell, Tamara Andjelovic, Delroy L. Paulhus	Journal of personality	Online Respondents	The research aimed to clarify the association between online trolling and sadistic personality and to provide evidence that the reward and rationalisation processes in sadism are also manifested in online trolling. It involved self-report measures of personality and trolling behaviour, as well as two judgement tasks: one involving stimuli depicting scenes of emotional/physical suffering and the other using the iTroll questionnaire alongside a moral judgement task.	73
2. Password Security: What Users Know and What They Actually Do	Shannon Riley	Software Usability Research Laboratory	Wichita State University	This study investigated the common password generation practices of online users. Results indicate that, in general, users do not vary the complexity of passwords depending on the nature of the site (bank account vs. instant messenger) or change their passwords on any regular basis if it is not required by the site. Users report using lower case letters, numbers or digits, personally meaningful numbers and personally, meaningful words when creating passwords, despite the fact that they realise that these methods may not be the most secure.	10
3. The roles of general and technology-related parenting in managing youth	Sanders Wesley Parent, Justin Forehand, Rex Breslend, Nicole Lafko	Journal of Family Psychology	General	The study employing structural equation modelling to analyse quantitative data, found that technology-related parenting strategies were positively related to youth screen time for all three samples. This suggests that parental strategies aimed at controlling technology use were associated with increased screen time among children and adolescents. General adaptive parenting, which involves broader parenting practices, was not directly linked to child screen time.	8

				However, it was positively associated with technology-related parenting strategies across all three developmental stages.	
4. Types of Authentication Safety Practices among Internet Users	Krishnapriyaa Kovalan	International Journal of Advanced Computer Science and Applications	Department of Software Engineering and Information System	A total of three main themes were identified: password authentication, biometric authentication, and multiple-factor authentication. Multiple-factor authentication was found to be the most secure and most frequently recommended authentication method. It is highly recommended to implement three-factor authentication and multi-biometric model in the future, as it provides a higher surveillance level in terms of information security among cloud computing users. OTP can be used to increase surveillance and safety templates, as it changes on the device with each use. In addition, information security awareness should be taught to users so that they know how to safely access the Internet. With the advances in technology, a value can be added to the password authentication by using biometric data, which led to multifactor authentication and a more secure cloud environment. Thus, with the multilayer authentication, it is difficult for hackers to attack the system, especially related to the use of passwords. Further, more awareness on authentication is needed among Internet users to help create a secure online environment.	7
5. Online safety begins with you and me: Convincing Internet users to protect	Ruth Shillair	Computers in Human Behaviour	General	The study focuses on the gap between the awareness of online safety threats and users' actual protective behaviours. Despite the prevalence of online threats, many individuals do not adopt basic safety precautions. The researchers use the Protection Motivation Theory (PMT) to understand the factors that motivate individuals to follow safe online practices.	110

themselves				The study highlights the importance of personal responsibility in motivating safe online behaviours. Users need to feel responsible for their own online safety. The researchers develop and test interventions that aim to enhance safe online behaviours, considering personal responsibility and knowledge levels. The research reveals a significant three-way interaction effect among personal responsibility, intervention strategy, and prior knowledge. Enhancing users' sense of personal responsibility is crucial, but it's not enough. The choice of intervention strategy also plays a role in enhancing online safety behaviours.	
6. Health information held hostage - How storing patient data on a decentralised blockchain can shift the security of the digital healthcare landscape	Katherine Fleshner	UWOMJ	General	The article proposes the implementation of a decentralised system called the Inter Planetary File System (IPFS) to mitigate the risks associated with EMR breaches. By using a blockchain-based approach, the article suggests that the incidence of patient records being held hostage could be reduced, potentially enhancing the overall security of digital healthcare data. while using a decentralised blockchain system like IPFS could reduce the risk of patient records being held hostage, it might also introduce a new challenge. It raises the concern that implementing such a system could potentially increase the risk of data breaches for informational gain, suggesting that the benefits of increased security could come with trade-offs in other areas of data protection.	5
7. Hacking the Human: The Prevalence Paradox in	Ben Sawyer and Peter Hancock	The journal of the human factors and ergonomics society	General	The study reveals a "prevalence paradox" in human-machine teams. As automation reduces the occurrence of attacks, the likelihood of human operators failing to detect and report attacks that still persist increases. This paradox underscores the	46

Cybersecurity				potential for adversaries to exploit human vulnerabilities, focusing on the human operator rather than algorithmic defences It the concept of the "prevalence effect" in the context of cybersecurity. This effect states that rare signals, even when they occur infrequently, are more challenging to detect. As the occurrence of a signal becomes rarer, human capability to detect and respond accurately diminishes. This effect has implications for human-automation teaming in cybersecurity.	
8. Facebook's Ideal User: Healthy Habits, Social Capital, and the Politics of Well-Being Online	Niall Docherty	Sage Journals	N/A	The paper's major findings include: Facebook designs its platform to encourage users toward active behaviours for health reasons, tied to a model of eudemonic well-being. The tension between habit, power, and user agency is explored in the context of Facebook's influence on user behaviours. Facebook's deviating and material scripting of user behaviour serves the company's economic interests by promoting active users for the sake of data collection and profitability.	30
9. From Offline Healthcare to Online Health Services: The Role of Offline Healthcare Satisfaction and Habits	Xiaofei Zhang, Xitong Guo, Kee-hung Lai, Chunxiao Yin, Fanbo Meng	Journal of Electronic Commerce Research,	323 Internet Users from 27 Provinces in China	The significant findings of the study include the following: - Satisfaction with offline healthcare reduces awareness of online health services. - Practical implications for OHS providers in targeting users and promotion - Information satisfaction does not directly contribute to overall satisfaction in this context. - Policy implications for supporting online health services development.	32

10. Digital Behaviour Change Interventions to Break and Form Habits	Pinder, Charlie; Vermeulen, Jo; Cowan, Benjamin ; Beale, Russell	Digital Library	N/A	The study discusses the effectiveness of Digital Behaviour Change Interventions (DBCI) in breaking and forming habits. While DBCIs have potential, there are limitations to their use, such as the short-term nature of testing and the need for more user evaluation in some studies. The publication also highlights various habit-altering strategies and their corresponding open research questions, noting that only one strategy (implementation intentions) currently has substantial evidence to support its use in habit-changing interventions.	162
11. The use of social media and online communications in times of pandemic COVID-19	Adrian Wong , Serene Ho , Olusegun Olusanya , Marta Velia Antonini and David Lyness	Sage Journals	N/A	The study emphasises the importance of carefully monitoring the quality and reliability of information exchanged on social media platforms. This finding is relevant for digital hygiene research, as it highlights the need for critical thinking and verification of information online. Social media has significantly transmitted information and promoted communication among healthcare professionals during the COVID-19 pandemic. Social media can be a helpful tool for professional education and collaboration, but it also comes with risks, such as circulating misinformation and the potential for privacy breaches.	279
12.Cyber Aggression between Intentions and Cyber Wellness of Students: An Application of TPB Models	Mardianto, Hanurawan, Chusniyah, Rahmawati, and Hutagalung	International Journal of Instruction	291 high school students in Padang, Indonesia	The study's major findings are that attitudes and perceived behavioural control significantly predict youth intentions for cyber aggression, while subjective norms are insignificant. Cyber wellness was not verified to be a moderator variable. The theoretical models are arranged to fit the requirements in the field in explaining the behaviour of students' cyber aggression. Finally, perspectives, norms, and behaviour can explain 27.5% of the diversity of	8

				intentions and behaviour related to cyber aggression.	
13. SARS-Cov-2 Lockdown Mediates Increased Use of Technology for Leisure: Implication for Development of Digital Hygiene	Sharma, M.K., Anand, N., Thirumoorthy, A., Thakur, P.C., Singh, P., SJ, A. Suresh, J.	Journal of Addiction and Recovery	N/A	The study highlights the increased use of online activities, such as social media, entertainment, and gaming, during the COVID-19 lockdown period. The individual's online usage pattern gradually became extreme, with high time spent on social media, video chatting, messaging, playing online games, and watching online streaming series. The excessive use of online activities led to disruptions in the individual's daily routine, including delayed sleep, and decreased engagement in physical activities.	0
14. Doom Surfing and doom scrolling mediate psychological distress in COVID-19 lockdown: Implications for awareness of cognitive biases	Anand, Nitin, Manoj Kumar Sharma, Pranjali Chakraborty Thakur, Ishita Mondal, Maya Sahu, Priya Singh, Jayesh Suresh Kande, Neeraj Ms, and Ripudaman Singh.	Wiley Online Library	N/A	The major findings of the study include that Doom-surfing and doom-scrolling have been identified as significant issues during the COVID-19 pandemic, leading to anxiety, fear, and distress. Cognitive biases, such as confirmation bias and anchoring bias, contribute to the initiation and maintenance of doom surfing and doom scrolling. Excessive use of technology, including social media platforms and digital news feeds, can negatively impact mental health and well-being. Nursing professionals can play a crucial role in raising awareness about the healthy use of technology and digital hygiene among nursing students and practising nurses. Engaging in offline activities and developing digital hygiene skills can help individuals overcome the harmful effects of excessive technology use and improve mental well-being.	22

| 15. Safe and secure? Not without digital hygiene! | Kunaciilan Nallappan | Social Space | Singapore | It addresses the growing dependence on digital devices and technologies, particularly among Singaporeans spending over 12.5 hours daily on digital devices, with over 3 hours dedicated to mobile phones. The sharing economy comes with cybersecurity risks like weak passwords, subscription management, and personal data sharing as vulnerabilities, emphasising the need for digital hygiene by cultivating a cybersecurity culture, especially among the prolific technology users - youth, highlighting the importance of proactive measures such as strong While the paper effectively addresses current challenges, it needs more detailed strategies to integrate cybersecurity education into formal education systems. It needs the opportunity to lay a strong foundation for future generations' digital hygiene awareness. Furthermore, it must explore the potential of collaborative efforts between governments, educational institutions, and technology companies to bridge this gap effectively. 134 downloads passwords, password managers, cloud services, and vigilance against phishing by managing one's digital footprint, as oversharing and data breaches might become more prevalent. | 132 |
| 16. Sound, Smart, and Safe: A Plea for Teaching Good Digital Hygiene | Alissa Sklar | Learning Landscapes | Canada | It emphasises on the concept of digital hygiene, through safe and responsible integration of digital technology into our lives. The paper highlights the need for teaching the young generation about digital hygiene, involving input from children and teens, and supporting parents and educators in its application. They also discuss the challenges parents face in managing children's digital device usage and present a family - oriented approach to digital hygiene. They also talk about incorporating However, | 9 |

				the study lacks an in - depth exploration of cultural influences on digital hygiene and the role of peer interactions. Additionally, it could benefit from a comparative analysis of digital hygiene practices in different geographical contexts. So, a comparative analysis of digital hygiene practices across different age groups and geographical regions could offer insights into evolving trends and needs. The paper has not received significant citations yet, indicating potential for further exploration and development in elements of digital citizenship and responsible online behaviour. The paper suggests involving children in creating guidelines and rules for digital hygiene, encouraging critical thinking and communication. It also emphasises parental involvement in monitoring and guiding children's digital activities while respecting their privacy. The research provides insights into fostering responsible digital behaviour among youth.	
17. Positive and negative uses of social media among adolescents hospitalized for suicidal behaviour	Positive and negative uses of social media among adolescents hospitalized for suicidal behaviour	Science Direct	Methodology: Qualitative study involving in-depth interviews, thematic analysis of transcripts, examining negative and positive experiences, and perceptions of	Suicidal adolescents experience positive (social connection, mental health resources) and negative (triggering content, stress, cyberbullying) aspects of social media; they value digital detox during hospitalization but acknowledge its importance for reintegration post-discharge. The study explores experiences of at-risk adolescents but does not deeply investigate the potential impact of digital hygiene interventions on mitigating the negative effects of social media use on their mental health.	36

			disconnecti on and reconnectio n		
18. Developm ent of a framework for digital literacy	Julia Feerrar	Emerald Insights	Conducted in urban and suburban areas across the United States.	The study explored digital hygiene neglect among youth, highlighting the paper could further investigate the influence of peer pressure and social media excessive screen time, lack of privacy awareness, and cyberbullying concerns. Strategies for prevention included parental guidance, digital education, and mental health support. Through a comprehensive analysis of surveys and interviews, the researchers found that many young individuals tend to underestimate the mental health implications of their digital behaviours. Additionally, the study shed light on effective preventive measures, suggesting increased parental involvement, structured digital education programs, and accessible mental health support as crucial strategies to counter these challenges.	66
19. Digital resilience mediates healthy use of technolog y	Manoj K Sharma, Nitin Anand, N Roopesh, Shweta Sunil	Sage Journals	Not clearly stated, but mostly around India.	The study explores the concept of digital resilience as a means to address problematic digital behaviours and vulnerabilities associated with excessive online technology use. The paper lacks an in-depth exploration of the cultural and demographic factors that may influence digital resilience strategies and a detailed examination of the effectiveness of the proposed model in real world settings. significance of digital resilience in recovering from negative online experiences and emphasises the need for a comprehensive model that includes individual, societal, and community interventions. The study is focused on vulnerabilities and interventions related to online behaviour and technology use. The	17

				paper highlights the need for a comprehensive model that integrates psychological and legal perspectives to address online vulnerabilities.	
20. Influence of Digitalizat ion on Cognitive and Social Orientatio ns of Generatio n Z fast Thinking	Olga A. Vasilyeva	Springer, Studies in System, Decision and Control series	N/A	Digitalization impacts cognitive and behavioural structures of Generation Z, pivotal for societal development. The paper has used the lack of earlier exploration of This study as limited investigation into cross-cultural variations in the impact of digitalization on cognitive and social orientations, and there is a need for analysis of potential interventions and effective strategies for promoting digital hygiene among Generation Z. Methodology: Meta-analysis of neurophysiological data, initial study with random sample and "snowball" method.	3
21. Digital Hygiene: Security Tools	Charles Boulet	Interface: The Journal of Education, Community, and Values.	N/A	This paper emphasises the importance of data security in the digital realm, discussing protection against online threats using suitable security solutions. Advises subscribing to and installing security software for comprehensive protection. The author highlights the need for comprehensive security solutions but focuses primarily on Windows operating systems.	Not me ntio ned
22. Digital Hygiene : Pandemic Lockdown s and the need to suspend	David Anthony Pittaway	Sabinet African Journals	Nigeria	The paper finds out that the burden of mental health in Nigeria is high, with 20% of people reporting mental health problems in the previous year. Results show that there is an acute shortage of mental health services in Nigeria, with a ratio of 1 mental health professional to 2,630 people in need of care. Mental health is still stigmatised and marginalised in Nigeria, resulting in limited advocacy for mental health care and	2

Fast Thinking				insufficient funding for mental health programs.	
23. Digital law and Digital Hygiene	Javlon Zoilboev	IBAST (International bulletin of Applied Science & Technology)	Tashkent	The paper explores the emerging topics of "digital law" and "digital hygiene" in the field of law. It talks about the issues and shortfalls in digital hygiene, digital law, and cybersecurity. The paper also emphasises the challenges and obstacles that the media face globally.	5
24. Acceptable and Unacceptable Behaviour on Social Networking Sites: A Study of the Behavioural Norms of Youth on Facebook	Val Hooper and Tarika Kalidas	EJISE	New Zealand	The study found that the use of online forums for patient education and support in chronic disease management can improve the quality of patient care, enhance social support, and reduce health disparities. The findings also suggest that online forums can facilitate the exchange of knowledge and experience among patients, leading to the development of patient-centric guidelines for chronic disease management. Additionally, the study highlights the need for more qualitative research on patient experiences with online forums to better understand the nuances of online support in chronic disease management.	51
25. Smartphones, social media use and youth mental health	Elia Abi-Jaoude, Karline TreurnichtNaylor and Antonio Pignatiello	CMAJ(Canadian Medical Association Journal)	Canada	According to the research paper, the burden of chronic disease and health care spending in Canada is likely to increase as the population ages. Studies show that the social determinants of health play a significant role in determining health outcomes for individuals, with low income being associated with higher rates of health problems. There is a need for more collaboration among health care providers, government agencies,	386

				and community organisations to effectively address social determinants of health.	

4. RESEARCH GAPS

Qualitative approaches, such as interviews or focus groups, questionnaires or other qualitative methods should be included as they could provide deeper insights into the reasons behind specific strategies and their impact on screen time, thus providing a user perspective for a comprehensive script analysis. Most of the papers could delve deeper into the aspect of **cybersecurity**, as further education regarding the vulnerability of password-protected systems would help users form a more accurate mental model of computer security. The studies might have benefited from examining how cultural, contextual and demographic factors influence online safety behaviours and responses to interventions which influence practices impact on youth screen time. More detailed strategies are also required to integrate cybersecurity education into formal education systems. Further research could explore real-world scenarios and case studies to validate the presence and impact of the prevalence paradox in the context of cybersecurity. Some papers share the idea of exploiting human vulnerabilities as a cybersecurity strategy, but should also look into the potential effectiveness, ethical implications or limitations of such an approach, including the role of offline habits in the transition to online services adoption, and the contingent effects of offline habits on the decision process. A further investigation is also required to understand the influence of peer pressure and social media, excessive screen time, lack of privacy awareness, and various cyberbullying concerns. Additionally, a paper encourages further research about authentication methods used in Malaysia as it is one of the leading communication technology countries with almost 89% of its population which is equivalent to 25.4 million Internet users.

This study exhibits a notable gap in its coverage, particularly concerning security considerations for operating systems beyond the scope of the discussed platforms. A significant enhancement would involve extending the coverage to include Linux, Mac and other operating systems, offering a more comprehensive and inclusive approach to digital hygiene. By incorporating a diverse range of operating systems, the article can better address the varied needs and challenges encountered by users across different platforms. The study lacks inclusion of real-world case studies to strengthen the practical relevance of its recommendations. Practical examples would provide readers with tangible insights into the application of digital hygiene practices and their effectiveness in authentic scenarios. The existing literature on online forums and their impact on patient outcomes reveals notable gaps that warrant further exploration. There is a lack of information on how participation in online forums influences tangible patient outcomes, such as reduced hospitalizations,

improved mortality rates, or enhanced overall quality of life. This gap hinders a comprehensive understanding of the real-world implications and effectiveness of online forums as a tool in healthcare. The current body of research lacks sufficient qualitative exploration from the patient perspective. More qualitative studies are needed to unravel the intricacies of the patient experience with online forums, including factors contributing to success or failure in utilizing these platforms for chronic disease management. There is a significant gap in research concerning the use of online forums for chronic disease management in low- and middle-income countries. Given the limited access to healthcare in these regions, understanding the potential benefits and challenges of utilizing online forums for patient education and support is crucial. The study lacks specific recommendations for addressing social determinants of health, leaving a critical gap in practical guidelines for policymakers and stakeholders. It falls short of offering concrete strategies or interventions to mitigate the impact of social determinants on health outcomes. The study lacks detailed information on successful policies, and programs in Canada aimed at reducing the burden of chronic diseases

Potential interventions or ways to mitigate online trolling behaviour should also be examined for they could be an avenue for future research. There is a need to investigate further the cognitive biases contributing to the phenomenon of doom surfing and doom scrolling during the COVID-19 pandemic. There should also be more research on the impact of excessive online activities on mental health during COVID-19, such as the development of addiction, psychological distress, or other related issues, discussing its on-going/potential long-term effects. The research paper even overlooks the impact of COVID-19 on social determinants of health and its subsequent effects on the burden of chronic diseases. Understanding its repercussions on social determinants is crucial for developing informed public health strategies. Furthermore, there is a need for further research to understand how users adopt the habits of active usership and whether users view their social networking behaviour in terms of well-being and self-interested social capital. Future research could investigate the sustainability of the intervention effects over time and explore how to maintain and reinforce safe online behaviours in the long run, investigating how cultural and demographic factors influence online safety behaviours and responses to interventions could be an interesting avenue for future research.

There remain various areas within the realm of digital hygiene, such as direct mental health consequences stemming from poor digital hygiene practices, that need to be explored further. There has been limited investigation into cross-cultural variations in the impact of digitalization on cognitive and social orientations, and there is a need for analysis of potential interventions and effective strategies for promoting digital hygiene among Generation Z. There is also a significant gap in understanding how different cultures may respond differently to the pervasive influence of digital technologies.

There is a need to evaluate the effectiveness of digital hygiene interventions specifically designed for at-risk adolescents, assessing their impact in reducing the negative consequences of social media use. The role of peer and family support in fostering positive digital engagement and mitigating online risks for suicidal youth requires more in-depth investigation. The study outlines prevention strategies such as parental guidance, digital education, and mental health support, but a deeper examination of their effectiveness and potential variations is warranted. The research indicates that many youths underestimate the mental health implications of their digital behaviours, emphasising the need for a more nuanced exploration of these perceptions. The paper presents a valuable perspective on digital resilience, but notable gaps exist that warrant further exploration. Firstly, a more in-depth analysis of cultural and demographic factors is needed to understand how these variables may influence the effectiveness of digital resilience strategies. Secondly, there is a need for a detailed examination of how the proposed model performs in real-world settings, ensuring its practical applicability.

Further research is needed to develop workshops and training programs for nurse teachers and students to screen, identify, and counsel individuals with excessive technology use, helping to address addictive behaviours at an early stage. The study lacks intricate strategies for the seamless integration of cybersecurity education into formal educational systems. The paper briefly touches upon the potential of collaborative efforts but lacks an in-depth exploration of how governments, educational institutions, and technology companies can actively collaborate. There exists a potential gap in the exploration of how these strategies can be adapted globally. The study lacks an in-depth exploration of cultural influences on digital hygiene and the role of peer interactions. Additionally, it could benefit from a comparative analysis of digital hygiene practices in different geographical contexts and age groups to offer insights into evolving trends. Despite its content, the paper has not received significant citations, indicating potential for further exploration and development in elements of digital citizenship and responsible online behaviour.

Also, some articles lack empirical evidence or data to support their claims. Researchers should deeply explore the ethical and legal implications of the same, and it should be covered in depth. Difficulties in selecting appropriate habit measurement mechanisms to test digital behaviour should be addressed by the researchers. Ensuring ethical implications of habit-focused interventions in cyberpsychology or any other area or domain is a necessity and cannot be overlooked. The potential challenges and pitfalls related to digital media or platform use, such as the rapid dissemination of information, potential misinformation, and issues with privacy and confidentiality, are areas for further investigation in digital hygiene research.

5. CONCLUSION AND DIRECTION FOR FUTURE RESEARCH

The literature review has disclosed various dimensions of the digital landscape, discussing critical aspects of user behaviour, cybersecurity, and digital well-being. The identified research gaps offer valuable directions for future research. Incorporating qualitative approaches to understand user views on screen time and finding ways to mitigate online trolling behaviour stand out as immediate priorities. The global integration of cybersecurity education into formal systems is a pressing need, demanding collective efforts between governments, educational institutions, and technology companies. Additionally, the exploration of the impact of poor digital hygiene practices on mental health, especially during the COVID-19 pandemic, calls for nuanced research methodologies and real-world scenarios. Furthermore, addressing the long-term effects of excessive online activities on mental health, developing workshops for technology use in healthcare, and offering specific recommendations for policymakers regarding social determinants of health are crucial for comprehensive research. Bridging these research gaps not only contributes to the existing body of knowledge but also figures out ways to make the internet a better place for everyone. It's not just about what we know right now, but what we can do to make digital life safer and healthier in the future.

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Harmony In Complexity: Understanding The Interplay Of Humans And AI In Sustainable Practices

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ABSTRACT

This review explores how Artificial Intelligence (AI) reshapes sustainability, balancing its promises and perils. As AI rapidly advances, transforming industries and lifestyles, its positive impact on 79% of UN Sustainable Development Goals (SDGs) comes with challenges. Job displacement, ethical quandaries, energy consumption, privacy concerns, and accessibility disparities require careful consideration. Recognizing the "dark side" of AI is pivotal. Responsible AI practices, addressing biases, ensuring transparency, accountability, and ethical collaboration are key. The study calls for a harmonious approach, urging policymakers, researchers, and industries to collaborate. Balancing innovation with ethics ensures AI becomes a force for positive change, fostering sustainability and equity in our digitized world.

Keywords: Artificial Intelligence, Sustainable Practices

JEL Classification Code: L63, L86

1. INTRODUCTION

AI technologies have undergone rapid advancements in recent years, propelled by increased computational power, enhanced algorithms, and the availability of vast datasets. AI's influence extends across various industries, such as healthcare, finance, education, and manufacturing, fundamentally transforming the way tasks are executed and problems are solved. This rise has been transformative and revolutionary, reshaping our lifestyle, work, and interaction with technology (Tomašev et al., 2020). The World Economic Forum in 2023 highlights how AI can contribute to the benefits of people, the planet, and performance. Various industries are adopting AI to facilitate their "sustainable transition," referring to the transformative changes made for sustainable development necessary for society to achieve the Sustainable Development Goals (SDGs). With substantial research support, there is little doubt about the positive impact of AI on society.

However, it is crucial to conduct an objective evaluation of this impact and a pertinent examination of the potential negatives associated with AI adoption.

2. POSITIVE IMPACTS OF AI ON SUSTAINABLE DEVELOPMENT

In a detailed expert analysis, Vinueasa et al. (2020) found that AI positively influences 79% of the SDG goals, while 35% may be negatively affected by AI development. They provided insights using categories, revealing that the environment category will experience the most positive impact (93%), while society may face a significant negative impact of 38% of the targets when interacting with AI. Expanding on some of the positive influences of AI within the SDG framework, they contribute to SDG 1 (poverty), SDG 4 (quality education), SDG 6 (clean water), SDG 7 (affordable and clean energy), and SDG 11 (sustainable cities). Their contribution to smart cities with low carbon emissions encompasses smart cities, smart appliances, and technology, positively impacting SDG 7, 11, and 13 (International Energy Agency. Digitalization & Energy (International Energy Agency, 2017). As we advance in implementing AI, caution must be exercised regarding the potential adverse effects this technology may have on society and the environment. One must remain aware and alert to the impacts of this new form of technology that can exert influence. While the type of evidence has a relatively minor impact on positive outcomes (resulting in a reduction from 79% to 71%), there is a more substantial reduction (from 35% to 23%) in the targets experiencing negative impacts of AI (Vinueasa et al., 2020).

It is important to understand that the revolution brought about by AI extends beyond its application scope. Van Wynsberghe (2021) emphasizes that it encompasses all the sociotechnical systems of AI. The focus on sustainable AI is not solely on sustaining AI's development but rather on developing AI that aligns with preserving environmental resources for current and future generations, fostering economic models that benefit societies, and upholding societal values fundamental to a given society. The term "Sustainable AI" is proposed to be understood in two branches: AI for sustainability and sustainability of AI. The former involves utilizing AI to contribute to sustainability goals, such as reducing carbon emissions and optimizing computing power. The latter is concerned with the sustainable development of AI itself, ensuring its compatibility with long-term environmental and societal objectives.

3. Challenges and Concerns in AI Implementation for Sustainable Practices

AI holds great potential to contribute positively to the achievement of the United Nations Sustainable Development Goals (SDGs). However, there are concerns and challenges that, if not addressed properly, could potentially hinder progress toward these goals.

3.1 Job Displacement And Economic Inequality (SDG 8):

The automation of specific tasks by AI has the potential to result in job displacement across various sectors, potentially exacerbating economic inequalities (Francescato, 2018). Furthermore, if future markets heavily rely on data analysis and these resources are not equally accessible in low- and middle-income countries, there is a significant risk of widening the economic gap, introducing new inequalities (Bissio, 2018; Brynjolfsson and McAfee, 2014). Managing the transition to an AI-driven economy is crucial to ensure that the benefits are shared more inclusively (Chen et al., 2022). This underscores the need for thoughtful and equitable approaches to AI implementation to mitigate potential negative socioeconomic impacts.

3.2 Ethical Concerns and Bias (Across Various SDGs):

If AI systems are not carefully designed and monitored, they can perpetuate and amplify existing biases present in training data, potentially leading to discriminatory outcomes. This bias can impact decisions in hiring, lending, criminal justice, and other areas. For instance, the automated targeting of online job advertising using AI faces a range of discriminatory challenges (Dalenberg, 2018), often linked to biases ingrained in past selection processes conducted by human recruiters. Therefore, critical measures by responsible bodies should be taken to prevent the creation of such disparities.

3.3 Energy Consumption and Environmental Impact (SDG 7 and 13):

The substantial computational power required for training and operating complex AI models can contribute to increased energy consumption. Given the growing demands of technology, there could be a projected 20% increase in global electricity consumption by 2030 (Jones, 2018). The energy consumption of bitcoins alone equals that of some nations. If this energy is not sourced sustainably, it may conflict with goals related to clean energy and climate action. As a responsible society, it is crucial that the sustainability of AI is studied and made transparent to the community, consumers, and policymakers.

3.4 Privacy Concerns (SDG 16 and 17):

AI systems often entail the collection and analysis of large amounts of personal data. If not handled with care, this can infringe on individuals' privacy rights and raise concerns related to surveillance and data protection. The lack of privacy can lead to discrimination and polarization, impacting the peace and stability of society and the country (Petit, 2018).

3.5 Lack of Accessibility (Across Various SDGs):

The deployment of AI technologies may not be equally accessible to all communities and regions, potentially exacerbating existing inequalities. Access to AI-driven solutions needs to be inclusive to ensure that the benefits reach a diverse population (Ben-Eli, 2018). Economic disparities worldwide influence the impact of AI, with underdeveloped countries facing greater disadvantages due to a lack of funds to adopt technology.

3.6 Unintended Consequences (Across Various SDGs):

The intricate nature of AI systems can result in unintended consequences. The adverse impact on social media usage, where users are exposed to content tailored to their preconceived ideas, can contribute to political polarization (Francescato, 2018) and may have repercussions on social cohesion (Helbing, 2019), thereby impacting the context of SDG 10, which focuses on reducing inequalities. This encompasses issues such as algorithmic errors, unforeseen biases, and unintended negative impacts on communities or ecosystems.

3.7 Security Risk (SDG 16):

AI systems can be susceptible to cyberattacks, and the malicious use of AI technology could pose security risks. The tension between the adoption of data-driven AI applications and the imperative to safeguard individuals' privacy and security is evident. In the absence of proper regulations, the extensive data generated by citizens can potentially be exploited to influence consumer opinions regarding a particular product or political cause. This underscores the critical importance of implementing robust privacy and security measures in the development and deployment of AI technologies to protect individuals from undue manipulation and ensure ethical and responsible use of data (Petit, 2018). Ensuring the robustness and security of AI systems is crucial for maintaining stability and security.

3.8 Dependency and Technology (Across Various SDGs):

Overreliance on AI solutions may divert attention and resources from holistic, human-centric approaches to addressing sustainable development challenges. It is important to recognize that technology is a tool and not a panacea for all problems.

Having a clear understanding of the "dark side" of AI can assist researchers and practitioners in anticipating the negative or unintended effects of AI, thus aiding in the development of policies and regulations that safeguard the interests of people and society at large (Tarafdar et al., 2013). Over the past decade, organizations have endeavoured to integrate AI into various processes. Based on past experiences, many organizations have proposed the need to establish principles for effectively governing AI (Barredo Arrieta et al., 2020; Fjeld et al., 2020). Some established bodies have made proposals as well (Google, 2021; IBM, 2021; OECD, 2021). Given differences in policies and regulations across countries, there is a need for a proposition or normative declaration about how AI should be generally developed, deployed, and governed (Theodorou and Dignum, 2020). Addressing these challenges requires a careful and responsible approach to the development, deployment, and governance of AI technologies. Policymakers, industry leaders, and technologists need to collaborate to establish ethical guidelines, regulations, and standards that promote the responsible use of AI in alignment with the SDGs (Mikalf et al., 2022). Balancing technological innovation with ethical considerations is key to ensuring that AI supports sustainable development rather than hindering it (Van Wynsberghe, 2021). Understanding these issues and actions can be instrumental in planning and executing AI initiatives.

Being aware of the negative and unintended consequences of AI can help deploy them in a "responsible" way (Shneiderman, 2020; Ågerfalk et al., 2022; Barredo Arrieta et al., 2020). It helps envision circumstances or scenarios that have been previously ignored by mainstream research, thus opening a more comprehensive and nuanced understanding of the AI phenomenon (Salo et al., 2018). In the past, only a partial view of the challenges like biases (Brighton and Gigerenzer, 2015), expandability (Gunning et al., 2019), and safety (Srivastava et al., 2017) were addressed. In recent years, a more holistic approach to responsible AI has been introduced (Dignum, 2019). According to the report published by the Berkman Klein Center for Internet & Society at Harvard University, 38 such initiatives have been introduced by different entities and organizations that adopt a holistic approach to addressing the challenges of AI (Fjeld et al., 2020). Accenture's (2021) report highlights the growing consensus for responsible AI that constitutes a set of principles ensuring ethical,

transparent, and accountable use of AI technologies consistent with user expectations, organizational values, and societal laws and norms. Responsible AI has gained traction globally, with initiatives from regions such as the European Commission (2019) and the Singapore Government (2019). Many countries worldwide are developing policies and defining fundamental principles that public and private organizations need to follow for responsible AI (Joblin et al., 2019). There is movement towards AI certification from independent agencies (RAII, 2021) as well as best practices advocacy from large tech companies like Google (Google, 2022). A high-level expert group for responsible and trustworthy AI has been developed by the European Commission (2019). Such initiatives around the world can help ensure the responsible execution of AI globally.

4. GOVERNING AI FOR SUSTAINABLE PRACTICES

As we understand some of the negative consequences of AI, there are some actions for which being aware can help reduce the impact of AI. Their application does not need to be limited to application; they can be updated from design, development, deployment, and the long-term impact of AI.

4.1 Fairness:

Algorithmic biases and injustice have been a grave concern throughout. There is a need to design AI in ways that increase its fairness and reduce biases. Dalenberg (2018) underscores the importance of modifying the data preparation process and explicitly adapting AI-based algorithms used in selection processes to prevent biases. Thus, ensuring long-term monitoring of AI to ensure outliers produced by the machines, monitoring patterns of decisions produced are not biased and are found to be fair and just.

4.2 Transparency:

The concept of transparency frequently emerges, particularly in the context of enhancing clarity regarding AI outcomes and the procedures governing responsibility and accountability (Barredo Arrieta et al., 2020; Dignum, 2019). As decisions become increasingly opaque and automated, they tend to be distanced from human agents (Giermindl et al., 2021). This trend has led to a compelling demand for explainable AI, as emphasized by Barredo Arrieta et al. (2020). In this context, explainable AI entails the necessity for outcomes and the data employed in deriving decisions from AI systems to be documented in a format that is interpretable by diverse stakeholders (Gunning et al., 2019). Developing systems that incorporate the concept of transparency with AI systems can be useful to reduce the dark side or negative perception towards AI. Understanding these challenges and including the concept of explainable AI can support a greater understanding of AI applications.

4.3 Accountability:

Accountability has been a focal point of discussions within the literature on artificial intelligence (AI), especially in scenarios where the outcomes carry high significance, such as in healthcare (Lebovitz et al., 2021). Additionally, the literature addresses the challenge of unclear accountability in autonomous vehicles, emphasizing the need to elucidate the justification of intentions, motives, and rationalities associated with AI-driven decisions in this domain. There is a need to design AI systems that are beneficial, explicable, and transparent. Rana et al. (2021) propose measures for holistic design and deployment where accountability is established within the organization, with anchors for an integrated business analysis system. Creating a system for shared responsibility within an organization can be a way forward for sustainable AI. Gaining insights into the reasons for the failure of AI systems is crucial for accountable AI technology. The introduction of combined human-machine analysis tools (Nushi et al., 2018) represents an essential step in addressing the substantial risks associated with such failures.

4.4 Safety Measures:

The significance of developing robust and safe AI applications has been a topic of extensive discussion in recent years (Gehr et al., 2018; Russell et al., 2015; Seshia et al., 2016). Gaining insight into how these significant concerns manifest as functional requirements from domain experts to algorithms requires a more profound understanding. As AI is closely associated with decision-making, it is essential that robustness is associated with the ethical principles of society (Daly et al., 2022). Due to the variation in ethics across societies, there can be a variation in the application (Leidner & Tona, 2021). There is also a need to ensure safety in the process of the development and deployment of AI systems. Examining the environment in which security policies are formulated and implemented is crucial. It involves identifying how humans interpret and respond to security policies. Security policies should encompass preventive measures, especially concerning instances of data poisoning. These policies must guarantee that AI models remain confidential, preventing any leaks while still enabling secure utilization to showcase the reproducibility of outcomes and decisions.

4.5 Managing Data:

The principle of data governance encompasses the entire sequence of the information value chain in AI projects. This spans from the creation and collection of data to its ultimate utilization, whether by human agents through AI insights or in the context of automated AI-based decisions. AI also imposes additional requirements related to privacy and data protection. This includes safeguarding against unauthorized access to data and ensuring that the data is of high quality and integrity. Our understanding of how data should be treated to eliminate socially constructed biases, inaccuracies, errors, and mistakes is still in its early stages. Simultaneously, organizations developing AI must strike a balance, ensuring that the quality of outcomes is not compromised by over-cleaning the data. Thus, measures to ensure these are avoided during AI

development and execution. Risk perceptions are reduced when organizations implement safeguards to minimize risks and address privacy concerns communicated with users (Cheng et al., 2021).

4.6 Law and Regulation:

There is a pressing need for a delicate balance, emphasizing the utilization of AI's potential while ensuring that individuals, particularly vulnerable groups, are not adversely affected by its consequences. Legislators and policymakers must be vigilant to ensure that legal frameworks do not inadvertently perpetuate injustice for individuals, potentially leading to systematic abuse (Marjanovic et al., 2021). In light of market disruptions and the anticipated consequences of job automation, there has been a growing call for the establishment of laws and regulations governing AI on both national and global scales. Policy-making processes must consider the perceptions of the relevant entities that are obligated to comply with laws and regulations. Understanding how these entities perceive such legal frameworks is crucial for enhancing adherence. Excessive vagueness in laws or regulations can lead to non-compliance by both private and public entities. In some cases, organizations might breach the corresponding laws or regulations, or they may refrain from adopting or utilizing AI due to concerns about potential legal consequences.

4.7 Human and AI collaboration:

It is important to create a balance between AI autonomy and ensuring effective and responsible outcomes while humans also retain their autonomy while using AI in the most effective way possible. Organizations need to understand how to balance humans and machines in a symbiotic relationship in a conjoined agency (Fügener et al., 2021; Murray et al., 2020). Creating a clear division of work between humans and AI can help create clarity for humans of their roles in tasks they have. Having humans play to their strengths and contribute as experts on the task helps create security for humans as they are not second-guessing what the AI is doing. There is greater acceptance of AI as they are placed as teammates to humans than tools in the workplace. In systems understanding, having two systems, humans and AI, work together on different aspects of the task simultaneously and collaboratively which increases the system's efficiency (Jain, 2022).

5. CONCLUSION

In conclusion, while Artificial Intelligence (AI) advancements have significantly reshaped various aspects of our lives, it is imperative to recognize and confront the potential adverse effects associated with its widespread use in sustainable practices. From ethical considerations related to algorithmic biases to the potential for job displacement and the widening of economic disparities, the darker aspects of AI present challenges that

demand careful scrutiny. The unchecked automation of tasks, leading to potential job displacement, prompts reflection on the societal ramifications of AI-driven economies. Unequal access to data resources in low- and middle-income countries introduces the risk of deepening economic divides. Additionally, the tension between the swift adoption of data-driven AI applications and the imperative to safeguard individual privacy underscores the necessity for robust regulation.

As we navigate the realm of AI in the context of sustainability, it is essential for policymakers, researchers, and industry stakeholders to collaboratively address these challenges. Striking a harmonious balance between technological innovation and the ethical, social, and economic implications of AI is paramount. Through the thoughtful implementation of regulations, ethical frameworks, and inclusive policies, we can harness the potential of AI while mitigating its negative consequences. Only through a comprehensive and responsible approach can we ensure that AI becomes a force for positive change in our increasingly digitized world, contributing to sustainable practices and fostering a more equitable and ethically conscious society.

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A Comparative Study of the Performances of HUL and Marico

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ABSTRACT

Fast moving consumer goods (FMCG) is the fourth-largest sector in the Indian economy. There is an increased demand for branded products in rural India. The urban segment contributes to about 55% of the revenue share, while the rural segment accounts for 45%. Indian FMCG is dominated by both indigenous India Inc. companies and foreign multinational companies. A comparison of these two segments will help us to understand their performances across different functional areas, which will give an understanding of their individual and collective market dynamism. We examine the performances of an Indian multinational and a foreign subsidiary. Marico Limited, an Indian Multinational Company, and Hindustan Unilever Limited (HUL), a subsidiary of Unilever, a British company, are the two companies analysed in this research.

Keywords: Performance analysis, ratio analysis, financial analysis

JEL Classification Code: D21, D22

1. INTRODUCTION

Fast moving consumer goods (FMCG) is the fourth-largest sector in the Indian economy.There are three main segments in the sector — food and beverages, which accounts for 19% of the sector; healthcare, which accounts for 31% of the share; and household and personal care, which accounts for the remaining 50% share. The urban segment contributes to about 55% of the revenue share, while the rural segment accounts for 45%.The Indian FMCG industry grew by 16% in CY21, a 9-year high, despite nationwide lockdowns, supported by consumption-led growth and value expansion from higher product prices, particularly for

staples. Final consumption expenditure increased at a CAGR of 5.2% during 2015-20. According to Fitch Solutions, real household spending isprojected to increase 9.1% YoY in 2021 after contracting >9.3% in 2020 due to the economic impact of the pandemic. The FMCG sector's revenue growth will double from 5-6% in FY21 to 10-12% in FY22, according to CRISIL Ratings. Price increases across product categories will offset the impact of rising raw material prices, along with volumegrowth and a resurgence in demand for discretionary items, are driving growth. The domestic FMCG market has grown at 12.6% YoY in Q3 2021.

The FMCG sector has received good investments and support from the Government in the recent past. The sector witnessed healthy FDI inflows of US$ 20.11 billion from April2000 to March 2022. Furthermore, as per the Union Budget 2022-23, Rs. 1,725 crores (US$ 222.19 million) has been allocated to the Department of Consumer Affairs, Rs. 215,960 crores (US$ 27.82 billion) has been allocated to the Department of Food and Public Distribution. In FY 2021-22, the government approved Production Linked Incentive Scheme for Food Processing Industry (PLISFPI) with an outlay of Rs. 10,900 crores (US$ 1.4 billion) to help Indian brands of food products in the international markets.

The future outlook of the FMCG sector looks on track. Rural consumption has increased, led by a combination of increasing income and higher aspiration levels. There is an increased demand for branded products in rural India. On the other hand, with the share of the unorganized market in the FMCG sector falling, the organized sector growth is expected to rise with an increased level of brand consciousness, augmented by the growth inmodern retail. The FMCG market in India is expected to increase at a CAGR of 14.9% toreach US$ 220 billion by 2025, from US$ 110 billion in 2020. With the above introduction, this research paper examines the performances of an Indian multinational and a foreign subsidiary. Marico Limited, an Indian Multinational Company, and Hindustan Unilever Limited (HUL), a subsidiary of Unilever, a British company, are the two companies we have examined in this paper. The FMCG sector significantly contributes to India" 's GDP and employment. Marico and HUL have become a prominent brand across India. It is important to understand the performances of an Indian-origin company and a foreign-origin company to understand their spread of activities across different performance areas.

2. LITERATURE REVIEW

Anirvan Pant and J Ramachandran discuss the identity of Hindustan Unilever as a transnational company. Where some senior managers believe that it is an Indian subsidiary of the Anglo-Dutch multinational Unilever, whereas others believe that over the years, HUL has established its presence as an Indian company

with international links. The paper also examines 6 major events in the past that posed a significant threat to the identity duality sustained by HUL's leadership. (Pant, A., & Ramachandran, J. (2017). Ajay Kumar Rath, in his research, states the historical background of HUL in India. Moreover, the author also finds out that HUL's share of profit contribution in its parentcompany, Unilever, is around 8-9%. (Rath, A. K. (1982).

Nirmal Kumar Chandra in his research titled "India's Foreign Exchange Reserves: A Shield of Comfort or an Albatross?" states that HUL came with an investment of Rs. 1 million with hardly any cash injection from the parent company Unilever over the yearsfor its growth. The Foreign Exchange and Regulation Act made the company reduce its foreign stake through a public issue, which brought in far more cash than the parent company ever invested. As of 2008, the market capitalization of HUL was at Rs. 471 billion, out of which the promoter's share was at Rs. 245 billion. (Chandra, N. K. (2008). To understand the above statistics, another study by V. G. Rajadhyaksha titled Hindustan Lever Limited: Past and Future discusses the policies of the company over the years. Key policies and projects, especially the ones initiated out of social welfare along with the profitability impact on the company. However, the overall positive impact on the company and on India was not discussed. (V. G. Rajadhyaksha. (1971).

To understand the strategies of targeting low-income markets by socially embedding the company, Sánchez et al (2005), state the various stakeholders and external partners involved in their distribution strategy. Focus on door-to-door distribution in rural areas helps consumers to have a better understanding of products and customers' needs. Strategies of social embeddedness was an important element behind the success for HUL's market coverage and perception among Indian consumers. HUL launched Project Shakti, that provides innovative mechanism of distribution for rural women. Incompatibility between the corporate interest and the poor must be understand for making such initiatives successful (Rohatynskyj, M. (2011). Prakash Tandon talks about current factors like need for change, number of people required, costs and facilities required inside HUL and future projections for the same inorder to do better in the country. (Tandon, P. (1968).

A research titled "Corporate Citizenship: Panacea or Problem? The Complicated Case of Hindustan Unilever" states a complete list of CSR initiatives launched by HUL over the years like Project Shakti, were launched with an aim to solve a social problem by including the local communities and achieve market leadership for its products. However, several others studies (including one mentioned above) question the successfulness of these initiatives and their benefits to the local communities. (Poonamallee, L. (2011). Researchers Mansi Arora and Akarsh Agarwal discuss the green marketing strategies of HUL in India and its impact on consumers. Some of their key strategies are reduced packaging, reducing waste from

manufacturing, recycle packaging and reducing water use in manufacturing and many more. The authors found that consumers believe HUL hasmade a mark in green marketing by including green marketing practices without keeping at stake the quality of the product. (Arora, M., & Agarwal, A. (2018)

Marico's herbal products got preference over other products, which helped them to expand their market share (Attri, R. (2017). Marico industries also launched social initiatives similar to Hindustan Unilever like Chhotte Kadam Pragatiki Aur Partnering their Brand of hair oil with CRY. These projectswere launched under cause related marketing in the villages of Uttar Pradesh, MP and Rajasthan. However, the researchers have not stated clearly as to what the reason was for following cause related marketing. (Chanana, S., & Gill, P. S. (2015). Madhavi, E.; Prasad, M. S. V. found that companies like HUL and Marico use EVA (Economic value added) as an indicator to rank themselves in the internal management report. The study also reveals that Marico has a fluctuating EVA over the years 2010-14. (Madhavi, E., & Prasad, M. S. V. (2015).

Mihaela COCOŞILĂ studies economic indicators like current ratio, quick ratio, interest coverage ratio, etc. to understand the financial position of the company. Quick ratio has shown an erratic trend due to high dependency on inventory in current assets, similarly cash ratio is very less due to the same reasons. (Goel, S., 2012). Marico limited has to increase their operational level to generate more revenue, reduce the outside liabilities or increase their share capital. Outside liabilities being more than the share capital is not a good capital structure. (Yasodha, M. (2021). Innovation has been the key in products of FMCG sector. Marico came up with hot oils during the discussion of providing some kind of heating device with its coconut oil due to concerns of coconut oil freezing in winters. (CHATTERJJEE, S. P. P. (2012)).

3. FUNDAMENTAL ANALYSIS OF FMCG SECTOR

After an in-depth analysis of Marico's financial statements using several ratios, a study titled "FUNDAMENTAL ANALYSIS OF FMCG SECTOR", it can be concluded that Marico had the least rank whereas HUL tops the list on the same parameters (MAHESHWARI, A., 2020). Sri. AYAN CHAKRABORTY evaluates the performance of leading FMCG firms, according to which in terms of liquidity Marico is in the top position (Current ratio). Moreover, as per price earnings ratio Marico again secures the top position. (Chakraborty,S. A. (2017). Samia Shanjabin, Amanta Hasnat Oyshi understands the presence of mission, vision, and core values in a list of 24 leading FMCG companies and found out that Marico had the presence of Vision, mission and core values with a focus on strategic HR in the visionand core values. (Shanjabin, S., & Oyshi, A. H. (2021). Kunal Mankodi discusses the case study of Kaya skin

clinic which was founded by the owner of Marico. Today, Kaya contributes 7% to the Rs. 4000 crore turnovers of Marico. Over the year's kaya has grown significantly and has 81 clinics in metro as well as tier 2 cities. The company developed an innovative business model to such an extent in the skincare industry that going to kaya clinic is a fashion as it has created a lifestyle statement. Kaya clinic will be focusing on products in future to make it a product centric company.(CHATTERJJEE2012)

Weights of Fundamental Ratios:

WEIGHTAGE OF FUNDAMENTAL RATIOS					
RATIOS	HUL	GODREJ CONSUMERS	ITC	MARICO	DABUR
Operating Profit Margin (%)	2	4	5	1	3
Profit Before Interest & Tax Margin (%)	3	4	5	1	2
Gross Profit Margin (%)	3	4	5	1	2
Cash Profit Margin (%)	1	4	5	2	3
Net Profit Margin (%)	1	4	5	2	3
Adjusted Net Profit Margin (%)	1	4	5	2	3
Return On Capital Employed (%)	5	1	4	2	3
Return On Net Worth (%)	5	1	2	3	4
Adjusted Return on Net Worth (%)	5	1	2	3	4
Current Ratio	3	1	4	5	2
Quick Ratio	3	1	5	4	2
Inventory Turnover Ratio	5	4	2	1	3
Debtors Turnover Ratio	5	3	2	4	1
Investments Turnover Ratio	5	3	2	1	4
Fixed Assets Turnover Ratio	4	5	1	3	2
Total Assets Turnover Ratio	5	2	1	4	3
Asset Turnover Ratio	5	2	1	4	3
TOTAL	61	48	56	43	47
RANK	1	3	2	5	4

Analysis of Income Systemin of HUL for the five years from 2017 to 2021:

Common Size Income Statement of HUL for the five years from 2017 To 2021

PARTICULARS	2017	2018	2019	2020	2021
	100%	100%	100%	100%	100%
INCOME					
REVENUE FROM OPERATIONS [GROSS]	100.00	100.00	100.00	100.00	100.00
Less: Excise/Service Tax/Other Levies	7.66	2.00	0.00	0.00	0.00
REVENUE FROM OPERATIONS [NET]	92.34	98.00	100.00	100.00	100.00
TOTAL OPERATING REVENUES	94.08	99.73	101.50	101.34	101.51
Other Income	1.55	1.64	1.76	1.92	1.13
TOTAL REVENUE	95.64	101.37	103.26	103.25	102.64
EXPENSES					
Cost Of Materials Consumed	33.52	36.08	35.16	30.24	33.00
Operating And Direct Expenses	0.00	0.00	0.00	0.00	0.00
Changes In Inventories Of FG,WIP And Stock-In Trade	0.46	-0.21	0.03	-0.32	-0.86
Employee Benefit Expenses	4.78	5.04	4.64	4.42	4.92
Finance Costs	0.06	0.06	0.07	0.28	0.24
Depreciation And Amortisation Expenses	1.17	1.38	1.39	2.45	2.23
Other Expenses	25.19	26.78	26.23	25.35	23.76
TOTAL EXPENSES	77.48	80.15	80.03	78.98	78.99
PROFIT/LOSS BEFORE EXCEPTIONAL, EXTRAORDINARY ITEMS AND TAX	18.16	21.22	23.23	24.27	23.65
Exceptional Items	0.71	-0.18	-0.60	-0.51	-0.50
PROFIT/LOSS BEFORE TAX (PBT)	18.87	21.04	22.63	23.76	23.15
TAX EXPENSES-CONTINUED OPERATIONS					
Current Tax	5.50	6.20	6.81	5.75	5.60
Less: MAT Credit Entitlement	0.00	0.00	0.00	0.00	0.00
Deferred Tax	0.12	-0.29	-0.21	0.40	0.00
Tax For Earlier Years	0.00	0.00	0.00	0.00	0.00
TOTAL TAX EXPENSES	5.62	5.92	6.60	6.15	5.60
PROFIT/LOSS AFTER TAX (PAT)	13.25	15.13	16.03	17.61	17.55

Interpretation:

From the above table we can understand that there is growth in revenue in the last 5 years. Cost of materials consumed increased from the year 2017 to 2019 from11363 to 13240 in the year 2020 it declines to 11572 and in the year 2021 it increased to 14951with a percentage of 33. Changes in Inventories of finished goods, work in progress and stock in trade gives the information that in the year 2017 it was 156 later on in the year 2018 it became negative value of 71 and in the year 2019 it is 12 and in the year 2020 and 2021 it became a negative value of (121) and (391). Employee benefit expenses increased gradually from the year 2017 to 2019 that is, 1620 to 1747. And in the year 2020 it became 1691 and in the year 2021 it is 2229. But in % wise if we see there is increase and decrease in all the 5 years. Finance costs is increasing year by year from 22 to 108 constantly in percentage terms it is 0.06in 2017, 0.06 in 2018, 0.07 in 2019, 0.28 in 2020 and in the year 2021 0.24. Finance costs is increasing year by year from 22 to 108 constantly in percentage terms it is 0.06in 2017, 0.06 in

2018, 0.07 in 2019, 0.28 in 2020 and in the year 2021 0.24.

Depreciation and amortization are gradually increasing from 2017 to 2021 that is from 396 to 1012. In percentage terms is 1.17% to 2.23%. Depreciation and amortization are treated as separate line items on the income statement. Depreciation is typically used with fixed assets ortangible assets, such as property, plant, and equipment (PP&E). Profit before tax can be found on the income statement as operating profit minus interest. In this company the profit before tax is, in 2020 it is 10490 whereas in the year 2017 it was 6396.This is because of the inventories, pricing structure, overheads etc., detail study and improvement lead to good profit every year. In this company profit after tax is increasing yearby year from 2017 to 2021. Every year it is in between 1000's but in the year 2021 it came up to1200 increase which raised from 6738 to 7954. Overall, the HUL company is performing well in the market from 2017 to 2021 as we have taken 5 years profit and loss and did common size income statement analysis they are at a betterposition in the performance.

Analysis of Income Statement of Marico (2017-2021):

Common Size Income Statement of MARICO LIMITED for the five years from 2017 to 2021

PARTICULARS	2017	2018	2019	2020	2021
	100%	100%	100%	100%	100%
INCOME					
REVENUE FROM OPERATIONS [GROSS]	100.00	100.00	100.00	100.00	100.00
Less: Excise/Service Tax/Other Levies	0.37	0.21	0.00	0.00	0.00
REVENUE FROM OPERATIONS [NET]	99.63	99.79	100.00	100.00	100.00
TOTAL OPERATING REVENUES	99.98	100.39	101.00	101.04	100.00
Other Income	5.40	4.22	5.09	5.32	5.46
TOTAL REVENUE	105.37	104.61	106.09	106.35	105.46
EXPENSES					
Cost Of Materials Consumed	48.38	58.54	58.58	50.58	52.91
Operating And Direct Expenses	0.00	0.00	0.00	0.00	0.00
Changes In Inventories Of FG,WIP And Stock-In Trade	-0.98	-4.30	-1.71	2.38	0.88
Employee Benefit Expenses	5.17	5.33	5.19	5.32	5.90
Finance Costs	0.26	0.15	0.41	0.57	0.35
Depreciation And Amortisation Expenses	1.32	1.30	1.76	1.95	1.69
Other Expenses	24.20	21.64	20.01	21.13	17.88
TOTAL EXPENSES	81.84	84.07	8608.00	84.31	83.83
PROFIT/LOSS BEFORE EXCEPTIONAL, EXTRAORDINARY ITEMS AND TAX	23.53	20.54	20.01	22.04	21.63
Exceptional Items	0.00	-2.02	0.00	-0.33	-0.95
PROFIT/LOSS BEFORE TAX	23.53	18.52	20.01	21.72	20.69
TAX EXPENSES-CONTINUED OPERATIONS					
Current Tax	5.03	4.46	4.40	4.47	3.23
Less: MAT Credit Entitlement	0.00	0.00	0.00	0.00	0.00
Deferred Tax	1.14	0.12	-0.30	-0.12	0.00
Tax For Earlier Years	-0.01	0.00	-3.18	0.00	0.00
TOTAL TAX EXPENSES	6.16	4.57	0.91	4.35	3.23
PROFIT/LOSS AFTER TAX	17.37	13.95	19.10	17.37	17.45

Interpretation

Marico's limited total revenue has been increasing from last five years that is from 2017 to 2021 that is, from 5112.61 to 6686. There may be fluctuations in 5 years that are increasing and decreasing in values of the revenue that is gross profit in percentage terms it is 105.37% to105.46% in last 5 years, the reason behind this is the sales or revenue from operations as this increasing even the total revenue varies. Based on the expenses, the expenses are also fluctuating in the year 2017 it is 3970.89 and it again increased in 2018 to 4329.9 and in the year 2019, it increased to 5089. It got fluctuated and got decreased to 4884. And again, it increased to 5312. This was because of the changes happening in the cost of materials consumed, changes in inventories, employee benefit expenses, finance costs, 64 depreciation and amortization expenses, and other expenses as thereare no operating or direct expenses it didn't affect from that particular line of item.

In percentage terms, the cost of materials consumed is 48.38% to 52.91% where it can of increase and decrease in the year 2018 58.54% which is 3014.97 and in 2019 it is 3463 in % wise it is 58.58% in 2020 it came to 2930 of 50.58%. If we check the changes in inventories itis negative in the years 2017, 2018, 2019 which is -47.44, -221.62, and -101 and in 2020 it is138 and in 2021 it is 56. Employee benefit expenses are in a static or fluctuating from 2017 to 2021 as it is 5.17% in 2017, 5.33% in 2018, 5.19 %in 2019, 5.32% in 2020, and 5.90% in 2021. The finance costs increased year by year in percentage terms which is 0.26% in 2017, 0.15% in 2018, 0.41%in 2019, 0.57% in 2020, and in last it is 035% in 2021.

Depreciation and amortization expenses increased gradually from 2017 to 2020 is 1.32 to 1.95% in the year 2021 they came to 1.69%. Profit before tax is declining and increasing this shows in the years 2018 and 2019 which is 953.73 and 11183 in the year 2017 it is 1141.72. in percentage, it is shown as 18.52% and 20.01 % in 2018 and 2019 whereas in 2017 it is 23.53 % but when we go through 2020 and 2021 itis 21.72% and 20.69%. At last when we interpret the tax current tax also fluctuates it is from 243.33 to 229.57, 260 forthe year 2017 to 2019 in 2020 it declines by 259, and the year after 2020 that is in 2021 it completely declined to 205. In this particular company based on the last 5 years' data, it is either paid in advance or paid extra taxes which is been deducted from the profit before tax amount. The tax which is made in earlier years and is not paid then tax it is charged and the taxexpenses are 6.16% in 2017, 4.57% in 2018, 0.91% in 2019, 4.35% in 2020, and in 2021 it is 3.23%. Profit after tax or the net income year by year that is from 2017 to 2021 is like in 2017 it is 17.37%, in 2018 it declined to 13.95%, in 2019 it is increased by 19.10%, it declined in 2020 and 2021 from 19.10 to 17.37 and 17.45%.

4. Comparison of HUL and Marico:

Expenses (2017-21)
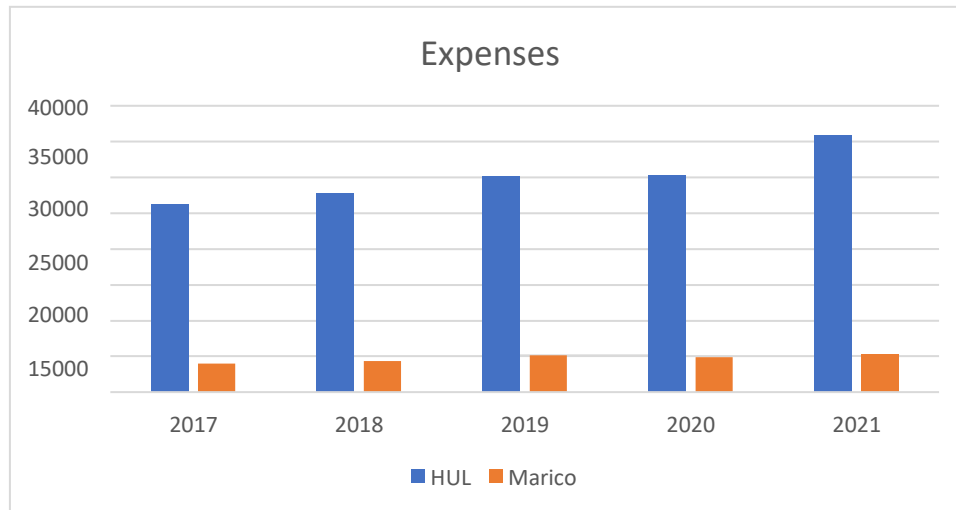
Profit After Tax – Net Income (2017-21)
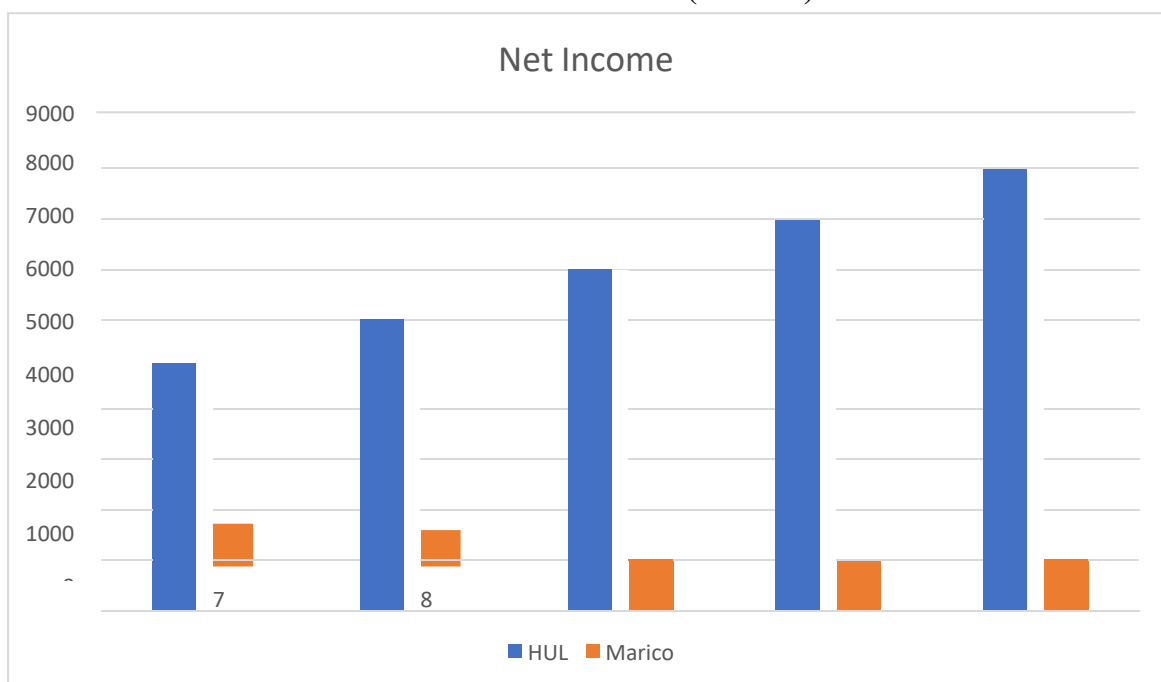
Sales (2017-21)
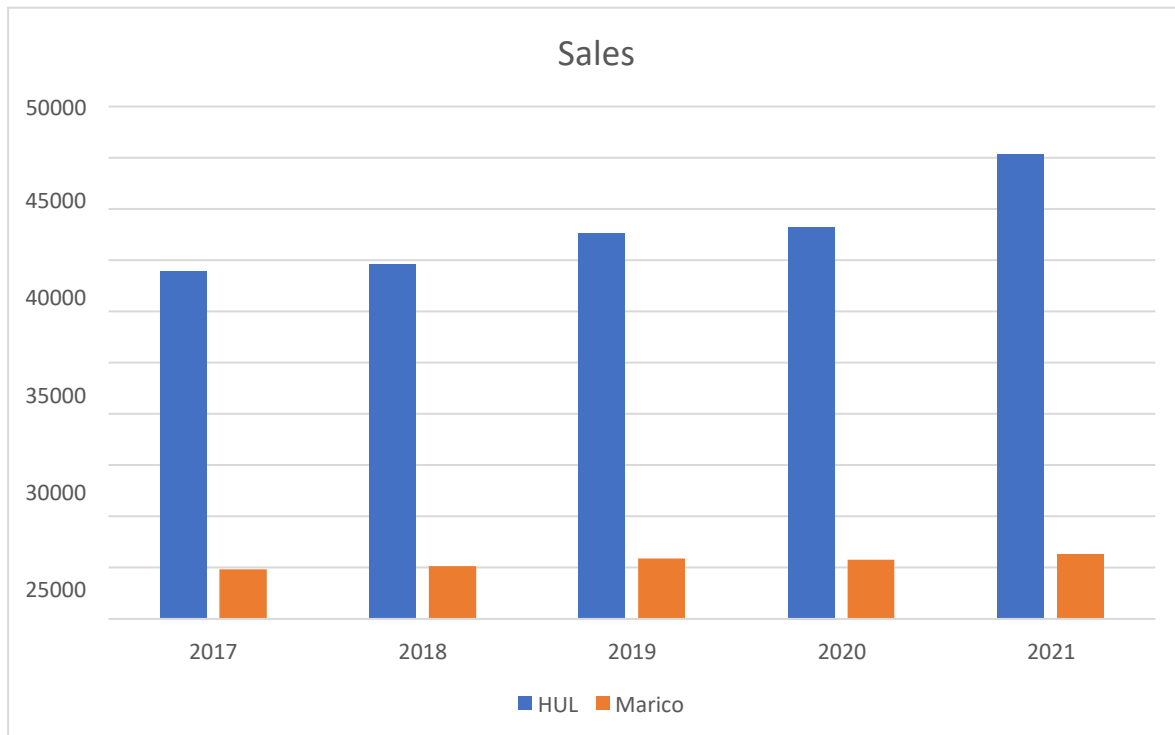
Sales

When compared to Marico, HUL's sales are higher, and in 2021, they are at their highest level which shows a constant growth in the company's revenue. For this reason, HUL is the FMCG sector's market leader and comes in first place overall. This is mainly due to the factthat Marico's revenue is based almost entirely on hair and edible oils whereas HUL offers a whole range of FMCG products. This is based on the income statement for the previous fiveyears, which spans from 2017 to 2021.

The Expenses of HUL are also much higher when compared to Marico because of their hugesales and distribution networks and their products spanning across industries. HUL faces stiffcompetition from large Indian companies like ITC, Britannia, Nestle, and so on.

5. FINDINGS, CONCLUSION AND SUGGESTIONS

➢ The market leader in the industry is Hindustan Unilever Limited (HUL). Its revenue is 40,511 crores of rupees. With more than 40 brands spreadacross 12 different categories, the Company touches the lives of millions of people every day.

➢ One of India's top FMCG companies in the beauty and wellness industry is Marico Limited. The company ranks seventh among the top 10 FMCG firms in India for 2019.During the previous 25 years, Marico has made a name for itself as a top manufacturerof consumer goods. It generates

revenue of Rs. 7465 crores.

> The HUL company's sales are rising year over year. Financial Year 2019–20 for HUL has been a difficult year due to deteriorating macroeconomic conditions and sluggish market growth expansion in the FMCG industry, and lastly, the COVID-19 epidemic and containment efforts towards the end of the year. In spite of this difficult situation, we have succeeded. Our profit after tax and excluding extraordinary items (PAT) has grown in a way that is both competitive and profitable. Profit after tax climbed by 18% and reached 7,954 crores in the fiscal year 2020–21. Our operating cash flow (after taxes) increased by 23% to 8,957 crores.

> Companies should regularly undertake the common size analysis to see how they are doing across all lines of business, where they are falling short, and how to improve those areas. The results of this standard size study are presented in percentages, allowing us to compare it to other companies.

> When they do common size income statement it does not showcase trends of each of the line items. Rather, it showcases the trends of the relationship of each of the items to the total. So, it is equally important to know the common size income statement analysis

> Finally, it may be claimed that the standard size income statement makes it simple to compare, allowing the analyst to see what is actually driving a company's profit, and then assess its performance in comparison to its competitors. From the viewpoint of an investor, a standard-size income statement aids in identifying trends while a raw income statement might not reveal certain aspects of the company's performance.

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Qualitative Research On The Advantages Of Online Learning Over Physical/Offline Learning

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ABSTRACT

Online education, E-learning, and massive open online courses have become essential and also popular during the pandemic. This study tries to understand the purposes of using online educational tools, their completion rate, content quality and preferred method of learning by adopting the focus group method of study.

Keywords: online learning, qualitative method, focus groups.

1. INTRODUCTION

Adoption of Online learning has grown significantly in the COVID era but no research has been done to find out the dominant purpose of online educational tools and E-learning platforms, so to analyze the market situation and potential of these platforms and tools through various perspectives like advantages of online learning over physical classroom learning, the preferred methods and relevant tools and whether they are considered rewarding, and do they get completed or are left unfinished and other suitable factors.

2. RESEARCH OBJECTIVES

The Following objectives were researched about:

- ➤ To find out the dominant purpose of using online educational tools, whether in a professional or personal capacity
- ➤ To find out whether the online courses do get completed or left unfinished.
- ➤ To assess whether the contents of online learning are rewarding.
- ➤ To find out the preferred method of online learning
- ➤ To find out which assessment tools are the most relevant ones.

3. RESEARCH METHODOLOGY

The research methodology will be a focus group and will fall under the bracket of qualitative research. The focus group will consist of 8 people who will be sharing their insights and opinions on the questions raised by the moderator. The moderator will take note of their answers and develop a thorough analysis of the data given to generate an analysis or interpretation. The type of research is primary research as we are collecting the data directly from the respondents in real time which will be supported by secondary research through research papers, blogs etc.

The focus group will have a fixed number of questions and will follow a flexible pattern of asking these questions. There will be additional questions depending on the answers that the respondents give.

FOCUS GROUP ANALYSIS:

The questions asked to the focus group are listed below, along with their response and analysis:

1. Question: Have you used any e learning sites/platforms recently? If yes, which one do you prefer the most and why?

Response: The focus group responded with a yes, following it with which particular platforms each prefers. A few of them mentioned "Coursera" because they felt it provided them with a proper timeline in which they could complete the course and they could track their overall growth on the platform. One mentioned "Hubspot" while another mentioned "Edex" since he felt the courses offered on that platform were better and more informative. Another mentioned "Udemy" since they felt it was more user-friendly and they could start from the very basics of whichever field they were interested in.

Analysis: This shows that there are a quite a few platforms available that have their own unique features they offer that might be preferred by people from different walks of life. Even though at the core, each platform is the same, offering the same service at the baseline, they have features characteristic to them alone. People have responded positively to these platforms.

2. **Question:** What is the purpose of using such platforms? College or corporate requirements or personal growth and development?

Response: The focus group gave quite a few reasons why they felt the platforms were helpful. One mentioned she could get access to world-class professors from the comfort of her home, another mentioned self-development. A few of them agreed that they initially started using these platforms to cover college required MOOC courses but they now use these platforms to do courses they feel with help in their personal development and growth for future endeavors.

Analysis: Most of the members might have started using the platform to fulfil their curriculum requirements, each one agreed that they realized the platforms had more to offer.

3. **Question:** What kind of courses do you pursue on these platforms? Subjects related to your college degree or something creative?

Response: One of the members of the focus group mentioned using the platforms to get access to excel courses. Some members said they usually pursue courses related to their specialization, aptitude tests and to gain strategic thinking. Some said they do courses related to their future goals or profession, extracurricular courses that give them an advantage in the corporate world.

One member said she did courses that she found interesting that had nothing to do with her curriculum or future endeavors.

Analysis: The platforms offer a myriad course in various fields not restricted to the general academic streams. There is something for everyone, irrespective of what they want to pursue professionally.

1.   Question: Why do they attend/prefer online courses when offline opportunities are available, even though there is no personal touch to it?

Response: The focus group seemed to agree that there was a level of comfort to being able to pursue courses from the comfort of their own homes, at the times they were available. This allowed them more flexibility to balance their college work, co-curriculars and extra credit work, and yet get the exposure of learning from world- class professors from all over the globe. They could complete the courses in their own convenience, at their own speed of learning, often revisiting lectures or concepts they might not have understood as many times as they wanted.

Analysis: There is no denying the usefulness of these online platforms, and no one can disagree they provide a certain comfort to pursuing courses. People have a positive outlook towards these courses and are all using them as it were an opportunity.

2. Question: Do you tend to complete the courses that you willingly join on such platforms?

Response: According to the replies from the focus group, people finishing their courses primarily depend on whether the course that they are studying through these E-Learning platforms is of interest to them. If it is of their interest, they will tend to complete their course and gain all of the learnings from it; however, if they become bored with the course or later realize that it is not of their interest, they will either drop the course or stop for the time being and possibly complete the following case in the near future if required or developed interest again.

Analysis: From our analysis we can say that people do tend to complete these courses but it is also based on one's choice. And also, from the secondary resources we understand that people do tend to complete these online courses because it's more flexible, cheaper, provides personalized education and is more efficient.

3. Question: Do you believe such courses and certifications are rewarding? In what ways?

Response: The certificate is significant since you may include it on your resume, and credentials from E-Learning platforms, such as Coursera or Udemy, are worldwide recognized and aid in an individual's self-development. They aid in the development of skill sets and add value to their resumes. People include these certificates on their resumes in case they are questioned about them during an internship or job interview concerning the job role they have applied for. So, yes, these certifications are valuable, and yes, these courses are lucrative for those that apply for these courses and certificates.

Analysis: From our analysis we believe that these courses are rewarding as they not only provide certificates

on completion but also help in developing skill sets in Individuals which is beneficial for the people who apply for these courses and also helps them in their interview when applying for Jobs. One of the most significant advantages of pursuing a professional certificate course is that it boosts your chances of advancement or raise within your existing organization while also offering up new career prospects. This makes it a win-win situation for all graduates and working people looking to advance their careers.

4. Question: Do you have any suggestions as to how these courses could be made more fun and engaging?

Response: The mix of pre-recorded sessions as well as live learning lessons because some subjects let's say finance, math, marketing because it requires in person attention. The reason behind this is that some topics in a subject might not require much attention and could be learned directly through pre-recorded sessions while some topics which might need met personal attention could be fulfilled through live sessions where individuals can clear their doubts on any topics then and there itself. Course could be made more fun and interactive through responding to a particular question and other members who are doing the same course as you could review your answers and also give their opinion on it like the six-sigma course on Coursera after getting reviewing each other's answers and in the end, Coursera would review the final answers and reveal the score. Review systems are very encouraging for students.

Analysis: People find both pre-recorded sessions and live learning sessions more fun and engaging and also love when other students can review each other's answer/assignments and give them their point of views which helps them see their assignments in ways that they couldn't have thought off and adds a good learning experience for all the participants involved in the course.

5. Question: There could be various methods of e-learning as well, live classes, recorded lectures, presentations, reading materials. Which is the most preferred method?

Response: Hybrid learning is the preferred method; certain subjects may necessitate live learning sessions, and the best part is that these live learning sessions can be recorded as well, allowing students to rewatch those videos as needed. Pre-recorded sessions can also be beneficial in certain theoretical subjects.

Analysis: Students choose a combination of live sessions for practical areas such as finance, arithmetic, and marketing, recorded lectures for theory, presentations, and reading materials for notes and future reviews and understanding. For better understanding, all E-Learning platforms now provide the following courses. Added benefit for these online live sessions is that you get opportunity to learn from the best teachers in the market just by sitting at home and have internet access.

6. Question: Are there any specific courses you thoroughly enjoyed in terms of engagement and interaction? do you think certain courses need to be improved to increase engagement?

Response: As per the responses received from the focus group, courses such as the Six sigma course offered by Coursera, among others, are highly engaging due to processes like – peer review. The peer review process is said to be encouraging, boosts learning, and denotes a distinguishable difference between live lectures and pre-recorded courses.

Analysis: The focus group participants believe that certain online courses are highly engaging and that this is due, in part, to the peer review process. This feedback highlights the potential benefits of peer review in online learning and suggests that it can be an effective tool for enhancing the learning experience.

7. Question: Do you prefer peer review assessments over the existing pattern of teaching and learning in schools and colleges?

Response: There are benefits to both patterns of learning. The existing pattern of learning in schools and colleges allows for direct interactions with the teacher which helps in understanding where the student is lacking and aids in better grasping of concepts. Whereas, peer reviews enable students to understand strengths and weaknesses, push creative boundaries and receive exposure. Therefore, a mix of both patterns would help gain insights from teachers as well as peers.

Analysis: It is safe to conclude that a mix of both patterns would be the best approach, allowing students to receive insights from both teachers and peers. This would provide a well-rounded learning experience that incorporates both individualized feedback and collective evaluation.

8. Question: Are there any specific challenges you've faced while doing a course online? How do you get your doubts cleared?

Response: From the responses received from the focus group, we can highlight three ways in which students clear their doubts.

i) Most courses have the option to ask doubts and receive a response from instructors or peers within a few hours.

ii) Seek answers via the internet by referring to research articles and other sources.

iii) Revisit the online course material to gain clarity on concepts.

Analysis: It can be deduced that online courses present specific difficulties for students when it comes to getting their doubts cleared.

The first way students clear their doubts is by asking their instructors or peers. This suggests that access to a support system, such as instructors and peers, is critical for students when taking online courses. Having the

option to ask doubts and receive a response within a reasonable time frame is important for students to be able to move forward with their learning.

The second way students clear their doubts is by seeking answers via the internet. This highlights the importance of having access to reliable and relevant information sources. Students who are taking online courses often have to be proactive in finding information and answering their own questions, and having access to quality resources can make a significant difference in their learning experience.

The third way students clear their doubts is by revisiting the course material. This suggests that students are taking an active approach to their learning and are making the effort to gain a deeper understanding of the concepts covered in the course. Re-visiting course material can help students reinforce their understanding of the material and clear any lingering doubts.

Overall, the response suggests that students face specific challenges when taking online courses and that access to support and resources is critical in overcoming these challenges and clearing their doubts.

9.   Question: Do you think there is a certain kind of environment that aids in the effectiveness of online learning? Would the lack of certain devices or technology hinder the online learning experience?

Response: According to the responses from the focus group, access to the internet and a compatible device are key resources required for online learning. The pandemic paved the way for a drastic shift toward online learning and it was also a time when students, as well as teachers, experienced technical difficulties which hindered the learning process. That said, the focus group suggests that even if up-to-date resources are available for online learning, hybrid learning still stands as a better option.

Analysis: It is evident that the participants view technology and internet connectivity as critical components of online learning. Without these resources, the online learning experience can be disrupted, leading to decreased effectiveness and hindering the overall learning process.

On the other hand, the preference for hybrid learning over purely online learning suggests that participants believe that in-person instruction and interaction with peers and teachers can provide additional benefits to the learning experience. In-person instruction can provide real- time feedback and interaction with teachers, while interaction with peers can foster a sense of community and facilitate collaboration.

Overall, the response highlights the importance of technology and internet access in the effectiveness of online learning and the potential benefits of a hybrid learning approach.

10. Question: Would you like to share your personal experience or your views regarding this topic?

Response: Online classes have benefitted students overall, especially during the Covid-19 lockdown. Such courses also hold long-term value, aid in gaining skills, and add value to resumes for job and college

applications, while providing students with a sense of purpose. That said, online courses can be considered a valuable addition to learning but cannot be considered a viable replacement for existing offline learning patterns altogether.

Analysis: The focus group views online learning as beneficial for students with long-term value, but also recognizes its limitations and believes that a combination of both online and traditional offline learning methods is necessary for a well-rounded education. They highlight the advantages of online learning such as accessibility, flexibility, and the potential for skills development and resume building, but also stress the importance of in-person interaction for hands-on learning, real-time feedback, and social interaction.

4. DATA ANALYSIS AND INTERPRETATION

❖ Existing Platforms And Its Features:

Online learning platforms have gained significant popularity in recent years, providing individuals and organizations with the opportunity to access high-quality educational content online. Some of the most popular online learning platforms include Coursera, Udemy, Skill share, and HubSpot, among others.

Coursera is a massive open online course (MOOC) platform that provides access to a wide range of courses from top universities and institutions. It offers interactive video lectures, peer- graded assignments, and discussion forums, providing students with a comprehensive learning experience.

Udemy is a platform that offers a vast library of courses in a variety of subjects, including business, technology, and creative arts. These courses are created by experts in their respective fields and are designed to provide hands-on learning experiences.

Skill share is an online learning platform that specializes in creative and design courses. It offers courses in photography, graphic design, and other creative arts, taught by industry experts.

HubSpot is an online learning platform that focuses on digital marketing, sales, and customer service. It offers courses and certifications in these areas and is designed for both individuals and organizations.

In addition to these online learning platforms, there has been a growing trend in the use of platforms like Zoom and Google Meet for online learning and teaching. These platforms allow for real-time interaction between educators and students, making it possible for remote learning. With the recent COVID-19 pandemic, these platforms have become increasingly important as many schools and universities have shifted

to remote learning. Zoom and Google Meet provide educators with the ability to deliver high-quality instruction to students, regardless of their location.

In conclusion, online learning platforms such as Coursera, Udemy, Skill share, and HubSpot offer a convenient and flexible way for individuals and organizations to access educational content and upskill. The growing use of platforms like Zoom and Google Meet has made remote learning and teaching possible, making education more accessible and flexible. These platforms are transforming the way we learn and provide opportunities for individuals to acquire new knowledge and skills in a convenient and cost-effective manner.

5. CONCLUSION AND RECOMMENDATIONS

❖ **Conclusion:**

In conclusion, the research aimed to determine the dominant purpose of online educational tools and the market situation of E-learning platforms. A focus group of 8 people was conducted, which fell under qualitative research and provided primary data. The participants appreciated the flexibility, personalization, cost-effectiveness, and value of online learning in skill development and career advancement. Support from instructors and peers, technology, and internet connectivity were considered crucial to the success of online learning. Participants preferred a mix of online and traditional learning methods for a comprehensive learning process.

In conclusion, online learning is viewed positively with recognition of its limitations, and the importance of combining both online and traditional methods for a comprehensive learning process.

The focus group discussed their experiences with e-learning platforms, with a majority of them have used them. They prefer platforms like Coursera, Edex, Udemy, and HubSpot, each with its own unique features that appeal to them. They use these platforms for both college requirements and personal growth and development. They pursue a variety of courses ranging from their specializations to extracurriculars and personal interests. The flexibility and comfort of studying from home was major reason for the popularity of e-learning platforms. The focus group mainly completes the courses if they are of interest to them. They believe that the certifications from these platforms are rewarding as they help in their self-development and add value to their resumes.

❖ **Recommendation:**

The data analysis showed that online learning platforms offer flexibility, personalized education, cost-effectiveness, and opportunities for skill development, certificate attainment, and career advancement. The importance of support, resources, technology, and internet connectivity was also emphasized. Participants preferred a mix of both online and traditional learning methods for a comprehensive education experience.

Overall, online learning was viewed positively by the focus group, with its limitations recognized.

From the analysis, it is clear that the focus group is interested in having interactive and practical learning experiences. They want to engage with instructors and other students and have opportunities for hands-on learning. To make e-learning courses more enjoyable and effective, these suggestions could be implemented.

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7. APPENDICES

Link To Focus Group Video:

https://drive.google.com/file/d/1U5LhZq4JQ2y_eqh8CjZVij3F7yWZecDR/view?usp=sharing

Exploring the Potential of DeFi to Increase Financial Inclusion:

A Study of Generation Y and Z

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ABSTRACT

Globally, financial inclusion remains a huge concern, with around 1.7 billion individuals lacking accessibility to fundamental economic resources such as bank accounts, credit, and insurance. Furthermore, existing financial systems frequently exclude underrepresented groups such as low-income people, women, and minorities. Despite Generations Y and Z being aware of DeFi, many are unclear of its advantages and how it varies from conventional banking. A lack of financial and technological understanding continues to be a substantial obstacle to wider adoption, as do worries about confidentiality, governance, and market volatility. In this study, we look at how decentralized finance (DeFi) might help Generations Y and Z increase their financial inclusion by measuring their familiarity and utilization of DeFi and analyzing their financial and technological literacy. The study also looks at the challenges to their engagement in DeFi and offers solutions to overcome them. According to the report, initiatives to enhance financial inclusion through DeFi should include education, streamlined software platforms, and coordination among the DeFi industry, government, and existing banking actors. DeFi has the ability to establish a more equitable and inclusive financial system for Generations Y and Z by solving these challenges.

Keywords: Decentralized finance, Blockchain, cryptocurrencies, financial inclusion, financial intermediaries.

1. INTRODUCTION

The Birth of Decentralized Finance:

The empire of digitalization has managed to inhibit all the existing global sectors of the current world. The financial sector that serves as the biggest link to all economic activities is no exception. The sector which was once predominantly all about cheque books, cash bundles, debit and credit cards is now encapsulated into a series of few finger swipes. With the rise of mobile devices and internet connectivity, digital payments, online banking and peer-to-peer lending are becoming more popular, offering greater convenience, speed and security. All this led to the birth of cryptocurrencies and blockchain technology, which has now given birth to a decentralized finance platform. Decentralized finance is an open and global financial system that makes available a variety of financial services, including lending, saving, investing, and trading. Unlike the current financial system, which depends on third-party intermediaries such as banks and brokers, this one-use open source software that anyone can build. therefore, it provides an alternative that is more open and transparent.

Understanding Financial Inclusion?

Financial inclusion is the concept of making financial institutions, services and products available to all members of society, regardless of their financial situation or social status. It seeks to give everyone the opportunity to manage their finances, participate in the financial system and improve their economic well-being.

Even after several layers of development in the financial sector, there is still a problem in the availability of financial instruments and transactions. The emergence of DeFi has given new hope to the improvisation of financial inclusion, as it provides insufficient access to digital assets and financial technologies without traditional barriers. Through decentralization, technology can be used to promote financial inclusion. While the role of technology in improving financial inclusion is undeniable, how this can be achieved still remains an unanswered question. The potential of Decentralized Finance (DeFi) to increase financial inclusion for Generation Y and Z: -

Generation Y and Generation Z can benefit from DeFi by gaining access to financial services previously

unavailable or challenging to obtain. Also, because people can manage their wealth independently of traditional financial institutions, it can provide them with more financial control DeFi can also help lower the cost of financial services, making them more accessible and cheaper for a wider range of people. DeFi can also provide faster and more efficient transactions, allowing people to access their money easily and quickly. However, other issues need to be addressed in order to increase the use of DeFi by Generations Y and Z. These challenges include issues around security, user experience and regulatory frameworks. Addressing these challenges will be critical for these firms to realize the full potential of DeFi to increase financial inclusion

Sustainable Development and New Dimensions in Financial and Accounting:

The emergence of Decentralized Finance (DeFi) represents a transformative force in the world of finance, one that is intricately intertwined with the principles of sustainable development and the evolution of financial and accounting paradigms. At its core, sustainable development seeks to ensure the well-being of current and future generations by balancing economic growth, social equity, and environmental preservation. DeFi's potential to foster financial inclusion aligns seamlessly with these objectives. By democratizing access to financial services and products, DeFi can empower marginalized and underserved communities, thus contributing to more equitable economic participation. This shift in financial dynamics also presents new dimensions in accounting, as the decentralized nature of DeFi transactions demands innovative accounting standards and practices to ensure transparency and compliance.

2. RATIONALE OF THE STUDY

Financial inclusion is defined as having access to reasonable and useful financial products and services, such as transactions, payments, savings, credit, and insurance, that meet one's needs. Financial Inclusion is so important that it is also one of the 17 sustainable developmental goals of the G20s and The G20 reaffirmed its commitment to implementing the G20 High-Level

Guidelines for Digital Financial Inclusion.

In order to achieve financial inclusion, around 1 billion individuals worldwide gained a banking account for the first time during 2010 and 2018. In 2017, 69% of adults worldwide had an account. Financial technology solutions, a few of which need smart phones and which that have grown rapidly, have now been introduced

in around 70 countries. Lakhs of poor customers who were previously marginalized are now migrating from exclusively money-based operations to official banking via smartphone or other modern technology. Blockchain is enabling this breakthrough by allow underbanked and unbanked populations to access the financial system. With the advancement of the idea of decentralizing access by financial technology (FinTech) companies, a digital economy is beginning to take shape. By establishing an ecosystem built on transparency, openness, and efficiency, decentralized finance (DeFi) is extending the potential of financial technology Through this project, I aim to dive deeper into how Decentralized Finance (DeFi) might improve financial inclusion for Generation Y and Z by examining how much DeFi is known about and used by Gen Y and Z and evaluating their digital and financial literacy. I also aim to look at the obstacles in the way of their DeFi involvement and suggests ways to overcome them.

3. LITERATURE REVIEW

Risk of an investment is DeFi: Decentralized Finance (DeFi) is marked by alluring rewards intertwined with significant risks. One major concern lies in the technological vulnerabilities of smart contracts, where any error can trigger system-wide failures, highlighting the reliance on flawless code execution. The volatile nature of cryptocurrencies used as collateral poses a threat, as asset devaluation could lead to borrower asset liquidation. (OECD, 2022) New protocols and pools, while promising higher profits, introduce uncertainties regarding income generation and the reliability of coverage pools posing as insurance. (Peterson. K. Ozil, August, 2022) Third-party data reliance compromises data quality and availability, while the use of admin keys creates susceptibility to data theft, potentially resulting in smart contract breaches. Interconnectivity risks within DeFi expose dependencies between protocols, where a single failure could have widespread consequences across multiple applications, emphasizing the intricate and precarious nature of the entire DeFi ecosystem. (Locke, June 2021)

Insurance: Blockchain-based smart contracts help to expedite insurance processes and improve claiming procedures. DeFi technologies such as Compound and Pool Together enable unsupervised interest-based mechanisms for borrowing and lending assets.

Payment Solutions: Compared to historical payment methods, DeFi provides faster, safer, and more transparent alternatives, making it enticing to the unbanked population.

Gaming and eSports: DeFi coins can be utilized in console games and eSports to construct incentive or reward structures (Anwar, May, 2021) (Piñeiro-Chousa, August 2022)

Margin Trading: For margin trading, DeFi projects such as Compound and dYdX have created decentralised and non-custodial lending protocols.

Platforms for Prediction: DeFi-based prediction platforms such as Augur enable consumers to exchange assets by forecasting or predicting the result of future events.

Savings: DeFi projects such as Pool Together, Dharma, and Argent provide no-loss savings options to prevent fiat currency inflation. Stable coins are asset-backed cryptocurrencies that have the potential to lessen the overall instability of the cryptocurrency system and become a viable worldwide payment option.

Tokenization: Asset tokenization, which constructs, distributes, and maintains digital assets on a blockchain network, is a key component of the DeFi environment and ushers in a new economic model.

Key Benefits of DeFi over Conventional Banking:

One of the primary benefits of DeFi is its transparency. Because DeFi is built on blockchain technology, all activities are recorded on a public ledger that anybody can audit. This improves openness while also lowering the possibility of fraud or manipulation, which can be a serious issue in traditional finance (Edelman, May 2015). Furthermore, by eliminating middlemen, DeFi can reduce expenses and boost efficiency. Banks, brokers, and counterparties are vital intermediaries in typical financial transactions, but they often add considerable fees and delays to the process. Smart contracts and other DeFi technologies can perform transactions automatically, removing the need for intermediaries and lowering expenses (Kaidong Wu, October 2019).

This paper examines the potential of DeFi in lowering the risks connected with traditional finance. They point out that DeFi has the ability to lower the dangers of criminal activity and corruption by employing blockchain technology to guarantee transparency and immutability. They also claim that DeFi can provide superior risk

management tools, such as automated smart contracts, to reduce counterparty risk. Furthermore, (Codruta Boar, January 2020) investigate the possibility for DeFi to disrupt the traditional financial system. As stated by the researchers, DeFi can provide a better transparent and competitive economic sector by offering innovative financial services and goods that conventional banks may not be able to provide.

Evolution of Decentralized Finance:

The origins of blockchain can be traced back to the 1990s. The concept of a cryptographically secure chain of blocks, which eventually evolved into what we now call a blockchain was initially proposed by Haber and W. Scott. Satoshi Nakamoto eventually went on created the first blockchain technology, Bitcoin, in 2008, which has subsequently extended into a variety of applications other than cryptocurrencies.

2008-2013: Bitcoin was introduced as the first blockchain application in 2008. Since then, the technology has been employed for a variety of other purposes, leading to the evolution of blockchain (Abdulhakeem, 2021)

In 2013- 2015 The deployment of smart contracts on a second-generation blockchain system signified the start of the second phase of blockchain technology. In 2013, Ethereum was established as a new public blockchain with additional features than Bitcoin, allowing financial assets like as loans and bonds to be represented. In 2018-2020: Blockchain technology is still expanding, and a decentralized network that integrates communications, data storage, smart contracts, and open platforms is required. Decentralized Applications (DApps) are being developed with a blockchain network as the backend and a user interface that accepts any programming language. DeFi is at the forefront of blockchain technology, incorporating decentralization (Zhou, June, 2021) (Heppding, March 2022).

4. RESEARCH GAP

Although there exist multiple research papers on DeFi and Financial Inclusion as two separate topics, there only exist a handful of papers that cover the impact of DeFi on financial inclusion. The papers that have spoken about the impact, have not kept the study restricted to a particular age group alone which might affect the accuracy of the study as the entire customer base of DeFi itself covers only Gen Y and Gen Z. Most of the literature reviewed, have focused on the technical aspects of Blockchain and DeFi which has resulted in low importance given to the consumer perspective of the topic. Most of the literature reviewed have failed to

understand the barriers that might affect the potential of DeFi to increase financial inclusion. By understanding how people perceive DeFi to be, we may be able to arrive at conclusions as to what needs to be changed to achieve financial inclusion.

5. RESEARCH OBJECTIVES

1. Determine the extent of DeFi awareness and knowledge among Generation Y and Z. 2. To understand how Gen Y and Gen Z perceive CeFi and DeFi.
2. To investigate the characteristics that influence DeFi adoption among Generation Y and Z.
3. To analyze DeFi's ability to improve financial inclusion among Generation Y and Z. 5. To assess the constraints and concerns connected with the adoption of DeFi.

6. RESEARCH METHODOLOGY

The following paper aims to examine the meaning of Decentralized Finance, how is it being used and what could be the barriers that stop people from utilizing the platform and its direct platforms. The paper's aim is to understand its objective, usage and prospects keeping in mind its growing popularity and complete technology dependence. As mentioned previously; in order to make this a qualitative study, I have streamlined my research to mainly the majority of the users of digital financial platforms: Gen Y and Gen Z. Some key phrases used in this paper includes Blockchain, smart contracts as explained above. Through my research I sought to confirm or deny the importance of these factors in understanding the prospects and aspects of the spread of DeFi in India. Responses were received from the age groups (18-50), focus groups being 18-25 and 36-49. Since our secondary data was specific to India, I seek to examine the extent to which these factors contribute to DeFi influence all around the world.

Sampling Size, Convenience Sampling Technique, and Research Method:

In the pursuit of investigating the landscape of Decentralized Finance (DeFi), our research enlisted a carefully selected sample size of 124 respondents. This sampling size was chosen deliberately to extract pertinent insights, with a particular focus on the perspectives of Generation Y and Generation Z, the digitally savvy demographics of India.

Sampling Technique:

The research embraced the convenience sampling technique, a pragmatic approach that enabled the gathering of data from readily accessible participants. Our survey was thoughtfully distributed among college students in India, ensuring a targeted approach for engaging with Gen Y and Gen Z. Convenience sampling was employed for its efficiency in reaching the intended demographic swiftly.

7. DATA ANALYSIS AND INTERPRETATION

1. Name
2. Email Id
3. Gender
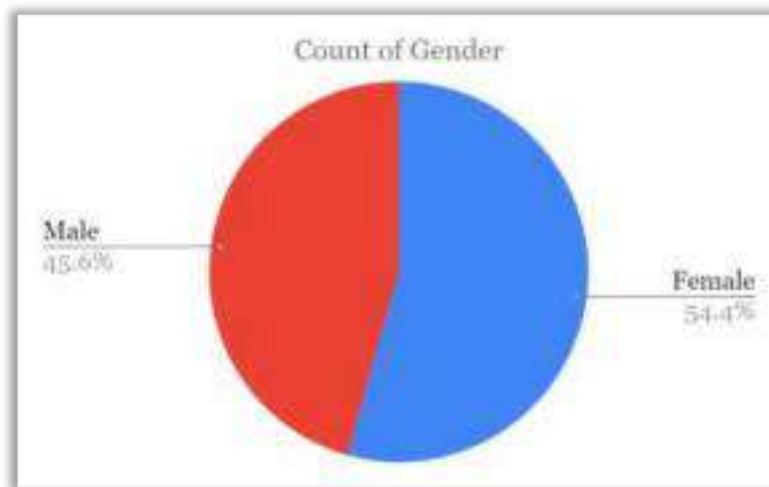
Figure 1 represents the gender of the respondents.

4. Age Group
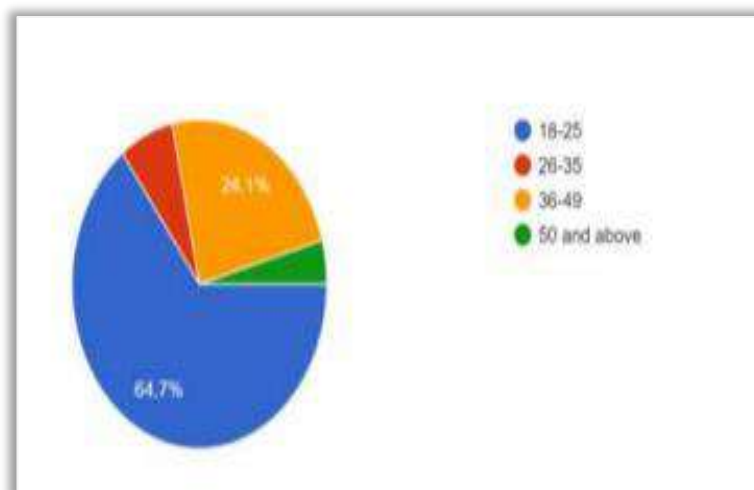
Figure 2 represents the age group of the respondents.

5. Have you heard of Decentralized Finance?
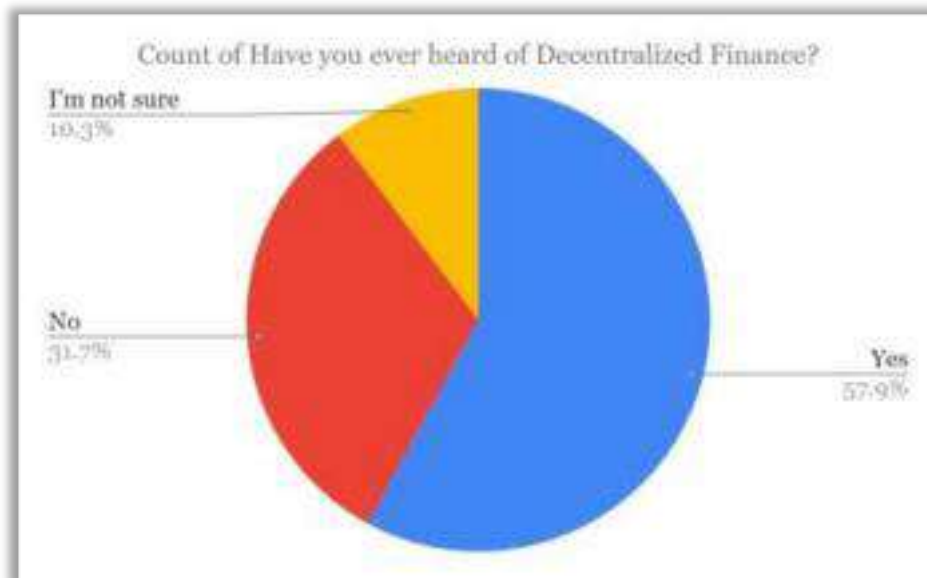
Figure 3 represents the awareness of the term "Decentralized Finance" among Gen Y and Gen Z

The above pie chart shows the level of knowledge people have when it comes to knowing and understanding about the term "Decentralized Finance".

The question in the survey was made to analyze the knowledge of the people who might have some knowledge regarding this subject which has been doing rounds from the past few years. The graph clearly shows that out of a sample space of 124 people spread over 3 generations, 31.7 % of the people do not know about the term "Decentralized Finance". 57.1 % of them say yes and the rest 10.3 % of them are not sure about the term and have a high chance of not knowing it. This data clearly shows that a good number of people of the sample chosen are aware of DeFi showing that the topic is now trending and pe and has quite seeped into the lives of the people. The respondents giving the answer as "No" and "not sure "can be accounted for the following reasons

1) The majority of the respondents being undergraduate students- 18-20 years old, might not be exposed to a deep technological aspect of the finance world and might have not got a chance or resources to utilize it.

2) The demography matters a lot. The survey is being conducted in India which specially has the DeFi factor

at just the beginning stage. People in India are just getting to know the technical terms but there is still a lot of confusion and haywire knowledge from here and there without a proper streamline of knowledge.

6. How would you rate your knowledge of Decentralized finance tools and platforms like Cryptocurrencies and Blockchain technology on a scale of 5? (5 being the most knowledgeable)
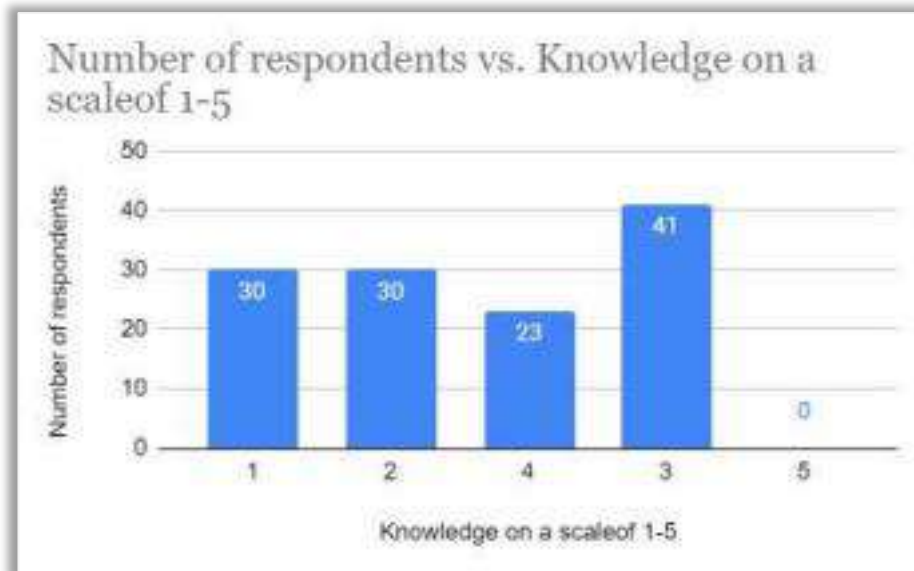
Figure 4 represents the level of knowledge on tools like Cryptocurrencies and Blockchain Technologies among Gen Y and Gen Z

This bar chart above showcases the people's knowledge about the term "Cryptocurrency" and "blockchain". The question's objective was to try and understand if people who were surveyed know about these terms that are making the buzz in the financial world. Out of 124 people surveyed, 41 people rated their knowledge as 3. 30 have answered 1 and 2 and 23 have answered 4. The results show a clear picture that most people say yes when asked about these terms as compared to the results when asked about the term "Decentralized Finance".

This maybe because:

1) As compared to DeFi which is comparatively a more technical term however when we talk about "blockchain" and "crypto-currency", they are terms used more casually in today's world. Every aspiring finance geek wants to learn about these new financial terms and a lot of sources like news, media, social media etc. provides them with the knowledge. At the same time, they might not really know about what is crypto and block chain actually based on.

2) The number of people who have rated their knowledge to be 5 is 0. This shows that although the majority of people do know what the terms are. Their knowledge on the same is restricted to the data

available on the everyday sources they are exposed to. Although trending, most people perceive these topics to be "complicated", "Too technical" hence the limit in knowledge.

7. Have you ever used a Decentralized Finance application or platform?
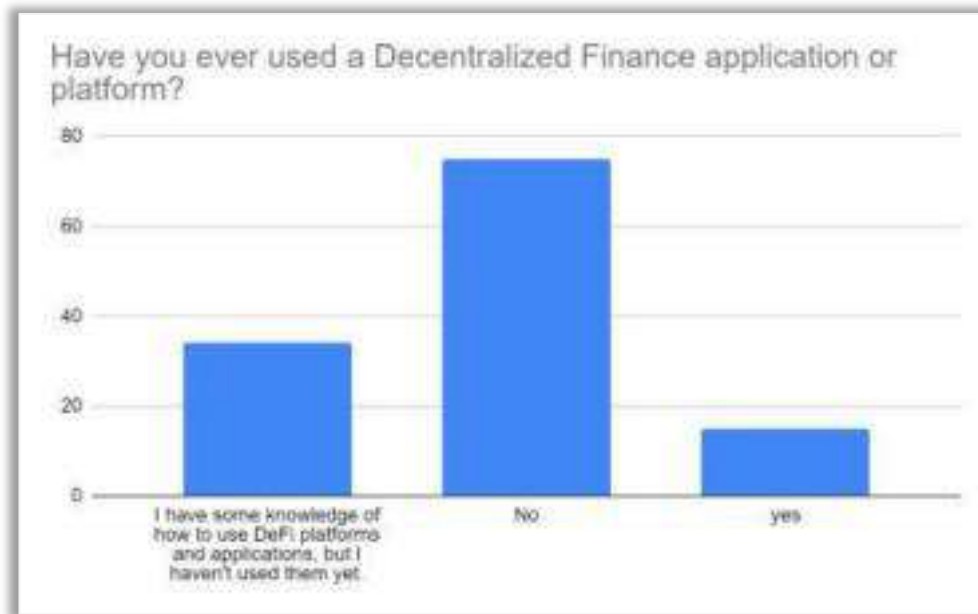
Figure 5 represent the level of usage of DeFi tools like Cryptocurrencies and Blockchain Technologies among Gen Y and Gen Z

The bar chart above asks the users if they have ever traded in Crypto currency like bitcoin, Ethereum, and other Crypto-coins. The chart shows that 71 people out of a sample space of 124 people have not/never traded or used crypto in their real lives. 34 people state that they have knowledge about it and the rest 19 say that they have traded or used crypto currency in real life. Out of 124 people, showing that DeFi is still in its infancy stage and not many people want to experiment with it.

The contributory reasons may be:-

Demographic Factors: The survey is taken in India and consists of responses from various age groups ranging from Generation Z to millennials and even have some respondents, who are above 50 and above. Talking about DeFi in India, the status it would be defined as "just beginning". It's more of an idea that people are starting to talk about. They are starting to learn about the terms and getting introduced with the technology; however, its long till we see frequent use of DeFi in India due to the following factors.

Risk Perception: The cryptocurrency market is still young and unstable, with sharp price swings. A lot of individuals would consider it a dangerous investment and be reluctant to put money into something they think is unreliable.

Complexity: For those who are not tech-savvy or have little experience with financial investing, the process of purchasing and trading cryptocurrencies can be complicated and confusing.

Absence of Regulation: Some people may be concerned by the market's lack of regulation. People can be reluctant to participate because they are concerned about the safety and security of their investments.

Trust Building: DeFi being in its infancy stage, People of the country need time and proof so they can start believing in the process and take a step forward to experiment and experience the service. With the platform having the potential of high rewards, it's easier to lure people but facing high-risks in the same can demotivate people to enter and continue with the service.

8. Would you be willing to use DeFi platforms and applications in the future?
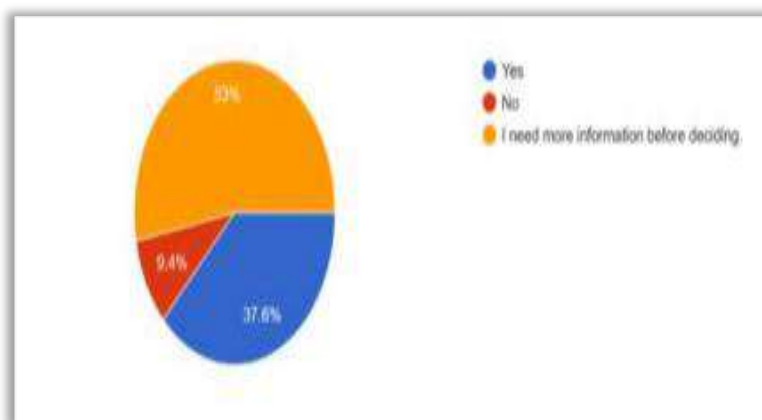
Figure 6 represents the willingness of the respondents to use DeFi tools like   Cryptocurrencies and Blockchain Technologies in future

It can be interpreted that although 37.6 % of the respondents are willing to use DeFi platforms, most of the people i.e. 53% of them told they require more information before deciding if or not they'd be interested to work. This clearly states that there exists a gap between their willingness and the information available to them. It is necessary that all these people receive financial education which is majorly focused on DeFi platforms. It calls a need for better awareness from existing sources.

9.   Do you currently have a credit/debit card?
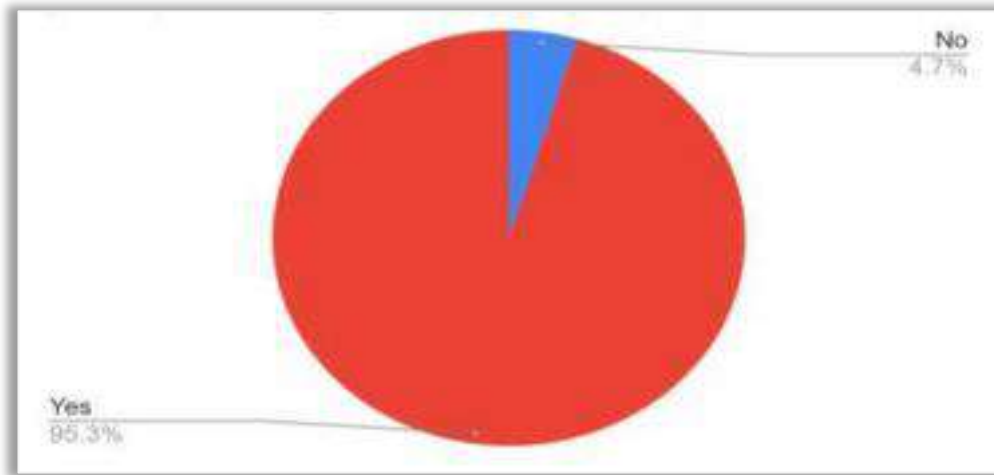
Figure 7 represents the Percentage of people showcasing the ownership of credit/debit cards

The above pie chart shows the responses to the question that was meant to study the number of people owning a debit or a credit card. According to the data given by the respondents, out of 124 people, 95.3% of them own a credit/debit card whereas only 4.7% of them do not own either of them. This shows that in today's generation, people are trying to go more digital. They have reduced using cash as much as they did a few years back. It took time for people to shift from cash to plastic money or UPI but with a huge percentage of growth of people shifting to digital mode of payment. Seeing this trend, increases possibilities of people ready to welcome DeFi into the financial space

10. How easy do you find it to access traditional financial services like opening a bank account or applying for a loan?
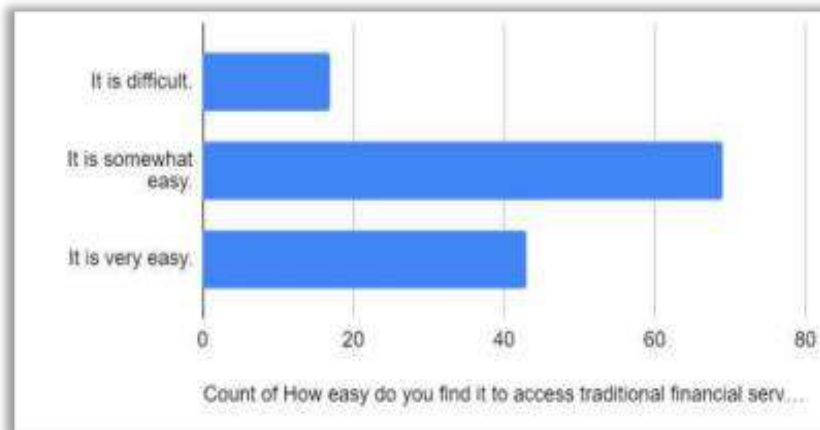
Figure 8 represents the ease/ accessibility of usage of traditional financial products/services

The above pie chart shows the responses to the question that was meant to study the ease of accessibility and perception of the level of difficulty while using Banking products/services. While 53.3% of the people responded saying using these is moderately easy, 33.3% people have said it is very easy to use these services. Only 13.2% out of a sample of 124 people have commented saying it is difficult to use these services. This proves that traditional banking has a commendable penetration rate in a country like India that nearly 85% of the respondents have already established decent familiarity and find it effortless to use. '

This ease and familiarity of use might be a factor that shall increase the inertia of people's mindsight while switching to DeFi platforms.

11. How often do you encounter issues while using your bank account or other financial products (such as savings accounts, loans, investments, credit/debit cards etc.)?
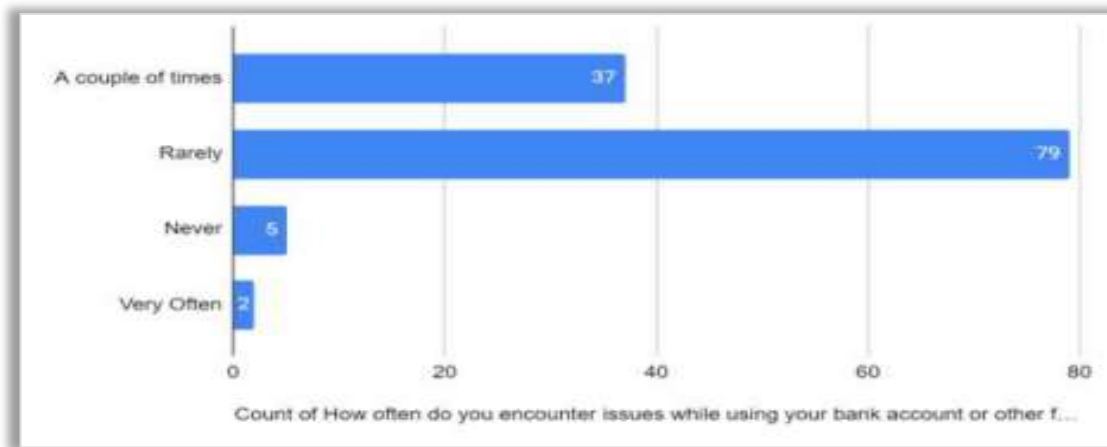
Figure 9 represents the frequency of problems faced while the usage of traditional financial   products/services by the respondents.

The above pie chart is a response to the question that was meant to understand how many people have faced problems while using traditional financial products/services for payments. According to the graph, 79 people out of 124 have rarely faced problems while making payments, however the other 39 did face a few issues and are not extremely satisfied with their experience.

After talking to some of the people who said that they did face issues, I interpreted that most of them had technical issues which led to a bad experience. Technical issues included money being debited from their account and not reaching the desired account of the other person. Despite lodging a complaint, the people were not reimbursed with their money because the organization wasn't clear about the transaction path.

However, this is not the case when we talk about the DeFi space. The method is completely transparent and borderless. DeFi does not allow us to be dependent on intermediaries and the transaction path for every activity is very clearly visible. It cannot be changed once it is inputted.

12.   What were the challenges you faced?
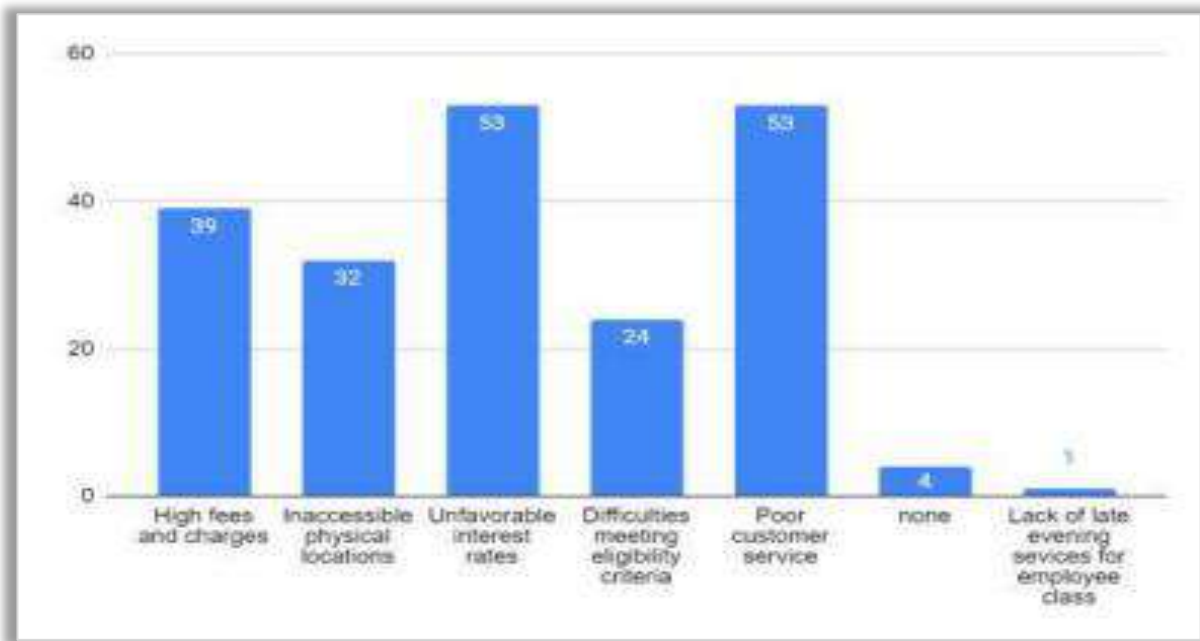
Figure 10 represents the problems faced while the usage of traditional financial   products/services by the respondents.

As a follow, up to the previous question the above pie chart is a response to the question that was meant to understand the nature of problems faced while using traditional financial products/services for payments. The major problems being poor customer service and unfavorable interest rates with 53 votes each, the problem of high fees and charges is the second major problem faced by 39 people. Inaccessible physical locations and eligibility criteria have 32 and 24 votes respectively. This shows that there exist problems in the traditional banking sector which need to be resolved. The biggest problem of unfavorable interest rates can completely be eliminated with the usage of DeFi. Similarly, the problems of high fees and charges and inaccessible physical facilities can also completely be mitigated with the replacement of DeFi tools like Bitcoins. Hence, the necessity and the potential of DeFi to mitigate the existing problems and to improve the customer satisfaction which indirectly increase the customer base indirectly promote financial inclusion.

13.   On a scale of 1-5, how satisfied are you with the level of transparency provided by traditional financial institutions?
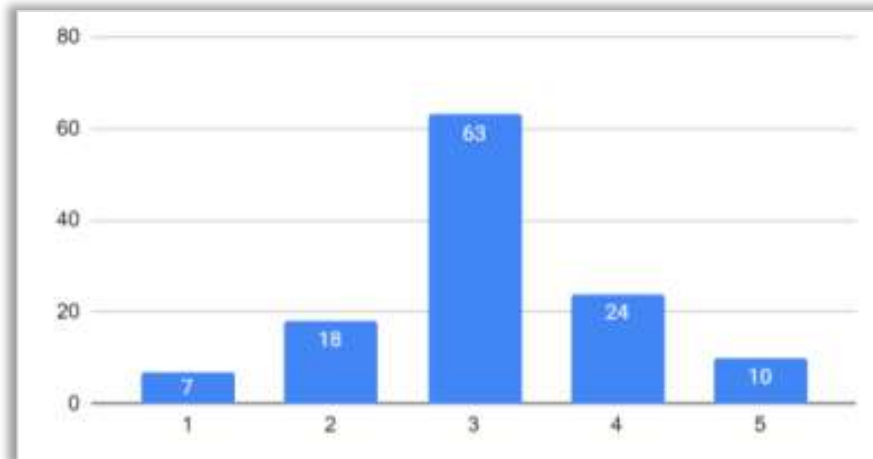
Figure 11 represents the level of satisfaction of respondents with the services provided by traditional   Banks.

The above graph shows the level of satisfaction provided by banks in terms of transparency provided by conventional banking systems. The majority of respondents have voted for the number 3 which clearly shows that they are neutral about this i.e. they are neither satisfied nor dissatisfied with this. This is where DeFi platforms have an edge as they are 100% transparent. This indirectly indicates the potential of DeFi in eliminating the problems existing in traditional financial procedures.

14.   On a scale of 1-5(with 5 being the highest), how willing are you to use technology to run everyday transactions and control your financial products and services instead of traditional intermediaries like banks?
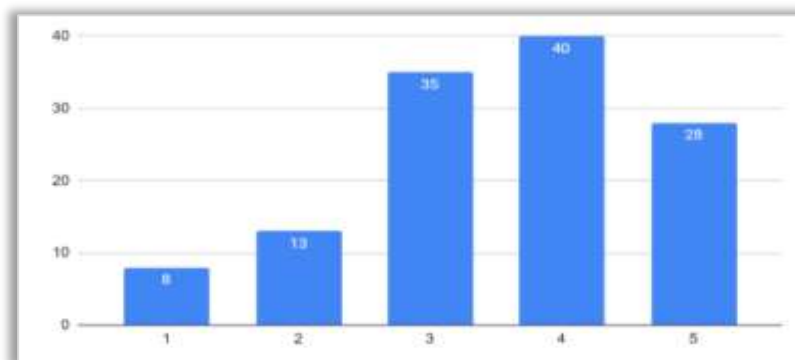
Figure 12 represents the willingness of respondents to let technology take over their everyday   transactions by replacing them with the services provided by traditional banks.

The above graph shows the responses of the people regarding the opinions of people to adopt technology to run everyday transactions and control our own financial products and services instead of traditional intermediaries. According to the graph, the maximum responses show 4 which shows that many people are willing to let technology take partial control. With 28 votes to 5, people are extremely comfortable and are ready for technology to take complete control. This means the Indian market, especially Gen Y and Gen Z are positive and exhibit openness towards adopting the technology. This indirectly indicates the positive potential of DeFi in future and how positive the response shall be if properly penetrated. However, a lot of respondents also have responses as 3 showing that they are neutral towards adopting technology.

What can be interpreted from this is that people are somewhat inclined towards using technology and replacing centralized mechanisms of financing, but have not yet used it. Which calls for better education and improved awareness as to how to use the platforms that are willing to be used.

8. FINDINGS

The data is primarily conducted from age groups 18- 50 to try and understand the take of Gen Y and Gen Z on CeFi and their opinion towards some features of DeFi. The age groups included 58.4% responses from 18-25 years, 6.4% from 26-35 years, 32.8% from 36-49 years and 2.4% from 50 and above.

The survey targeted Gen Y and Gen Z, with 58.4% aged 18-25, aiming to gauge their grasp of DeFi. Over half had some awareness of DeFi, but only a minority claimed substantial knowledge. A mere 15.3% had traded in cryptocurrency. Looking ahead, 37.6% expressed interest in using DeFi, while 53% sought more information before committing. Plastic money dominated, with 95.3% owning credit/debit cards. In banking, accessibility was moderately easy for 53.3%, but nearly a third faced issues, primarily poor customer service and high fees. Satisfaction with traditional banking was neutral overall, showing scope for improvement. Lack of awareness was the primary barrier to DeFi adoption, with education cited as crucial by 57.2%. Education, incentives, integration, and trust were highlighted as key factors to enhance DeFi usage, each receiving significant attention between 38.7% and 57.2%.

9. FUTURE SCOPE

Exploring the possibilities of decentralized finance to improve financial inclusion: A study of Generation Y

and Z is a research paper that has a lot of potential for future research and advancements in this area.

Empirical Studies: Future academics can carry out additional empirical studies to look into how Generation Y and Z use DeFi platforms. Understanding the DeFi acceptance rate, the difficulties users encounter, and the advantages users derive from using DeFi platforms would be aided by this.

Security and Privacy: Studying the security and privacy of DeFi platforms can be another topic. Researchers can investigate the numerous security risks that DeFi platforms encounter and consider ways to reduce those risks. It is possible to investigate privacy issues in DeFi transactions and look at user privacy enhancement strategies.

Policy Implications: The research study emphasized how DeFi may broaden financial inclusion. The policy ramifications of DeFi for governing bodies and regulatory agencies can be studied in further research. The paper makes the case that governments may try to establish an environment that is favorable for DeFi in terms of regulation, and that additional research can look at the precise policy measures that governments can implement.

Infrastructure for DeFi: As DeFi expands, additional infrastructure is anticipated to be created to support it. Future studies can examine the possibilities for new DeFi infrastructure to improve financial inclusion, including layer 2 solutions and cross-chain interoperability.

Comparison with Conventional Finance: Ultimately, a comparison between DeFi's advantages and those of traditional finance can be made in future research. This would aid in comprehending DeFi's ability to change the financial landscape and the advantages it can provide for those who are shut out of the established financial system.

10.   CONCLUSION

Through this paper, I have reviewed various literature works and have conducted a primary survey in order to better understand the current penetration of DeFi amongst the masses. I started off with the paper by

reviewing existing literature to better understand the technical aspects of DeFi, uses and applications of DeFi, CeFi v/s DeFi. By conducting a survey, I was able to understand the depth of knowledge Gen Y and Gen Z have about DeFi, how well versed they are with traditional banking products/services, issues they are currently facing with the existing traditional and digital financing system, barriers that limit their usage of DeFi and what can be done to improve their usage. It can be concluded that although some features of DeFi like increased transparency, reduced interest rates and brokerages, high returns, non-vulnerability to the current banking collapse in the economy make DeFi irreplaceable in today's digital world, there simultaneously exist a few barriers that may hinder the rate at which DeFi is currently growing. Some of these include lack of education and awareness, complexity and technicality involved in the usage of these platforms, vulnerability to security breaches and the absence of clear regulations and government measures to streamline theses platforms. The paper also makes the case that governments should try to establish an environment that is favourable for DeFi in terms of regulation, and that additional research can look at the precise policy measures that governments can implement. In this study I have highlighted the perception of DeFi in the minds of the Gen Y and Gen Z and have come up with measures that can be taken to change their perception. it still cannot 100% or even near 100% stated if DeFi is going to fully replace the centralized system but combining both the systems and taking benefits from their best parts is something that can definitely be predicted in the near future.

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Boom in Land Prices in India after Covid-19

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ABSTRACT

In this research paper we would discuss about how at the time of Covid 19 when everything was paused so the normal factors responsible for growth in land rates were not playing out but then to after the end of lockdown and covid-19 it was realized that real estate and land market has shown tremendous growth in rates other than the contrary assumption that rates would fall drastically and distress selling will be seen the hidden reason for the same was the flow of money from informal economy in land market which gave a high inflation in the prices due to use financial influx in the market.

*Keyword*s**: Land rates, informal economy, real estate

JEL Classification Code: A1

1.   INTRODUCTION

Land can surely be termed as one of the most important resources on earth as by the basic definition of land it is one of the 3 basic factors responsible for enabling living which is land water and air and the significance of the same can be understood by taking a brief look. History of this globe land and titles ruled where around 6000 years ago people started to possess land and hold it with themselves and since them it has been the prime cause of power prestige and importance in the world every ruler every empire and still now all the countries are run on the basis of the piece of land that they hold and still all geo political issues can be resolved by

proper distribution of terrestrial land. But in today's world land has transformed itself from more than just being a symbol of power to life and blood of any economy in this world as today land is the only and one of the most significant factors of production for any country to prosper as every commercial and non-commercial activity can be directly or indirectly correlated with position of land if its basic agriculture land industrial spaces office spaces residential land and many more.

Because it cannot be moved, land differs from other movable goods that may be purchased and sold. Its land cannot be transported, but the structures built on it may be disassembled and relocated. It is only possible to purchase and sell land use rights. When and where it is possible to trade land rights for predetermined sums of money or delivered services, there are land markets. A healthy land market, which in turn necessitates a healthy land administration system, is the foundation for banks and other financial institutions' ability and capacity to lend money. Now if we talk about the land rates they vary from kilometre to kilometre depending on various factors which are responsible for change in prices in land market latest understand some most important and major factors out of them

Some of the basic factor responsible for determination of land rates are summed below.

New projects and prospects in that area like development of any industrial space or any new residential colony. Government schemes better announce near that area like anywhere or new road projects which are passing away from that area or industrial corridors getting built there. Another key aspect is the availability of water as land would be of very little value if ample water is not available there because it will restrict the functions that could be performed on it to a high extent, like any tube well or existing will in that piece of land or supply of water from pipeline etc. The proper legal papers of that land which will denote the disputes of that land and search report for any prospective errors in the records clearing any fog from its title entitlement. Another key factor is the accessibility to the land parcel from various roads connected. Does it have private access, or do you have to cross another land for your access? Is it directly connected to any main road and has a front page? What is an incomplete interior with just walking access. The neighbourhood of that area defines the kind of people surrounding you. Are they good neighbours or bellicose? Resistance from locals. The land use is defined by the government for that particular area and various permissions like building permissions and FSI development permissions. Demand and supply of various lands in that area: the number of buyers and number of sailors ready to sell their piece of land at different prevailing rates. Land market has also concentration of emotion in that area like if certain rumours has spread of New road approaching their

transactions will stop as no one would be ready to sell and prices would go more than 200%. What existing amenities also play a crucial role in land rates, whether there are any schools, hospitals, parks, entertainment zones, or other amenities near your land or whether it is in the centre of the city or on the outskirt of any town? Another important factor is lands are not of uniform size and shape so the specification vast constrain the time period of giving the payment the form of payment the size of land the quality of soil is the land plane or does it have slope in it are various other factors responsible and when these all factors were playing their role in the market came the most unexpected thing Covid-19 with the first case of Covid in India on 27th of January starting the rumours in market with increasing number of cases but then the final day came when the complete lock down was imposed on 25th of March 2020 which was completely unexpected and put a huge pose to the whole real estate and land industry and markets as this market depends highly upon the physical contact.

General Industry Practices:

Starting from first sitting with brokers to know different pieces of land which are available in the market and contacting with buyers and sellers then in the second step visiting various land parcels physically to assess its quality and then series of various meetings with wire and seller for negotiating various terms of buy and sell and rate for it and then at the time of transfer of money, which take place from literally one hand to another in the form of cash and covid-19 was the youth said back which disrupted the flow of the whole industry by restricting the movement of people and their meetings, physical contact due to lock down the people were sitting at their home and no action could be taken as purchasing a land or selling a land is a use transaction which can't be done through just verbal communication also this is involved in making it highly difficult for people to rely on each other list they meet them and token amount is received or agreement has been formed between them according to the terms and form of payment.

Also, the registries which were getting due at that point of time can't be executed due to shutdown of movement and all government officers the earlier made agreements were getting lapsed due to the circumstances and for the first-time land owners were unable to realize their asset in the time of crisis due to the situation. And then after the break of more than two months unlock was starting from first of June first of all their pile of registries which were pending from last 2 months and due to that hustle and the number of new transactions were starting at a low pace. And with all this when the market was getting stabilized to stand up again on its feet when the second wave of covid-19 strike in India which was far more brutal, damaging

and dangerous and had fatal effects once again disrupting the flow of market but when the second wave was about to get over.

Technicalities of the land market are that first you as a buyer or as a seller have to spread the news that you have to sell or buy or land to selected brokers with your desired rate then the second party approaches you for the first meeting and initial talks after that the second party would visit the land first if they want to buy it and see the on ground situation of it then the series of final meeting take place where the rate is decided and negotiations are done then the buyer carries out search report to see whether the land is legal or not and verified its paper work then the guideline value of the area is assessed and the amount to be paid in white or in bank balance is decided after that in case of part payment first so that it is done then after few days agreement is done having the terms and time of payment and after that at the due date the registry is done in which the bank balance is transferred according to the registry value and 11% registry charges are paid and rest amount speed by hand overring the cash after few days of the registry the new owner receives khata book of the land or legal papers of the land and namantaran is done on revenue records on the name of new owner. Land market is a highly decentralized market as every state has their own land records and revenue records but there is no Central depository which compiles the records of all the states to know the total land holdings of any one person as in Madhya Pradesh MP is the corresponding authority to look forward on land deals and stuff and in the same way in other states.

2.   RATIONALE OF STUDY

Land market has always fascinated me because of its high dynamic nature and variability as a reason of n number of factors involved in it in fact any and every news can affect land rates of that and to properly analyze and predict this market as always been one of my leisure time activity as it can lead you to earn in amount of wealth in very short period of time and as every market have different timeline of process different reaction time to any new news different kind of people that live there who hold the land having different emotions. We are always been hearing about stories of how people who bought the land 20 years 40 years before in just penis are no worth in millions and millions and still there are some people who successfully placed their land investment and have managed to complete with the growth of 2 to 4 decades in just last 5 years because of the promising future and development in India but due to have monetary involvement and very high rest taking capacity you have to be more than 100% sure to enter in this market and should have observed date

for a decent period of time that's why I decided to take this topic to have a better and this is an opportunity to know about land market.

3.   LITERATURE REVIEW

Sr. No.	Author	Name and Indexing	Data /Study	Finding	Cita tions
1.	SANJOY CHAKRA VORTY	A New Pricei Regime: Land Markets in Urban and Rural India	Economical impacts on real estate, price inflations. Economic and Political Weekly, 2013 - JSTOR	In the past ten years, land values in both urban and rural India have soared significantly, by a factor of five in urban areas and perhaps much more in certain rural regions. This study uses similar global data to show that metropolitan prices are significantly higher than is consistent with earnings and that these rates' maxima are unusually high. Similar to metropolitan pricing, rural prices can be very high relative to other places in the world. This argument holds that increasing land scarcity, an increase in the money supply, increased incomes from foreign, white, and black sources, and widening income and wealth disparities may all be used to explain the current situation. Having said that, this goes beyond a bubble.	45
2.	Sebastian Morrisi, Ajay Pandeya	Lands markets in Indiai: Distortions and issues	A study on how land and markets are bought and sold ver. The module deals in finding the ways that impact the prices and stability of land. India infrastructure	The contentious topic of land acquisition in India is examined in this article, with particular attention paid to the severely regressive system in place from independence until the middle of the 2000s, which resulted in the eradication of millions of families, the rapid uprising against acquisitions that began around 2006–2007, the adoption of a new law in 2013 to improve justice and rights, and an attempt to amend that new law in 2014–2015. The main issues raised by this process are: Why did a regressive system persist for such a long time? What caused its demise during the past ten	38

				report, 2009 - papers.ssrn.com	years? These questions are best addressed within the context of a political-economic system in which rising political rivalry has undermined the electoral logic of "majoritarianism" and strengthened "wedge issue" politics	
3.	Rayaprolu Nagaraj	India's dream run, 2003-08: Understanding the boomi and Its aftermaths	An analysis of the 54-year financial plan and its implications over real estate. Economics and Political Weekly, 2013 - JSTOR	The Indian economy saw five years of rapid expansion beginning in 2003. Up to the financial crisis of 2008, the economy expanded at a rate of about 9% annually. Why did there be a boom? Have liberal changes been ongoing and successful? Or was it a debt-driven, cyclical boom that occurred at a particularly strong period of the global economy? According to this study, the latter scenario prevailed, leaving behind elevated corporate debt and frothy asset markets. It was driven by private sector investments, supported by growing national savings, and resulted in previously unheard-of foreign exchange inflows. With the world economy in a semi-slump and the macroeconomic balance unstable, the debate over India's policy is centered on how to stop the present downturn. Extending bank loans to the unofficial economy and farmers, which were restricted during the boom years, on flexible terms and improving public infrastructure could be the most sensible course of action at this juncture in order to ease supply shortages. The high leverage in the corporate sector is the cause of this.	115
4.	Jyotie Bhoji	Impact of Covid-19 at Real Estate Industry within	The deep dive on the impacts of Covid 19 by an Indian Researcher.	India's economy is not an exception to how the current epidemic has affected economies in other nations. The IMF projects that India's growth rate would be 1.9% for the next fiscal year. Previously, the prediction for this was 5.8% by 2021.They represent a significant risk to the economy of India.	4

		References to India	Int. J. Manag. Human, 2020 - ijmh.org	COVID-19 will have an effect on every industry. Indian real estate has already started to lose its demonetization, and other Reformers were taken aback by the establishment of lockdowns throughout this pandemic. Transactions in real estate have ceased as well as activities. Real estate in India needs to get ready for the post-election environment. COVID-19 environment and should be ready to use a variety of cutting-edge, technologically advanced tactics to get back to their track. Understanding the prior to the pandemic real estate market and investigating the effects of COVID-19 on the Indian real estate market are the main topics of this article. It also discusses the potential advantages and disadvantages of becoming a special participant in the real estate market.	
5.	Rashmi Jaymin Sanchaniya	the Effects of Covid-19 on the Real Estate Industry in India	Baltic Journal of Real Estates Economics, 2021 - sciendo.com	One of the worst downturns in recent memory appears to be hitting the global economy. India's economy, like others, has suffered as a result of the most recent epidemic. India's growth rate was earlier predicted by the International Monetary Fund to be 5.8 percent, but will now be 1.9 percent for the upcoming fiscal year. The Indian economy faces a serious problem as a result. The workers' unexpected return from underground to the employers made it difficult to resume work. Due to the significant labour market limitations, developers had a difficult time finding enough jobs that would generate new employment. The severe plague that threatens the country burdens the inhabitants. This outbreak was unexpected because Indian real estate was still recovering from the demonetization (the month of November 2016) and other occurrences. involves putting an end to real	4

				estate transactions and building construction. To get back on track, Indian real estate has to plan for a post-COVID-19 scenario and be ready to adopt many innovative, cutting-edge technological activities. The study's objectives are to investigate the Indian real estate market prior to the pandemic and the impact of COVID-19 on it. The secondary data research approach is employed in this work. It also talks about the dangers and opportunities that different players in the real estate market face.	
6.	Arupa Mitrai	Lands Prices in Indians Cities: Dimensions and Determinants of Changes	This dives deep into the price's occupant lands and the wasteland, while giving a deep insight over how the determining factors are changing in the real estate era. Economic and Political Weekly, 1990 - JSTOR	A significant portion of the population no longer has access to relatively acceptable homes due to the sharp rises in the cost of land and building supplies in urban areas. The pace of immigration, the size of the city, and the degree of industrialization and commercialization are all positively correlated with price per square meter of land. Therefore, big towns that draw immigrants from rural and urban regions inside and outside of the state and that are experiencing rapid economic growth need to pay more attention to controlling the price of land and the spread of slums. How successful has the government's policies been in this area.	7
7.	J-GIBS	Impacts of COVID-19 on Real Estatex Sectorz in India , Volumey12 , Number 1,	The proper impact of Covid on the health of humankind *J-GIBS, Volumez12, Number 1,*	The worldwide coronavirus pandemic has claimed the lives of over a million people, yet this isn't the first epidemic to strike the planet. Actually, at least five of these epidemics—SARS (serious acute respiratory disorder), swine flu, zika, and avian influenza—have struck the globe in the last 10 years or more. Each of them had a significant impact on both domestic and global stock markets. During these difficult times, it was said that the Nifty 50 fell as low as 15%; nevertheless, the next	1

		January-December 2020	*January-December 2020.*	year, it increased to over 90%. This pandemic affects every economic sector. This also applies to the Indian real estate market. This also applies to the Indian property market. The article looks at the performance of the Indian real estate industry using DLF, Phoenix Mills, Godrej Properties Ltd., Oberoi Realty, and Prestige Estates as five example companies. Several important factors are included in the study, including net profit margin, interest coverage ratio, profits per share, return of equity, and net revenue.	
8.	Niharikae Mehta, Seema Guptaa, Shipra Maitraw	House prices and COVID-19 pandemic shocks in India: a nonlinear ARDL analysis	The state of the Indian subcontinent during the pandemic. International Journal of Housing Markets, 2022	India is one of the nations that has been badly impacted by the COVID-19 epidemic. The surge in cases resulted in high unemployment rates, unstable economic conditions, and slow growth rates throughout the nation. The Indian real estate market suffered as a result. The nation's economic growth has been significantly hampered by the drop-in property values due to the relatively long-lasting correlation between the housing market and the GDP. This essay aims to assess the asymmetric impact of COVIDw-19 shocks on home prices in India.	-
9	By James Chong, G Michael Phillips	COVIDz-19 losses to the real estate's markets: an equity analysis	Finances Research Letter, 2022 - Elsevier	This article is the first to look at the financial impact of COVID-19 on the total market value of office buildings in the United States. The COVID-19 epidemic has had an especially negative impact on commercial real estate due to the confluence of isolation from society, trade barriers, telecommuting, is and business closures. Data on the drop in the value of business properties in the US is computed through the examination of traded REITs. We use firm stock value models from MacroRisk.com to assess how shifts in the economy impact corporate real estate prices. When	4

				pricing shares, these models include important economic aspects. We conclude that, in absence of the strong monetary and fiscal policies adopted in the initial weeks of the pandemic, real estate market would have surely experienced substantially bigger reductions.	
10.	By Ikechukwu Uchehara, Mansur Hamma-Adama, Kwadwo Ayeh Obiri, Naeimeh Jafarifar, David Moore	Impacts and risk management of COVID-19 pandemic on real estate supply chain	International journal of …, 2020 - intrest.utm.my	Covid-19 has already had an instant effect and is starting to have a significant influence. The stay-at-home strategy has caused a standstill in property sales and other growth sectors. Developers may encounter delays due to the impact of the pandemic and inherent risks on the built environment. Concerns have been raised over the potential long-term detrimental effects of a recession on sources of income, such as rental and mortgage payments, which are already suffering greatly in the short term.	24
11.	Cécile REMEUR	Understanding money laundering through real estate transactions	C REMEUR - 2019 - policycommons.net	Through the utilization of real estate, criminals can enjoy assets and generate earnings while masking the source of the cash used for payment. A variety of strategies are employed, including cash or shady financing plans, overpriced or discounted pricing, opaque businesses and trusts, or unreliable third parties that pose as legitimate owners. As a result of high-profile instances of money laundering in land in several EU capitals, awareness is expanding.	8
12.	J. D. Agarwal2	Money Laundering : The Real Estate Bubble1	JD Agarwal, A Agarwal - Finance India, 2008 - Citesee	The real estate industry has been the most widely used and simple means of money laundering for over a century. Beginning in 1995, the global real estate market have experienced phenomenal	8

| | | | | expansion throughout the last 20 years. An estimated US\$ 2 trillion to US\$ 2.5 trillion, or around 6-8% of the global GDP of \$44.444 trillion, is laundered through legitimate channels each year. | |

4.   RESEARCH GAP

After doing the literature review, it came to my knowledge that one of the most crucial parts of the key reasons which led to the increase in land prices, specifically at the time and after Covid, was not clearly described in any of the research papers. As land is an investment option, this level of rise in land markets indicates a high influx of amount getting in land, but no one has touched upon this topic about the quantum of cash it was showing in this market, which led to this historic boom in prices.

5.   RESEARCH OBJECTIVES

1.   To know about why the prices rose of real estate after Covid
2.   To know which type of real estate has what effects
3.   To see was this trend followed in other cities as well

6.   RESEARCH METHODOLOGY

For carrying out the research the complete data could be gathered by the combination of secondary and primary data so for that first I would be making a Google form and circulating it to my friends and family to get their general views about land market and its reactions best to their knowledge and for the more comprehensive part of the research I would be contacting various stakeholders brokers and traders of land market and real estate who knew the market current rates and its working in depth and are already as a performing or have performed in it for which I will be taking there short interviews to know about how things played out after Covid and what was the key features according to them

For the same I have conducted surveys in Pan India across 15 cities from various States to know about the basic trend line which was followed in that city which would help us to draw out the conclusion

And in secondary data I would be referring to various research papers and journals to find about the depth of informal economy in India and how it places a crucial role in the inflation of land rates and real estate and how the same thing amplified after and during Covid 19.

7.   Data Analysis and Interpretation

Google Form
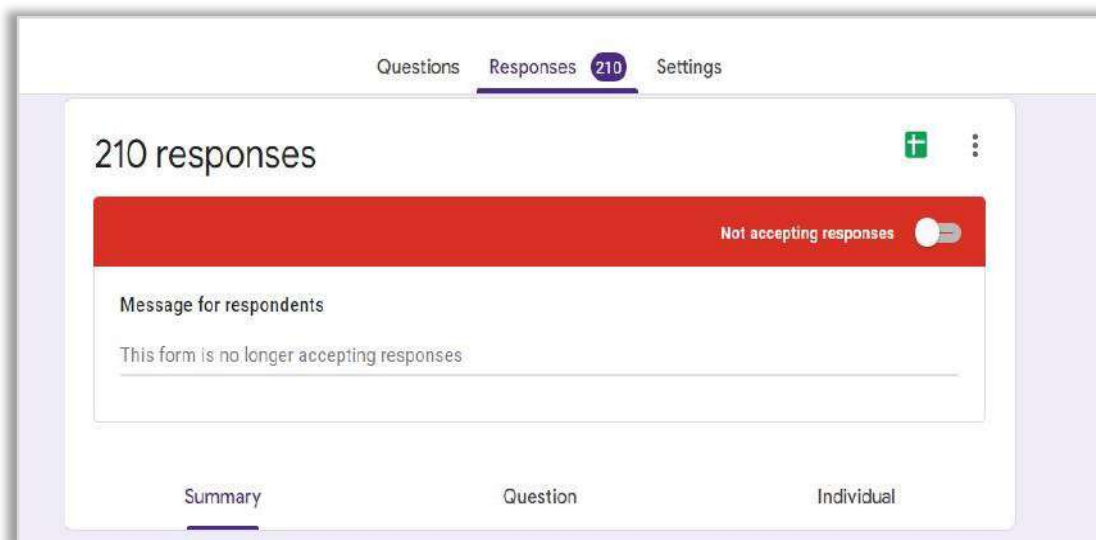
Now for getting in general view we have to do Google form survey which would be circulated to various people of various age group and geographical regions as much as possible to get the maximum response and know about the general Trend going on in land market

1.   So the first question was of eighth group of the responded this was to understand our different age groups who have knowledge of this market at different levels respond to the survey people of age group above 40 would be highly experienced and must have interacted for known about the land market or themselves performed in it at least once which were 49.8% of our survey the other is group post 25 to 40 know about the market as they must be probably earning and would have started investing in it the percentage was 25.1% and

the third age group cap was 18 to 25 who are just now understanding all these concepts and are figuring out how all these things works the percentage of this sample space is 25.1%.
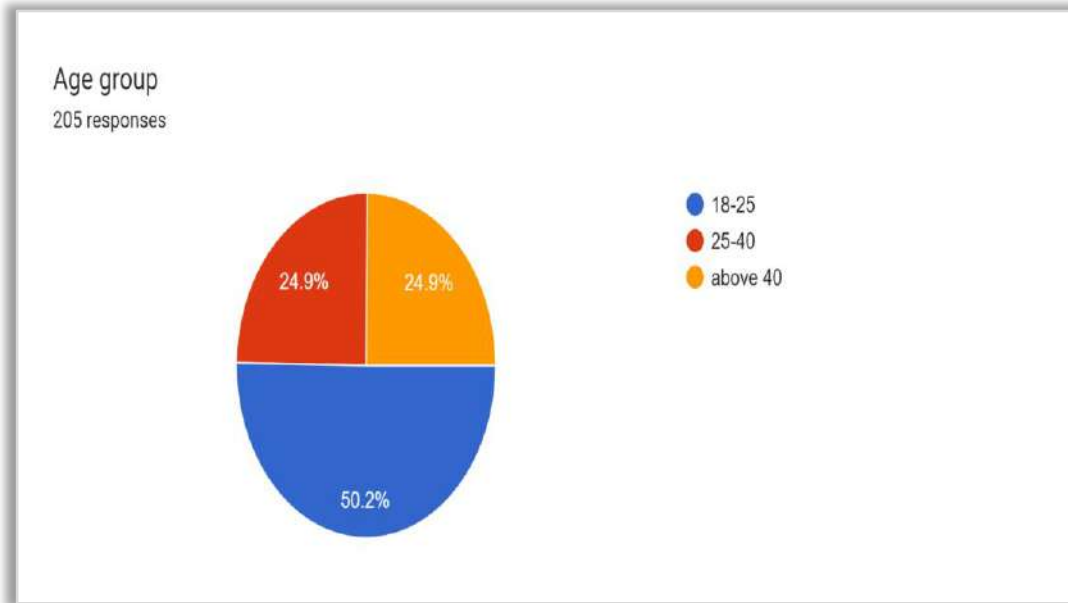
2.   The second question was India has higher amount of black money do you agree as Black money is the key factor responsible for the high inflation real estate market the survey indicates 40.4% of people agree to the statement 51.7% strongly agree to the statement and merely 7.9% of people disagree to the fact that no India does not have high amount of black money prevailing in the market
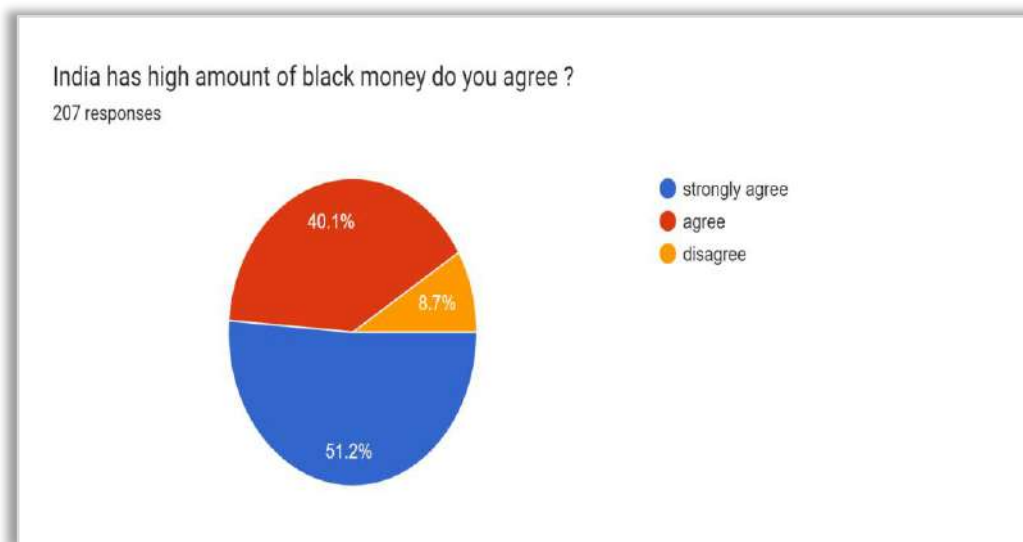
3.   The next question was India has a prominent informal and parallel economy do you agree as the formal economy and its investment are driven in places like banks stock market mutual fund etc but informal economy realize only on real estate and land investments so 46.8% of people agree to the statement 42.4% strongly agree to the statement and just 10.8% people think that parallel economy is not much prominent in India

India has a prominent informal/parallel /black economy do you agree
207 responses

- strongly agree
- agree
- disagree

46.4% 11.1% 42.5%
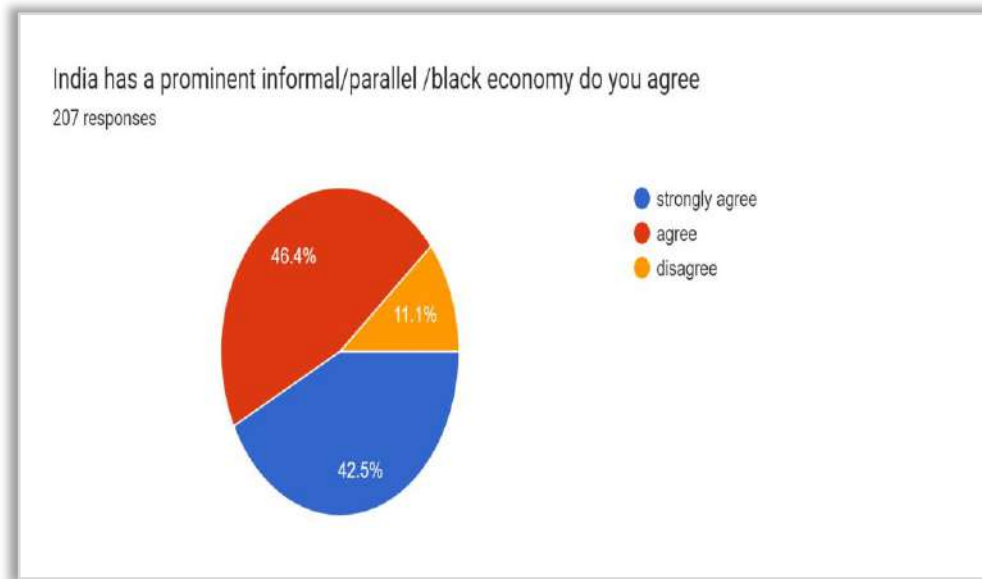
4.   The next question was land investment can be best option for parking black money due to its high cash involvement it is a known fact hi cash involvement is there in any line deal other than white component and the same can be seen in the responses that 70.6% people agree to the statement and 29.4% disagree

land investment can be best option for parking blank money due to its high cash involvement ?
205 responses
- agree
- disagree
30.2%
69.8%
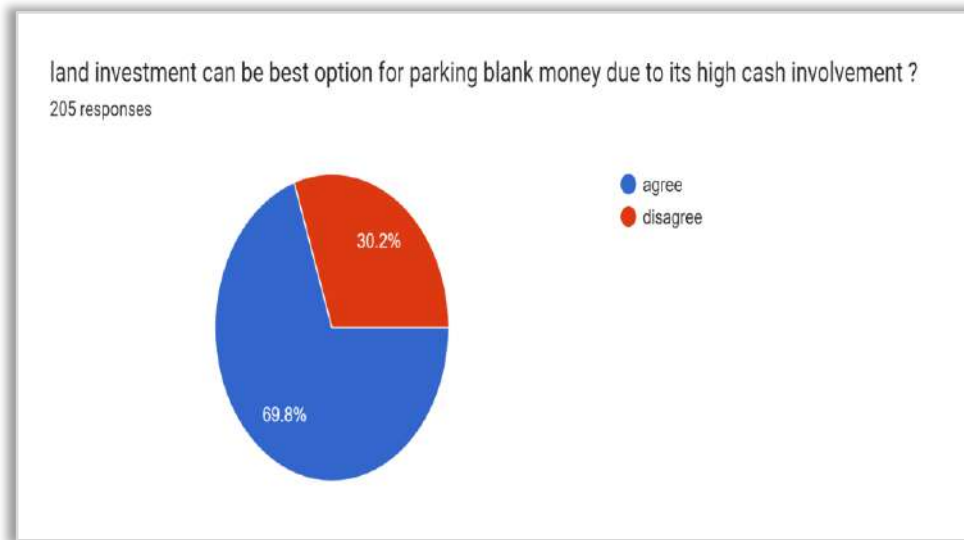
5.   This question was written with the motive to understand how the buying in land and real estate have increase in last 2 years which are resulted in the Bull run which we see today for that the question was have any of your relative or acquaintance bought any of the land recently and shockingly 74.8% of people have themselves or in their relation bought land in last 2 years and only 25.2% have not brought any land or real estate.

Have any of your relatives or acquaintance bought and land recently
206 responses
- Yes
- No
25.7%
74.3%
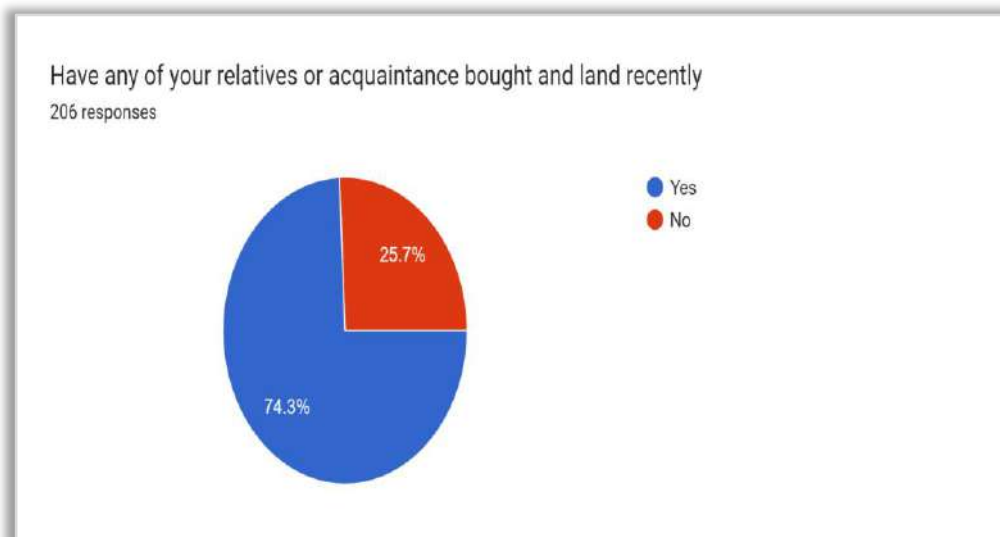
6.   This question was aimed to know the extent of Hike in prices in land and real estate in various cities by asking the responded to rate the Hike on the scale of 125 where one being normal increase and 5 being extremely high increase in the rates of the line 23 months after cold 2.5% of people have responded to the

scale 1 of normal increase 3.9% have responded to the scale 2 14.2% of people have responded to the scale 3 then the maximum 105 responses or 51.5% is for scale 4 and 27.9% is for scale 5

Rate the boom in land prices after 2-3 months of Covid according to you on the scale of 1-5 (1-normal, 5- extremely high)

208 responses

Informal Economy Analysis:

Some experts believe that 62% of India's GDP is made up of the country's black economy. It exceeds the revenue produced by both industry and agriculture put together. It exceeds what the Indian government spends.

Extortion and drug selling are two examples of illegal economic activity that result in financial benefit. Other examples include forgery and fraud.

The term "informal economy" refers to economic operations that operate outside of set pricing and are not granted the benefits and privileges provided by laws and other regulations. This class includes non-market activities like the assemblage of domestic services or favours provided by friends and neighbours.

Unrecorded economy refers to economic activity that evades institutional regulations that specify the information requirements of state applied math authorities. information that has been purposefully withheld for legal or illegal grounds, or as a result of practical challenges in data collection.

Subrosa employment and non-taxable non-public transactions are included in the Unreported Economy class. This type of economy aims to circumvent the legally binding financial regulations.

Some experts believe that 62% of India's GDP is made up of the country's black economy. It exceeds the revenue produced by both industry and agriculture put together. It exceeds what the Indian government spends and its relevance can be understood by the percentage of taxpayers in India.

On Tuesday, the Parliament was notified that, of the 136 crore Indians, little over 8 crore taxpayers (both individual and corporate) have enrolled for the 2019–20 fiscal year.

Nirmala Sitharaman, the Finance Minister of India, made the following statement in a written response to the Rajya Sabha: "8,13,22,263 individuals have paid taxes on their income in the nation of India during Assessments Year (AY) 2020-21 that covered the fiscal year 2019-20."

Now as only around 5.8% of people are paying taxes so all this money goes in the market to extent credit in the form of hundi chitties which is the informal financial instrument it is A written, unqualified directive known as a "hundi" is given by one person to another to pay a certain amount of money to the individual specified in the order. Due to their informal character, hundis are not subject to the Negotiable Instruments Act of 1881 and have no legal standing.

In which any person can take credit on hundi Chitti which has very high interest rates and sometime even daily or hourly interest rates to take credit but at the time of coward when transactions in this market was stopped and the fear of losing the credit extended because of death or demise of the person at the time of coward. Was prevailing that's why the backbone of informal economy the life in blood of it all inflow of cash from hundi market got part into land market.

Personal Interview And Survey In Various Cities:

1.   Ranchi (Saroj Singh)

Mr. Saroj is a real estate trader and developer on talking to him he converts that in the city of Ranchi price give rapidly in chira Chas area where only few societies are set up right now after Covid and that's why heard lot of farmland and low rates whereas rates sold just light increase in the prime reasons of the area like ring road area and City light House due to already high rates.

2.   Patna (Sumit Singh)

In the city of Patna, the outer region of the city where big land parcels are available the prices rise to almost 200 to 300% because of high disposable income and new railway station name – Patliputra setup in that area where as the prime area of the city near PMCH hospital having extremely high rates before covid started a slide decrease in the rates due to low growth opportunity in that area.

3.   Hyderabad (Neelima Kanchanakuntla)

She is the proprietor of a major developer firm of Hyderabad. She told that the prime areas of the city that are Jubilee hills or banjara hills already having one of the highest prices in the country did not show much increase in the prices. But the outer areas of the cities having spare land and just some parks like in Gachibowli or areas like Mokila, kokapet, gandipet showed much higher increase.

4.   Lucknow (Manish Gulati)

On talking to Mr Manish Gulati who is the leading businessman in the city of Lucknow and carries out business of wholesale trader give us the valuable inside that there was great hike in the prices of real estate and land after Covid but now they have reached stagnancy in City places like Gomti Nagar but market still continuing its Bull run in malibad area with somewhat away from City.

5.   Dehradun (Rajveer Singh)

Mr. Rajveer is completely involved in selling buying and speculations on various real estate on talking to him he mentioned market took time of 3-4 months after lockdown but then the same trend line was followed by Dehradun that places like Sahashtradhara which comes on outskirts of city showed huge gain but main city places like Daalanwala showed slight increase in rates.

6.   Haryana (Pawan Kumar)

Mr. Pawan has been Dealing in Govt authorized land and real estate of HUDA (Haryana Urban Development Authority) where he specializes in buying land on Auction he told us that at the time of lockdown distress selling was going on where he had to sell of his plot in sector 18 a prime and lavish colony at Rs 47 lakh and later on while trading he brought a plot of same specifications in more than 1.25 crore and then sold it in profit.

7.   Indore (Ajay Taose)

Mr. Ajay is in close coordination of various developer big brokers landlords and large buyers to talking to him it came to our knowledge that exterior western side of Indore having satellite towns like Kanadiya showed increase of 2 -3 times in due to increased number of transactions in that area due to new road project whereas colony plots did not match with that level of rise in prices.

8.   Pune (Sanjay Pagariya)

Mr. Sanjay is a businessman in the city of Pune carrying out the business of cosmetics and conversation with him he highlighted that rates in the area mandai area for shops 3 crores 2 years back and today it has reached to almost 7 crores in present day and the same trend line has been followed in the far exterior areas for farmlands also. The general trend line in Pune has shown almost double the crisis at every place.

9.   Hazaribagh (Mukesh Kumar)

In Hazaribagh Mukesh Kumar who is the real estate broker and agent and carries out is business in the same field gave does a deep inside that how in the interior area of Suresh Nagar the rates rise from 18 lakh to 25 lakh per hectare whereas in Singhania area which comes in the outer part of the city the rates grew from 12 to 14 lakh per hectare.

10.   Moradabad (Mohit Varshney)

On talking to Mohit Varshney who is a businessman Moradabad he gave us the inside that surely the rates have risen the after covid-19 but he was unaware of the rates in prime area sector but had earned a good sum of money but reading various land parcels in Badayun area which is exterior part of city.

11.   Calcutta (Pardeep Singh)

Mr. Pradeep Singh is businessman in Calcutta on talking to him about the land rates before and after covered he gave us the inside that Alipore is a prime area of the city which showed slight increase in the rates where is the exterior area called rajarhat having low prices should use increase in the prices due to higher demand and height transactions in that area.

12.   Siliguri (Sajjan Agarwal)

In Siliguri where the opportunity to talk to Sanjay Agarwal who told us that in matigara which is the outer part of the city agriculture lands exchange hands many times and every time at high profits but sevoke road which is City Centre should normal increase in prices

13.   Noida (Chaitanya Bansal)

Noida city is divided among various sector on talking to Chaitanya Bansal it came to our knowledge that the prime areas of the city having very high rates did not show any extraordinary movement or transactions in real estate but the outer sectors like the sector 150 151 had increase number of transaction and high growth in rates

14.   Surat (Dhirendra Jain)

Mr Dhirendra Jain is a well-established businessman in the City of Surat and has been in the close with various real estate deals and market on conversation with him he highlights it change in rate after covered near his mil area which is currently going on at 2100 for square meter and earlier used to be 1400 to 1500 per square meter in the area of Hoziwala industrial estate area due to high demand and paying capacity of people to consume more of black component.

15.   Ajmer (Naveen Sharma)

In the city of Ajmer on talking to Mr Naveen Sharma who is the lead real estate broker and trader there give us the inside that people living in the center of the city in a very congested area decided to move out to more spares colony like DK Nagar Maharana Pratap colony kothara Yojana rate before Kuwait use to be 70 to 80 lacs and now they have reached to than 2 crore and the same trained line of high increase in rates of agriculture land was also seen for road nakad road where the paying capacity of people led to multi fold increase in prices and overall boom in the market.

8. FINDINGS

1.   The prices of unorganized real estate like agricultural land grew much more in comparison to prime City areas.

2.   Majority of people having black money had parked it in lands having low prices.

3.   Survey indicates buyers had very high paying capacity and that too for big land deals.

4.   Extraordinary increase has been seen in areas having low cost and high opportunity near cities.

5.   In cities, the rates for high and majority of parts have to be paid through banks. That's why they showed a slight increase in their rates.

9. CONCLUSION

It can be concluded after the survey and personal interviews that this scenario of increase in prices of real estate has been followed throughout India in various cities will slight variations but the one thing that was common was there was high paying capacity of the buyers due to black money involvement and which led to more increase in the prices of farmlands or lands in outer portion of the cities having low guideline value consuming high black component and slight increase was seen in the prime cities areas were already the rates and guidelines were high.

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11.   APPENDIX

India has a prominent informal/parallel /black economy do you agree

◯ strongly agree

◯ agree

◯ disagree

land investment can be best option for parking blank money due to its high cash involvement ?

◯ agree

◯ disagree

Have any of your relatives or acquaintance bought and land recently

◯ Yes

◯ No

Rate the boom in land prices after 2-3 months of Covid according to you on the scale of 1-5 (1-normal, 5- extremely high)

	1	2	3	4	5
	◯	◯	◯	◯	◯

Exploring Student Perceptions, Engagement, and Dropout

in Massive Open Online Courses (MOOCs)

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ABSTRACT

Massive Open Online Courses (MOOCs) have grown popular in India and throughout the world in recent years. MOOCs have increased in popularity in India as a result of the enormous demand for excellent education and the limited supply of seats in traditional educational institutions. Numerous Indian colleges and institutes have collaborated with MOOC platforms such as Coursera, Udemy, and edX to provide learners with online courses. Because of their flexibility, cost, and accessibility, these MOOCs have grown in popularity. Globally, the demand for continuous learning and professional development possibilities has spurred the growth and development of MOOCs. The COVID-19 pandemic has also spurred online learning uptake, resulting in a rise in MOOC enrolments. The aim of this study was to better understand the perspectives and attitudes of college and university students in Pune towards MOOCs and investigate the factors that affect student engagement and dropout from MOOCs. To meet the research objectives, a questionnaire survey method was employed to gather primary data from higher education students in the Pune city of Maharashtra.

Keywords: MOOCs, Massive Open Online Courses, student perceptions, student engagement, student dropout, online learning, education.

1. INTRODUCTION

A massive open online course (MOOC) is a web-based distance-learning programme that is either free or paid which is designed for large populations of learners and students who are spread out geographically.

MOOCs are online programs that students can access from anywhere. These courses frequently include standard course content that is published on the web, such as educational videos that have been videotaped or recorded, reading material, practise problems, online examinations and assignments, interactive learning modules, and discussion with other students in forums.

Compared to other countries, MOOCs have recently increased in popularity in India. However, the use of these online courses has grown exponentially in recent years across the country. Its expansion may be credited to several factors, such as the growing acceptance of online education, the creation of electronic-learning programs, and the expansion of the internet in India.

The Government of India has also played a significant role in the promotion and advancement of MOOCs in India. The government announced the National Mission on Education through Information and Communication Technologies (NME-ICT) in 2014 in order to provide quality education to Indian students. The MOOC platform "SWAYAM" was created in 2017 by the government which provides students with access to over 2000 online courses on various subjects. "SWAYAM" has become an easy and affordable means for students all over the country to take courses from reputed Indian universities. Since their introduction, MOOCs have developed tremendously, and enrolment in MOOCs has increased in India lately. Students in India have access to quality education at lower costs through MOOCs, and India is on the round to dominating the global MOOC market. The education system in India is set to change as MOOCs become more popular and access to internet grows.

Massive Open Online Courses (MOOCs) have a very variable completion rate that depends on a number of variables, including the platform, the kind of course, the subject matter, and the demographic of the students enrolled. According to estimates, MOOC completion rates typically range from 5% to 15%, depending on the type of MOOC.

Massive Open Online Courses (MOOCs) have gained popularity due to their accessibility and flexibility, allowing students worldwide to learn from renowned professors without the need for expensive university attendance. Students, particularly working professionals, benefit from the ability to learn at their own pace and on a flexible schedule. MOOCs, often affordable or free, cater to diverse student populations, including those unable to afford traditional education. With a broad range of courses, from computer programming to art history, students can explore interests and acquire new skills. MOOCs also play a crucial role in career development, offering timely information in rapidly evolving fields. In higher education, institutions integrate MOOCs for cost savings, reducing faculty requirements for certain courses. Additionally, the flexibility of MOOCs supports working students, enabling them to complete their education conveniently. Overall, MOOCs contribute to democratizing education, making quality learning experiences accessible to a broader audience.

A review of the relevant academic literature revealed that there is minimal research done on the perceptions and attitudes of Indian students towards MOOCs. There is also minimal research done on the factors that contribute towards student engagement and retention in MOOCs. The purpose of this research is to better understand the overall perspectives and attitudes of higher education students in India regarding MOOCs. The project also intends to identify the elements that drive student involvement in MOOCs, as well as the causes of MOOC drop-out rates. The findings gathered from this study will be beneficial to professors, university staff, as well as MOOC providers. The results may help university staff and professors understand the viability and usefulness of MOOCs, and whether to include MOOCs in the course curriculum. The results will also help MOOC providers to understand where there is scope for improvement and what can be done to overcome the limitations of MOOCs.

Further research can be done to understand the growth of MOOCs after the COVID-19 pandemic and the subsequent lockdown, and if enrolment in MOOCs increased during the lockdown. Researchers can also conduct an exploratory study to discover the link between demographics such as gender, and the probability of dropping out from a MOOC.

2. OBJECTIVES OF THE STUDY

1. To investigate the perceptions and attitudes of students towards MOOCs (Massive Open Online Courses).
2. To determine the elements that impact student engagement in MOOCs.
3. To identify the factors that influence student dropout from MOOCs.

3. LITERATURE REVIEW

A 2016 study by Noa Aharony and Judit Bar-Ilan highlights that the perceived usefulness (PU) and perceived ease of use (PEOU) significantly influence MOOC enrolment. Improving present MOOC systems enhances PEOU, while meeting students' needs boosts PU. The study's qualitative aspect notes changing moods over time, with confidence replacing uncertainty, and emphasizes varying needs and expectations among pupils, advocating for diverse platform choices.

John M. Carroll et al. (2015) attribute low MOOC retention rates to factors like high workload and complicated material. They categorize learners' motives into meeting immediate needs, future planning, curiosity, and forming relationships. Social contact emerges as a significant motivator, possibly surpassing subject mastery for some. The study suggests viewing retention as both a problem and an opportunity, considering learning motives, patterns, and various elements in addressing the issue.

The urgent need for introducing Massive Open Online Courses (MOOCs) in Indian colleges is emphasized due to the global recognition of their value in education for both faculty and students. Corporations are increasingly using MOOCs to encourage employee enrolment, aligning with the principles of ongoing learning in models like Peter Senge's learning organization. The call for MOOC implementation extends beyond students, encompassing all stakeholders and promoting a comprehensive "knowledge ecosystem."

An analysis by Manivannan Anand Shankar Raja and Tomy K. Kallarakal (2020) underscores the importance of making educational programs accessible to the entire public. In a 2020 study by Noura Alhazzani, a quantitative survey revealed that MOOCs significantly impact higher education, leading to a 65% increase in

educational outcomes in Saudi Arabia. The findings highlight the positive influence of MOOC courses on the higher education system.

Nasser Alalwan, Hosam AlSamarraie, Ahmed Ibrahim Alzahrani, and Hanan Aldowah's 2019 research found six critical aspects that directly influenced completion of MOOC: academic ability, previous knowledge, course structure, feedback, social engagement, and social support. It was observed that other elements such as connectivity, course complexity and duration, dedication, enthusiasm, and social conditions only play a supporting function in student dropout in MOOCs.

A 2021 study by César Jorge Soledispa Baque et al. notes a disadvantage of MOOCs and web-seminars, highlighting their widespread availability on social networks, university websites, or specialized training firm sites. The abundance of information on the network can lead to stress and depression, with some organizations charging for certificates, deterring swift completion.

Dr. Odiel Estrada-Molina and Dieter-Reynaldo Fuentes-Cancell's 2022 study identifies communication, motivation, and online activity design as crucial factors for MOOC engagement, citing feedback, interaction, and tailored instruction as potential obstacles.

Vinu Sherimon et al. (2021) identify professional development, schedule flexibility, free access, and certification opportunities as key motivators for MOOC enrolment. Successful completion is linked to high-quality videos, clear instructor directions, efficient course delivery, and helpful instructions. Dropout reasons include missed deadlines, unclear language from teachers, challenging tasks, and a lack of comprehension. The study aims to guide educators and decision-makers in understanding and improving MOOC enrolment, completion, and dropout rates.

According to Kate S. Hone and Ghada R. El Said (2016), completion rates in MOOCs are not significantly influenced by factors such as educational qualifications, MOOC platform, or gender. Post-MOOC student feedback highlights that the perceived feasibility of course material affects the relationship between content and knowledge retention. Effective communication with course personnel emerges as a significant predictor of MOOC retention. Catherine Cheung and Joselyn Goopio's 2020 thematic analysis categorizes dropout

factors into seven themes, including learning experience, participation, curriculum design, technological infrastructure, languages, duration, and scenario.

You Huay Woon's 2019 quantitative research reveals significant positive associations between perceived viability, perceived ease of understanding, and obstacles in MOOCs. The study indicates that students who are more willing to participate in MOOCs believe there will be fewer difficulties, even if challenges may exist. Moreover, students perceiving fewer obstacles experience deeper learning and reduced apprehension, while those feeling scared tend to be superficial learners. The study underscores the substantial impact of MOOC platforms and content on students' educational approaches and psychological functioning.

In 2019, Deng, Benckendorff, and Gannaway identified key issues in MOOC research, including a lack of substantial evidence on non-mainstream learners, oversimplified consideration of learner factors, insufficient reconciliation of approaches to measuring learner engagement, nonsensical metrics for student learning, and unclear connections between key educational factors. Wang and Baker (2015) linked MOOC completion to student motives, revealing that completers are more interested in course material, while non-completers see MOOCs as a learning experience.

Aydin and Yazici (2020) explored reasons for MOOC non-completion, revealing themes such as personal motivations ('other commitments'), platform-related issues (course length, lecturer responsiveness), and curriculum factors. Khalil and Ebner (2014) identified time constraints, lack of commitment, perceptions of remoteness, limited prior knowledge, and undisclosed expenses as significant contributors to MOOC attrition.

Badali et al.'s 2022 analysis identified six motivators for MOOC completion: academic, social, course, personal, professional, and technological factors, categorized into need-based and interest-based factors. Academic incentives were found to have the greatest impact on retention. The study highlighted the use of the self-determination theory and emphasized the indirect impact of motivational variables on MOOC retention through factors like participant satisfaction, self-regulation, attitude towards MOOCs, and degree of involvement.

4. RESEARCH METHODOLOGY

4.1. Research Design:

The project was focused on qualitative research because the study's major aims were exploratory and more reliant on non-numerical data. As a result, an online questionnaire was created because it is a more systematic manner of gathering a larger sample and thereby reducing data collection errors.

4.2. Sample and Procedure:

The questionnaire survey method of data collection was discovered to be the most suitable and resourceful. A questionnaire in the form of Google Forms was used to conduct the survey.

The study's population will include college and university students in Pune, with a sample size of 105 students chosen by random sampling in order to generalise the findings.

4.3. Sample Method:

The questionnaire was sent at random to 150 people, with 105 responding. All the responses were rated appropriate and proper for the sample.

4.4. Survey Design:

The survey was designed with both multiple choice and multiple response questions.

The survey was divided into two sections:

a. Generic Demographic Information: This area included basic information on the respondent's background, such as their first name, gender, and age.

b. Research-related: This portion included 21 questions designed to better understand students' perceptions and attitudes concerning MOOCs.

5. DATA ANALYSIS AND INTERPRETATION

5.1 Demographics:
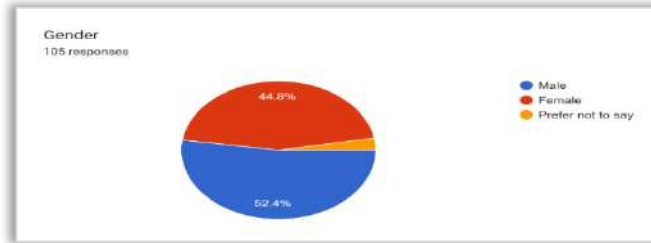
5.1.1 Gender Distribution:

➢   A total of 105 responses were collected, out of which 47 (44.8%) are female, 55 (52.4%) are male, and 3 respondents have chosen not to disclose their gender.
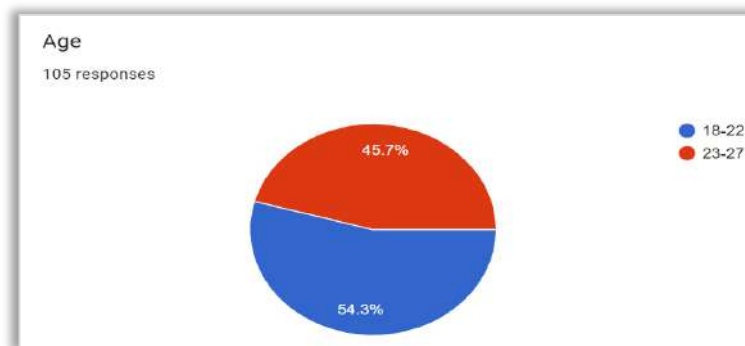
5.1.2 Age Distribution:

➢   57 (54.3%) of the respondents fall in the age group 18-22, and 48 (45.7%) of the respondents are in the age group of 23-27.

➢

5.2 Research Related:
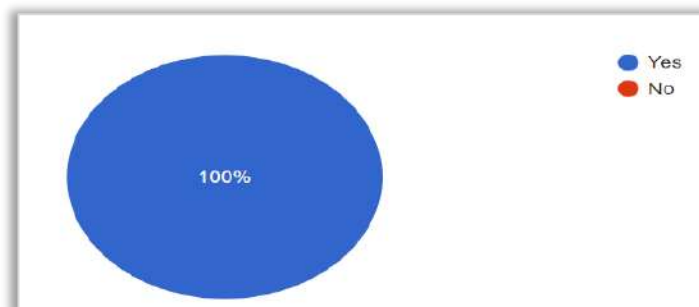
5.2.1 Have you ever enrolled in a MOOC?

All the respondents had enrolled in MOOCs previously.
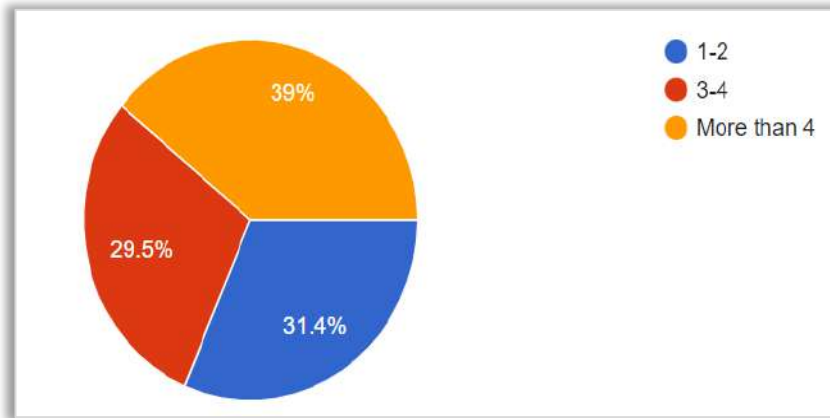
5.2.2 How many MOOCs have you enrolled in?

➢ 33 (31.4%) of the respondents have enrolled in 1-2 MOOCs. 31 (29.5%) of the respondents have enrolled in 3-4 MOOCs. 41 (39%) of the respondents have enrolled in more than 4 MOOCs.
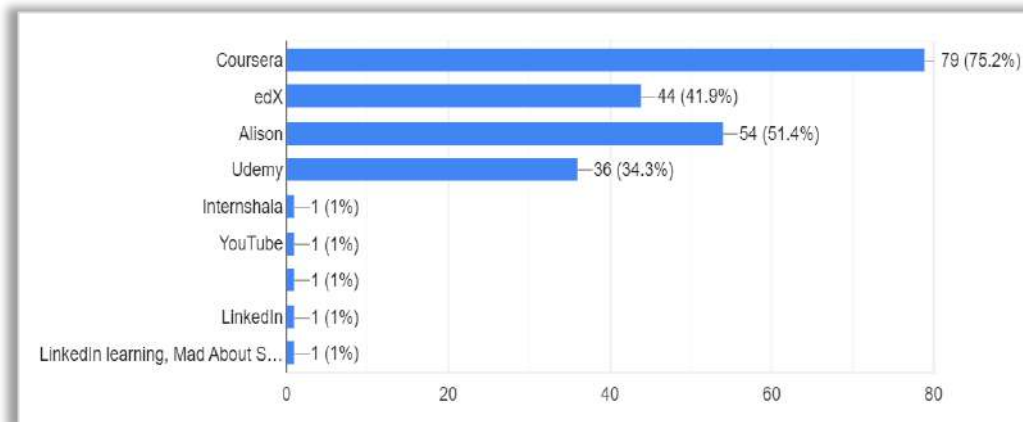
5.2.3 Which MOOC platform have you used?

➢ 79 (75.2%) of the respondents have used Coursera for enrolling in MOOCs. 44 (41.9%) of the respondents have also used edX for enrolling in MOOCs. 54 (51.4%) of the respondents have also

utilized the MOOC platform- Alison. 36 (34.3%) of the respondents have also used Udemy. Other MOOC platforms used by the respondents include Internshala, YouTube, LinkedIn, Mad about Sports.
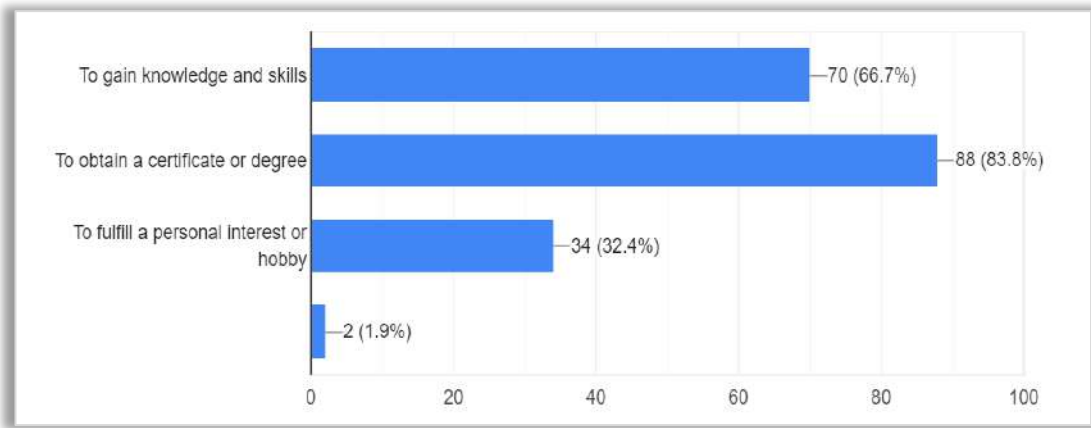
5.2.4 Why did you decide to enrol in a MOOC?

➤ 70 (66.7%) of the respondents enrolled in a MOOC to gain knowledge and skills. 88 (83.8%) of the respondents enrolled in MOOC(s) to obtain a certificate or degree. 34 (32.4%) of the respondents enrolled in MOOC(s) to fulfil a personal interest or hobby. 2 (1.9%) of the respondents enrolled in a MOOC for other unspecified reasons.
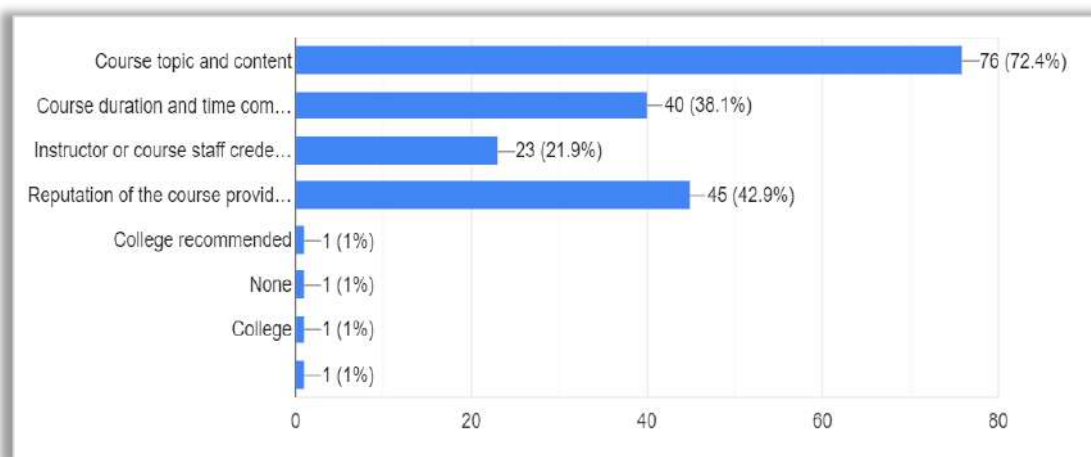
5.2.5 What factors influenced your decision to enrol in a particular MOOC?

➤ 76 (72.4%) of the respondents said that the course topic and content influenced their decision to enrol in the course. 40 (38.1%) of the respondents said that the course duration and time commitment

affected their decision to enroll in a particular course. 23 (21.9%) of the respondents said that the instructor or course staff credentials affected their decision to enroll in a MOOC. 45 (42.9%) of the respondents said that the reputation of the course provider or institution affected their decision to enroll in a particular MOOC. Other factors influencing respondents' decision to enroll in a MOOC include college recommendations, or recommended by professors.
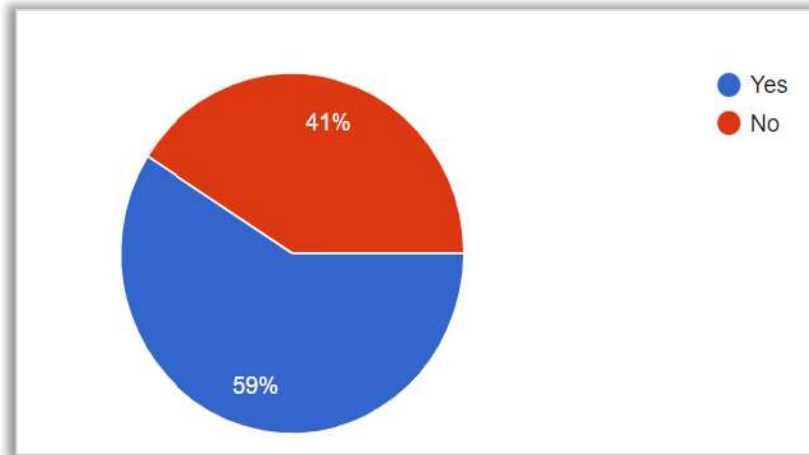
5.2.6 Have you ever dropped out of a MOOC?

➤ 62 (59%) of the respondents have dropped out of a MOOC before completion, whereas 43 (41%) of the respondents have not dropped out of a MOOC before completion.
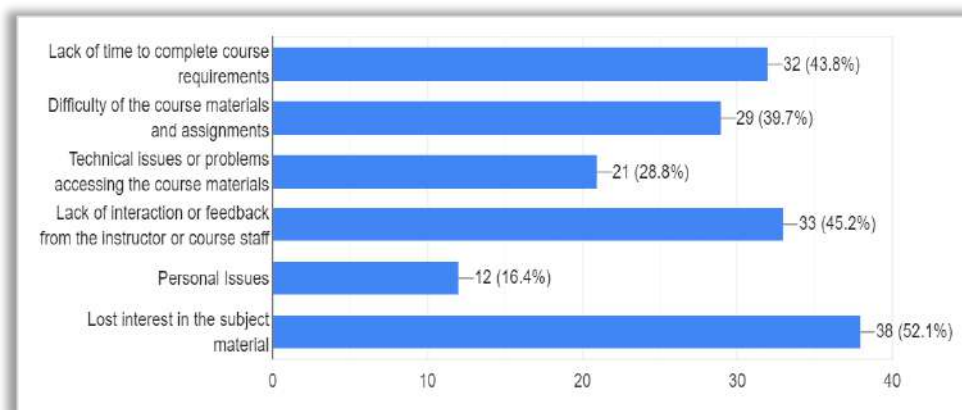
5.2.7 If yes, what factors led to your decision to drop out of the MOOC?

➤ 32 (43.8%) of the respondents said that lack of time to complete the course requirements led to

dropping out from the MOOC. 29 (39.7%) of the respondents said that difficulty of the course materials and assignments was the reason behind dropping out of the MOOC. 21 (28.8%) of the respondents said that technical issues or problems accessing course materials led to dropping out from the MOOC. 33 (45.2%) of the respondents said that they dropped out due to lack of interaction or feedback from instructor or course staff. 12 (16.4%) of the respondents dropped out due to personal issues. 38 (52.1%) of the respondents dropped out because they lost interest in the subject material.
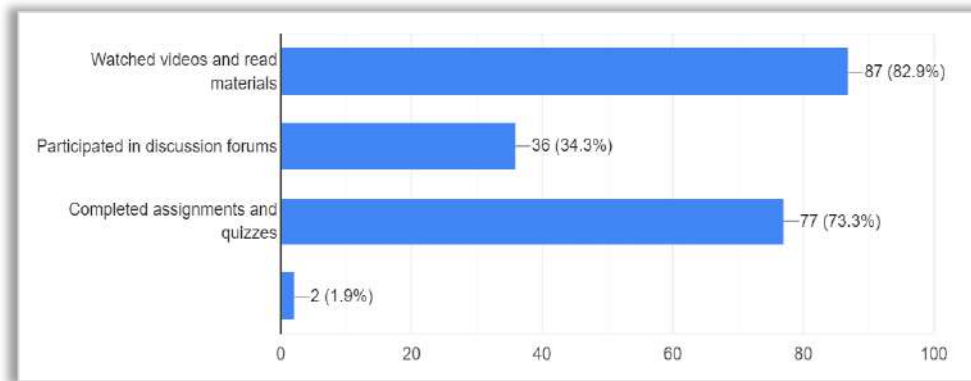
5.2.8 How did you engage with the course materials and activities in the MOOC?

➢ 87 (82.9%) of the respondents watched videos and read the reference material to engage with the course materials and activities. 36 (34.3%) of the respondents participated in discussion forums to engage with the MOOC. 77 (73.3%) of the respondents completed assignments and quizzes to engage with the course materials and activities in the MOOC.
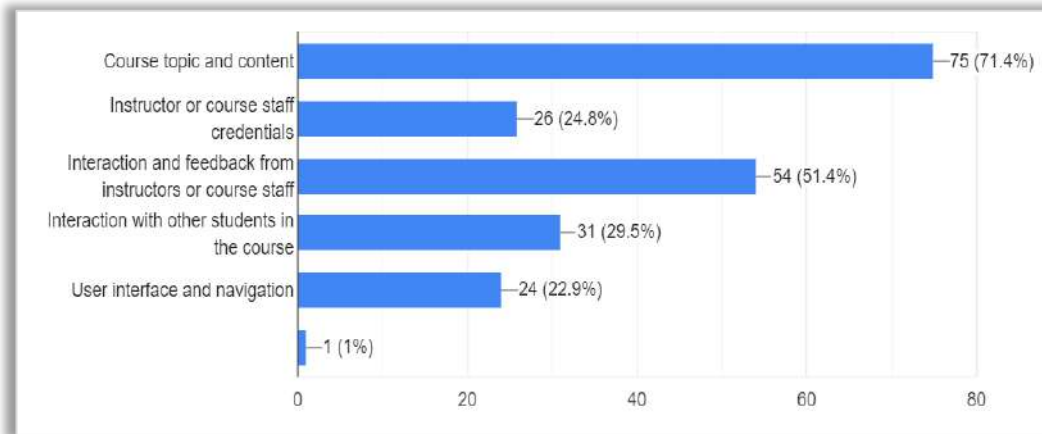
5.2.9 What factors influenced your level of engagement with the MOOC?

➢ 75 (71.4%) of the respondents said that course topic and content influenced their level of engagement with the MOOC. 26 (24.8%) of the respondents said that the instructor or course staff credentials influenced their level of engagement with the MOOC. 54 (51.4%) of the respondents said that interaction and feedback from instructors or course staff influenced their level of engagement with the MOOC. 31 (29.5%) of the respondents said that interaction with other students in the course influenced their level of engagement with the MOOC. 24 (22.9%) of the respondents said that user interface and navigation of the MOOC platform influenced their level of engagement with the MOOC.
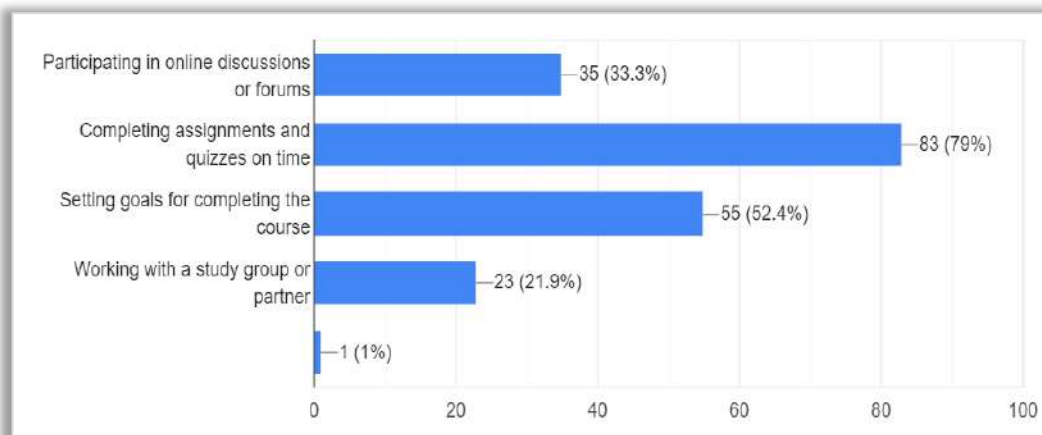
5.2.10 What strategies did you use to stay engaged with the MOOC?

➢ 35 (33.3%) of the respondents participated in online discussions or forums to stay engaged with the MOOC. 83 (79%) of the respondents completed assignments and quizzes on time to stay engaged with the MOOC. 55 (52.4%) of the respondents set goals for completing the course. 23 (21.9%) of the

respondents worked with a study group or partner to stay engaged with the MOOC.
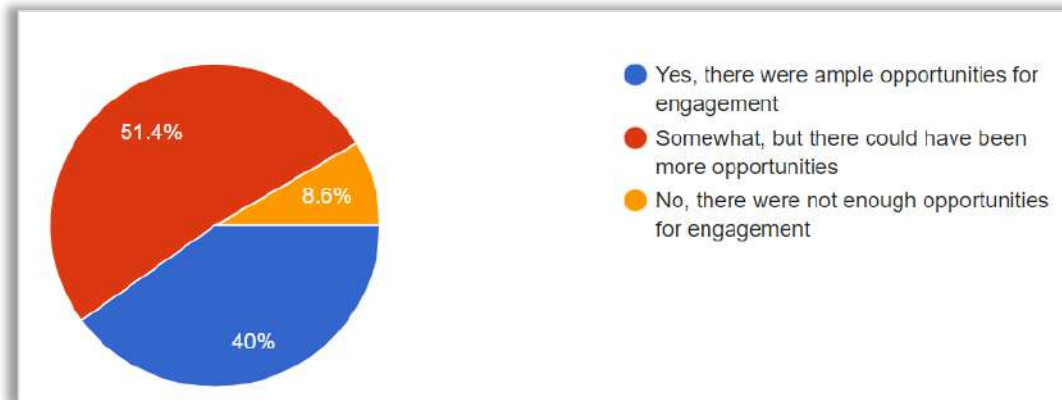
5.2.11 Did you feel that the MOOC provided enough opportunities for engagement?

➢ 42 (40%) of the respondents felt that the MOOC provided enough opportunities for engagement. 54 (51.4%) of the respondents felt that there could have been more opportunities for engagement. 9 (8.6%) of the respondents said that there were not enough opportunities for engagement.
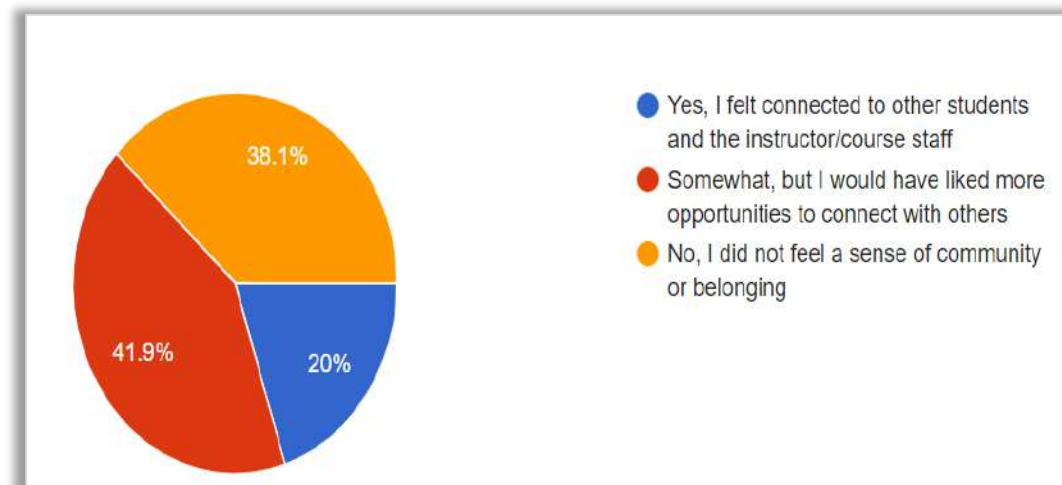
5.2.12 Did you feel a sense of community or belonging while taking the MOOC?

➢ 21 (20%) of the respondents said that they felt connected to other students and the instructor or course staff. 44 (41.9%) of the respondents said that they would have liked more opportunities to connect with other students as well as the instructors. 40 (38.1%) of the respondents did not feel a sense of community or belonging while taking the MOOC.
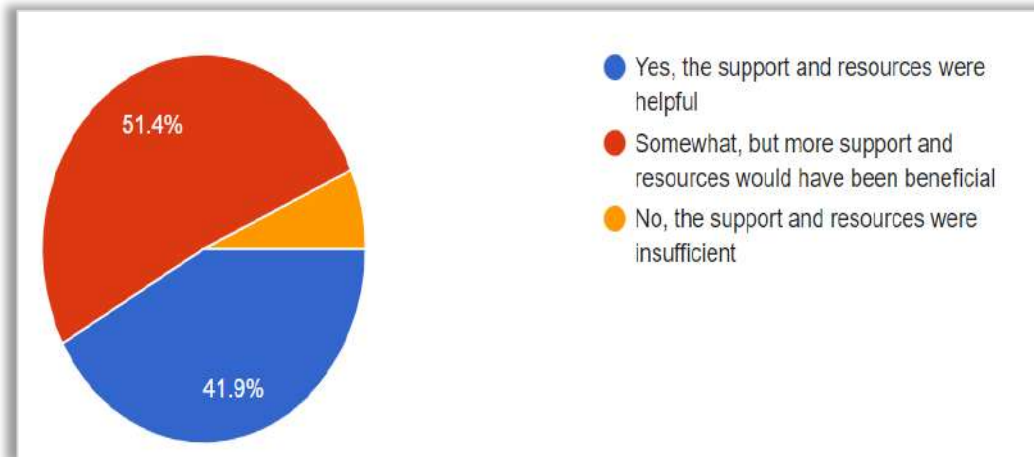
5.2.13 Did the MOOC offer enough support and resources to help you succeed?

➢ 44 (41.9%) of the respondents felt that the support and resources offered by the MOOC were helpful. 54 (51.4%) of the respondents felt that more support and resources would have been beneficial. 7 (6.7%) of the respondents felt that the support and resources were insufficient.
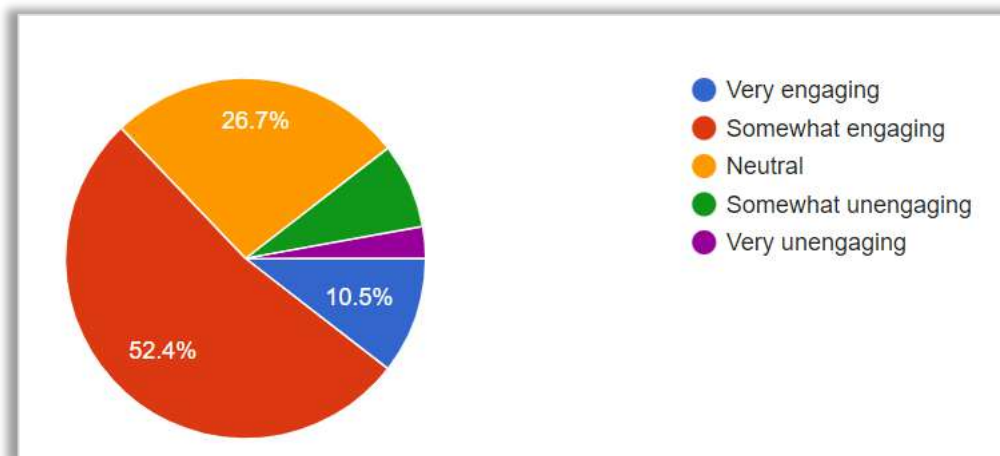
5.2.14 How would you rate the overall quality of the MOOC in terms of engaging students?

➢ 11 (10.5%) of the respondents said that MOOCs are very engaging. 55 (52.4%) of the respondents said that MOOCs are somewhat engaging. 28 (26.7%) of the respondents feel that MOOCs are neither particularly engaging or unengaging. 8 (7.6%) of the respondents said that MOOCs are somewhat unengaging. 3 (2.9%) of the respondents felt that MOOCs are very unengaging.
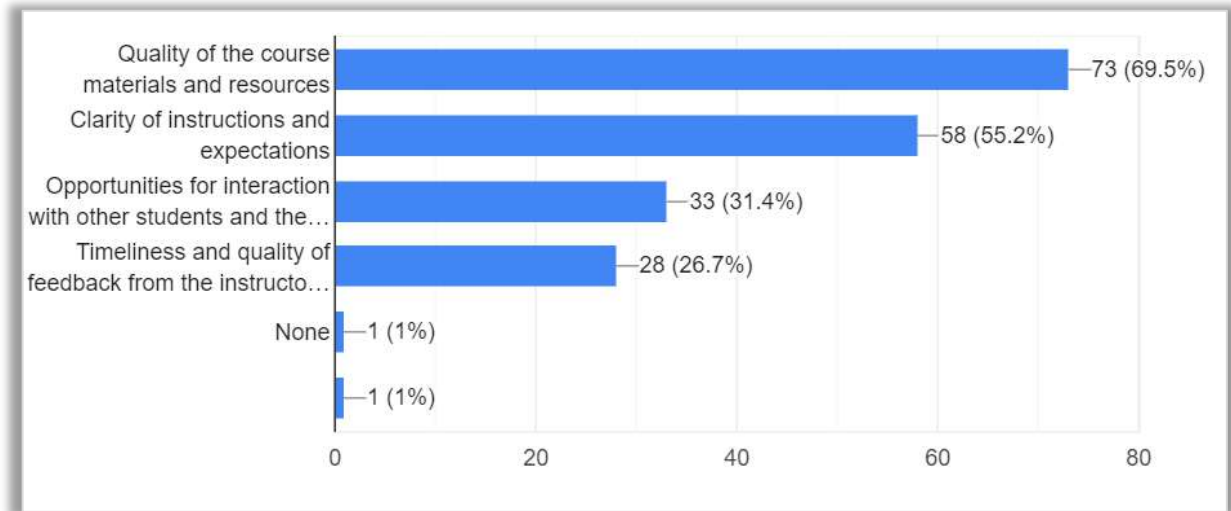
5.2.15 What factors do you think positively influenced your engagement and retention in the MOOC?

➢   73 (69.5%) of the respondents said that quality of the course materials and resources positively influenced their engagement and retention in MOOCs. 58 (55.2%) of the respondents said the clarity of instructions and expectations positively influenced their engagement and retention in MOOCs. 33 (31.4%) of the respondents said that opportunities for interacting with other students and the instructors positively influenced their engagement and retention in MOOCs. 28 (26.7%) of the respondents said that timeliness and quality of feedback from the instructor or course staff positively influenced their engagement and retention in MOOCs.
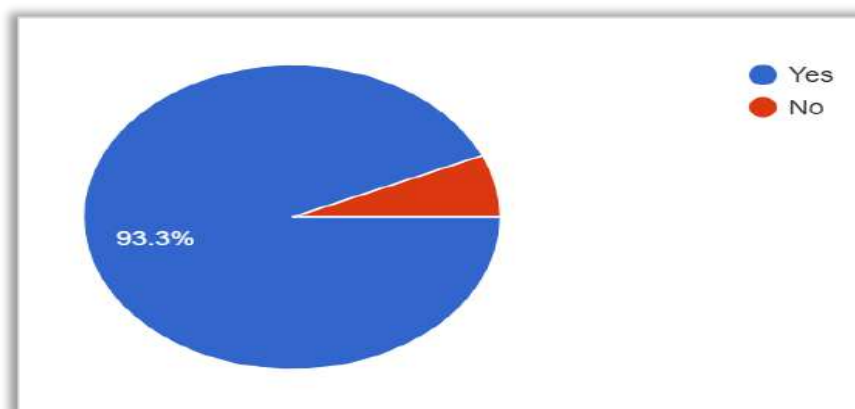
5.2.16 Did you receive a certificate or credential for completing the MOOC?

➢   98 (93.3%) of the respondents received a certificate or credential for completing the MOOC. 7 (6.7%)

of the respondents did not receive a certificate or credential for completing the MOOC.
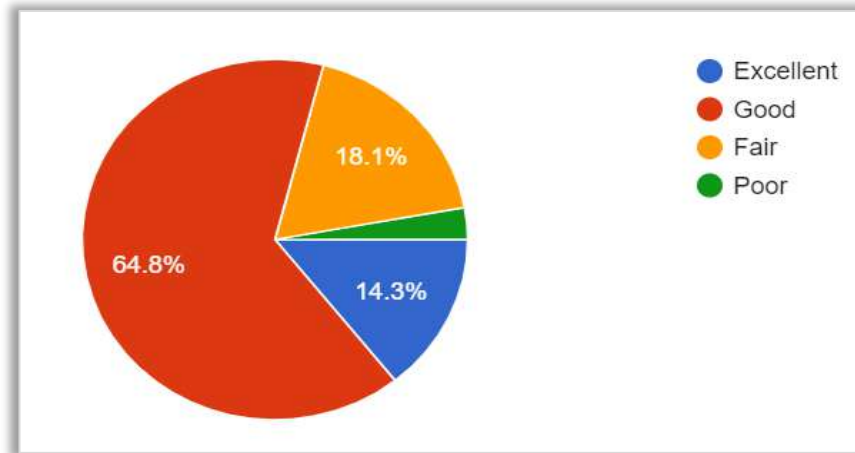
**5.2.17** How would you rate the quality of the course materials and resources?

➢   15 (14.3%) said that the quality of the course materials and resources was excellent. 68 (64.8%) of the respondents said that the quality of the course materials and resources was good. 19 (18.1%) of the respondents said that the quality of the course materials and resources was fair. 3 (2.9%) of the respondents said that the quality of the course materials and resources was poor.
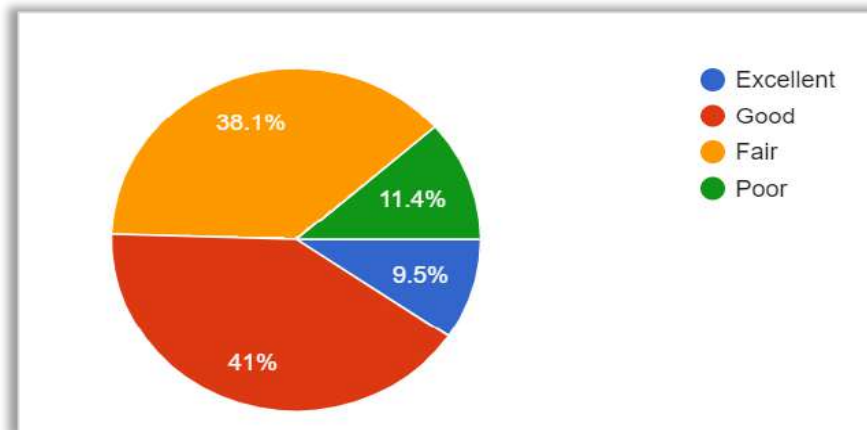
5.2.18 How would you rate the quality of interaction and feedback from the instructor or course staff?

➢   10 (9.5%) of the respondents said that the quality of interaction and feedback from the instructor or course staff was excellent. 43 (41%) of the respondents said that the quality of interaction and feedback from the instructor or course staff was good. 40 (38.1%) of the respondents said that the quality of

interaction and feedback from the instructor or course staff was fair. 12 (11.4%) of the respondents said that the quality of interaction and feedback from the instructor or course staff was poor.
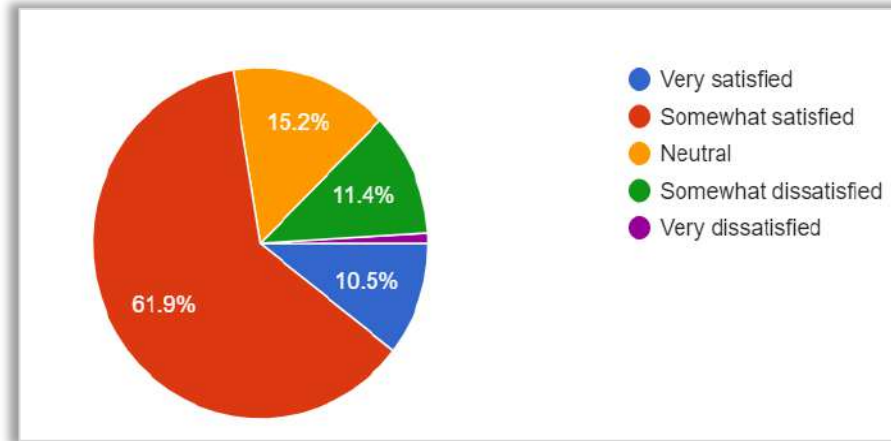

5.2.19 How satisfied were you with the MOOC overall?

➢ 11 (10.5%) of the respondents were very satisfied with the MOOCs completed by them. 65 (61.9%) of the respondents were somewhat satisfied with the MOOCs completed by them. 16 (15.2%) of the respondents were neither particularly satisfied nor dissatisfied with the MOOCs completed by them. 12 (11.4%) of the respondents were somewhat dissatisfied with the MOOCs completed by them. 1 respondent was very dissatisfied with the MOOCs completed by them.
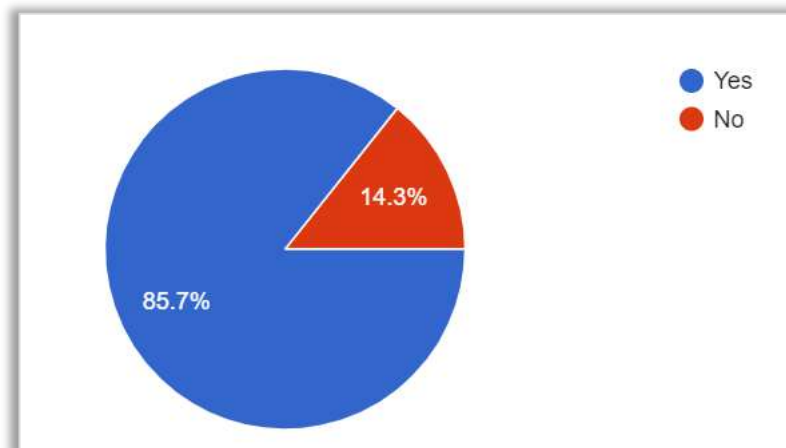
5.2.20 Would you recommend MOOCs to others?

> ➢ 90 (85.7%) of the respondents would recommend MOOCs to others. 15 (15.3%) of the respondents would not recommend MOOCs to others.
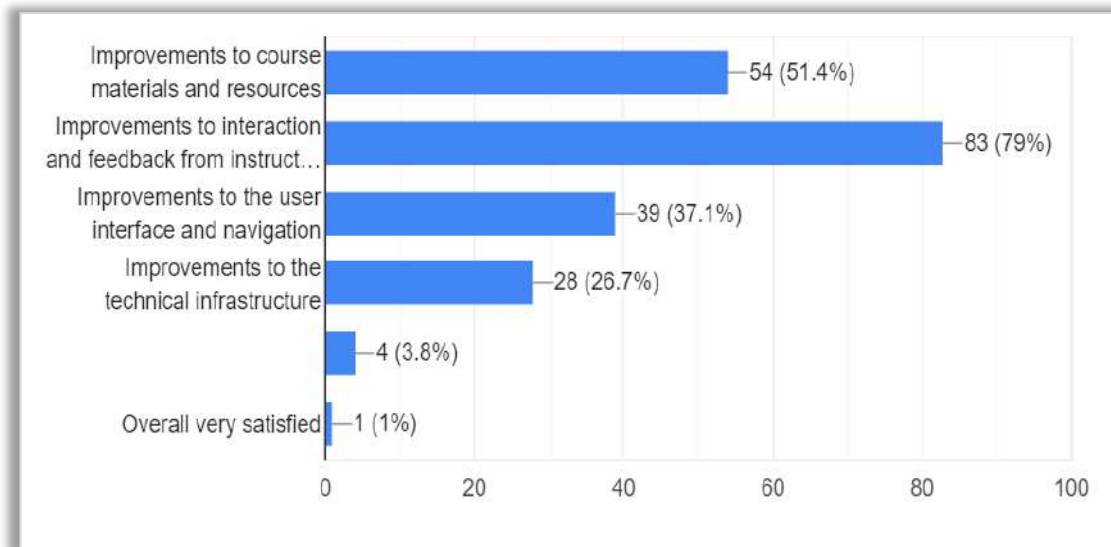
> ➢ **5.2.21** *What improvements do you think could be made to MOOCs to make them more effective for learning?*
>
> 54 (51.4%) of the respondents said that improvements to course materials and resources should be made to make them more effective for learning. 83 (79%) of the respondents said that improvements to interaction and feedback from instructors or course staff should be made to make them more effective for learning. 39 (37.1%) of the respondents said that improvements to the user interface and navigation should be made to make them more effective for learning. 28 (26.7%) of the respondents said that improvements to the technical infrastructure should be made to make them more effective for learning.

6. FINDINGS & DISCUSSION

Student Perceptions and Attitudes Towards MOOCS:

The survey reveals that Coursera is the most popular MOOC platform among respondents, with 75.2% enrolling in online courses through it. edX is the second most popular platform, utilized by 41.9% of respondents, while Alison ranks third with 51.4% using it for MOOCs. Udemy is also prominent, accessed by 34.3% of respondents, and other platforms like Internshala, YouTube, LinkedIn, and Mad about Sports are used as well. The study indicates diverse platform usage, with learners exploring alternatives beyond standard MOOC platforms.

Participants engage in MOOCs primarily for gaining information and skills, followed closely by obtaining certificates or degrees. Many also use MOOCs for personal interest or hobby development, showcasing varied learner objectives. Course topic and content are identified as the most influential factors for enrolment, affecting 72.4% of respondents, followed by course length and time commitment (38.1%). Teacher or course staff qualifications matter to 21.9%, while 42.9% consider the reputation of the course provider or school. College or faculty recommendations also impact enrolment decisions in MOOC.

The survey results highlight that learners are primarily interested in the course material and topics offered by MOOCs, with the reputation of the course provider or school being a crucial factor in enrolment decisions. The findings underscore the importance of providing high-quality course content and maintaining a solid reputation to attract and retain participants.

The study indicates that only 20% of participants felt connected to other students, the lecturer, or course staff during the MOOC. A significant 41.9% expressed a desire for more opportunities to engage with peers and instructors, emphasizing the need for increased community-building activities. Additionally, 38.1% did not experience a sense of community, stressing the necessity of fostering a supportive learning environment for MOOC participants, suggesting improvements to the existing infrastructure for better community and connection.

While 41.9% found the resources and learning support provided by MOOCs beneficial, 51.4% believed that greater assistance and resources would enhance their learning experience. A small percentage (6.7%) found the help and resources insufficient, signalling a need for more support to improve participant experience.

Regarding engagement, 52.4% perceived MOOCs as somewhat engaging, with room for growth in raising overall engagement levels. The majority (69.5%) stated that the quality of course content and resources influenced their participation and retention, while 55.2% noted that clear instructions and expectations improved engagement. Interactions with other students and faculty were cited by 31.4% as contributing to engagement, and 26.7% highlighted the importance of timely and positive feedback from instructors.

Regarding course materials, 64.8% of respondents found the quality good, with 14.3% rating it as excellent. While a small percentage (2.9%) thought the quality was quite poor, 18.1% deemed it fair, suggesting room for improvement despite overall satisfaction.

The majority of respondents (82.5%) thought the level of contact and feedback from the instructor or course staff was at least fair. Specifically, 9.5% of respondents ranked the quality as outstanding, 41% as good, 38.1% as fair, and 11.4% as bad. Overall, the findings suggest that the quality of interaction and feedback from instructors or course instructor in MOOCs might be improved.

According to the research, 51.4% of respondents agree that course materials and resources should be improved to make them more useful for learning. Additionally, 79% of respondents said that contact and feedback from teachers or course personnel could be improved. Roughly 37.1% of respondents said that the user interface and navigation could be improved to make them more helpful for learning. Finally, 26.7% of respondents said that technological infrastructure should be improved to make it more useful for learning.

According to the study, 40% of respondents thought the MOOC provided enough opportunities for engagement, while 51.4% thought there could have been more. Just 8.6% of respondents thought there were not enough opportunities for participation.

Factors Influencing Student Dropout From MOOCS:

The findings highlight a number of factors that contribute to learners dropping out of MOOCs. The most common reason for dropping out was a lack of time, which was mentioned by 43.8% of respondents. Difficulties with course materials and assignments were noted by 39.7% of respondents, while technical issues or trouble accessing course materials were cited by 28.8% of respondents.

Another big cause for dropping out, stated by 45.2% of respondents, was a lack of engagement or feedback from the teacher or course personnel. Lack of interest in the subject matter was another cause, with 52.1% of respondents citing it as a reason for leaving. Personal issues were the least prevalent reason for dropping out, cited by just 16.4% of respondents.

To prevent learners from dropping out, the survey results indicate that course providers address difficulties such as time limits, complexity of course materials and tasks, and technological challenges. They should also give enough interaction and feedback to keep students interested and motivated. Furthermore, course providers should ensure that the course material stays engaging and relevant to learners in order to maintain their interest in the subject matter.

Factors Influencing Student Engagement In MOOCS:

According to the study results, learners interact with MOOCs in a number of ways. To interact with the course materials and activities, the majority of respondents, 82.9%, viewed videos and read the reference material. Doing assignments and quizzes was also a common technique of interacting with course information, as reported by 73.3% of respondents. Also, 79% of respondents completed assignments and quizzes on time in order to remain engaged with the MOOC.

Another technique for keeping involved with the MOOC was to participate in online conversations or forums, which 34.3% of respondents reported doing. Establishing objectives for finishing the course was also a common way for respondents to stay involved with the MOOC, with 52.4% reported doing so. Working with a study group or a partner was the least popular means of keeping involved with the MOOC, with just 21.9% of respondents saying that they did so.

According to the findings, course providers should focus on offering high-quality video lectures and reference resources to engage students with the course content. They can also think about including interactive tasks and quizzes to keep students involved and motivated. Encouraging learners to participate in online debates or forums, as well as setting completion targets, may assist enhance engagement and retention.

According to the research findings, 71.4% of respondents said the course topic and substance influenced their degree of engagement with the MOOC. Interaction and comments from instructors or course staff affected 51.4% of respondents' level of engagement with the MOOC, while 29.5% said that contact with other students in the course influenced their involvement. Furthermore, 24.8% of respondents claimed that the qualifications of the teacher or course staff affected their level of participation, while 22.9% said that the user interface and

navigation of the MOOC platform influenced their level of engagement. Overall, the data indicate that course material and interaction with instructors or peers have a major influence on MOOC participation.

7. CONCLUSION

Massive Open Online Courses (MOOCs) offer flexible and convenient access to quality education worldwide, often at a low cost or for free. Learners can engage in various courses at their own pace, benefiting from qualified instructors, interactive tools, and professional networks. MOOCs also serve as a valuable resource for professionals seeking to acquire new skills and stay updated in their fields. However, challenges exist, including low completion rates due to the lack of accountability and motivation in self-paced learning. Direct interaction with instructors and peers is limited, and MOOC quality varies. Recognition by companies and organizations may also be lacking, limiting their utility in certain career paths.

This study aimed to assess student perceptions of MOOCs, identify factors influencing involvement, and analyze contributors to student dropout. Findings reveal varying degrees of connection, community, and engagement among students. Factors like course material quality, clear instructions, and opportunities for interaction positively impact engagement and retention. To enhance MOOC success, improvements in course materials, interaction, feedback, user interface, and technological infrastructure are crucial. Dropout reasons include time constraints, course difficulty, technical issues, lack of interaction, personal issues, and loss of interest.

While these insights provide valuable information for improving MOOC production and delivery, certain limitations must be considered. The study's focus on Pune may limit generalizability to other regions. Access to technology and potential sampling bias could affect participation and representation. Additionally, student perceptions may differ based on the specific field of study covered by the MOOC.

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Decentralized Finance (DeFi): The Future of Finance

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ABSTRACT

DeFi, a revolutionary force in finance, empowers individuals seeking control over their assets and a transparent, tech-driven financial landscape. A survey covering diverse age groups revealed that Generation Z is more receptive to DeFi, displaying familiarity with blockchain and a willingness to embrace the decentralized system. They acknowledge its transparency compared to traditional finance but lean more towards understanding "blockchain or crypto" rather than the specific term "DeFi." However, older generations show less enthusiasm, displaying a reluctance to shift towards online financial systems, indicating a reluctance to embrace technological advancements in finance.This survey highlighted a significant mindset divergence among generations in India. Gen-Z exhibits a readiness to adapt, embracing risk and change while being open to potential losses. Conversely, older generations are less inclined to welcome such shifts, demonstrating a more conservative approach towards financial innovation, indicating a divide in embracing new financial paradigms.

Keywords: Decentralised finance, consumer perspective, financial institutions

JEL Classification Code: H30, H31

1. INTRODUCTION

DeFi stands for Decentralized Finance and it refers to the ecosystem comprised of financial applications that are being developed on top of blockchain which is an open-source code and distributed ledger systems. DeFi takes open finance a step further. Imagine if there is a global, open way to use all your financial products and services like savings, loans, trading, insurance and any others which we use these days with help of

intermediaries namely banks, NBFCs etc.; which could be accessible to anyoneusing just a smartphone or anybody who has an access to internet connection. DeFi is the movement that leverages decentralized network and open-source softwareto create or transform old and used financial products into new and trustworthy transparent protocols that run without intermediaries. This reduces the cost of using these financial products and can make it largely and easily accessible to everyone. This research paper will analyze several other papers and researches on DecentralizedFinance with focus on its features, subsets, data collected as of the current scenario andthe future aspects with respect to the way people plan to introduce and use DeFi in their everyday lives 10 years down the lane. (Popescu, 2020).

2.   RESEARCH OBJECTIVES & METHODOLOGY

RESEARCH OBJECTIVES:

1. To understand the basis of DeFi.
2. To understand the characteristic features of DeFi
3. To understand consumer perspective towards DeFi.
4. To understand the future prospects of DeFi.

RESEARCH METHODOLOGY:

The paper delves into Decentralized Finance (DeFi), aiming to explore its definition, application across various sectors, and its introduction. Focused primarily on the finance sector, it encompasses blockchain and smart contracts within the DeFi framework. The qualitative study involves gathering secondary data that affirms the increasing relevance of DeFi while highlighting its potential for growth and the need for trust-building within the populace.

In order to supplement this, a survey was conducted among college students and various age groups in India, primarily targeting Generation Z, to gauge their awareness of DeFi, their experiences with centralized financial systems, security concerns, and their willingness to embrace a decentralized financial setup. The research, influenced by secondary data findings, aims to validate the importance of these factors in shaping the future trajectory and global impact of DeFi, bridging insights from worldwide data with a focus on India. This study aims to assess the extent to which these factors contribute to the worldwide influence of DeFi

despite initial data not being specific to India.

3. LITERATURE REVIEW

3.1 <u>Blockchain technology and quest for an Open financial system:Advantages</u>

Blockchain technology can reduce transaction costs, facilitate decentralized platformsand produce distributed trusts, creating formations for new business models. Due to blockchain technology, the financial services maybe more decentralized, innovative, transparent and borderless. (Yan Chen, 2019) Since, the decentralized platforms are open and transparent, the platform becomes permission less and people don't have to depend on intermediaries to avail financial services. DeFi is a user-centric platform. The users are given incentives if they use the DeFi platform to avail financial services for e.g.-: providing liquidity for lending and the userscan choose whether they give access through personal portals or publicly traded portals. Defi platforms are interoperable with one another due to the shared blockchain networkom which they reside; cross-blockchain interoperability networks will further reinforcethis phenomenon as they are adopted. Interoperability means that different blockchainsare able to exchange and leverage data with one another and move unique type of digital assets between the network's different blockchains.

With broad interoperability, a lot of new blockchain applications can be found and a variety of unique DeFi protocols and services. (Anon., 2019). At the face value, DeFi may seem like a utopian service, the development and adoptionof such services have already begun and is being built into tens of billions of dollars ofdigital assets existing on the chain. The services range from lending, saving yield accounts, exchange liquidity pools and more. Applications like UniSwap and SushiSwap have shown that it's possible to exchange and swap a wide variety of digital assets from all around the world. Anyone can modify smart contracts on the aforementioned DEXs if they have access to the internet. (Anon., 2019)

3.2 <u>CeFi vs DeFi – What is the Difference?</u>

CeFi stands for Centralized Finance whereas DeFi stands for Decentralized Finance. While DeFi falls short because of complexity and delays in performing cross chain swaps, CeFi obtains asset custody from multiple chains. Using Centralized exchanges, you can handle your internal portfolio through an internal account and

avoid blockchain transaction fee. Moreover, since the funds are on an exchange, the management part of it can easily be overlooked. Though CeFi and DeFi both focus on the same thing- increasing the use of blockchain in the world, there are some crucial differences that lie between both of them. (Kaihua Qin, 2021)

Figure 2.1. CeFi VS DeFi
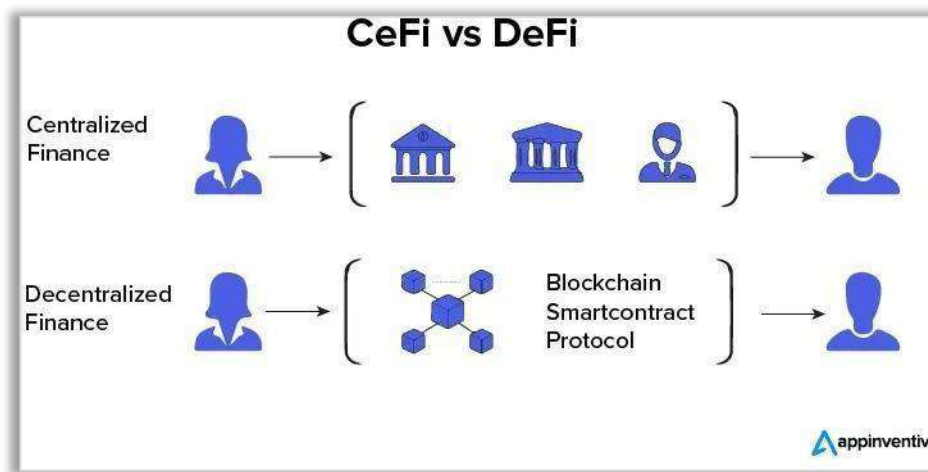
CeFi and DeFi work around the same financial services. Moreover, the end user does not even get to know if its CeFi or DeFi infrastructure. The blockchain experts see a merger of both where both infrastructures would complement each other. In addition, DeFi is continuously modifying CeFi's architecture to suit its requirements. For ex: - AMM has inspired CeFi's over-book architecture (Chirag, 2022).
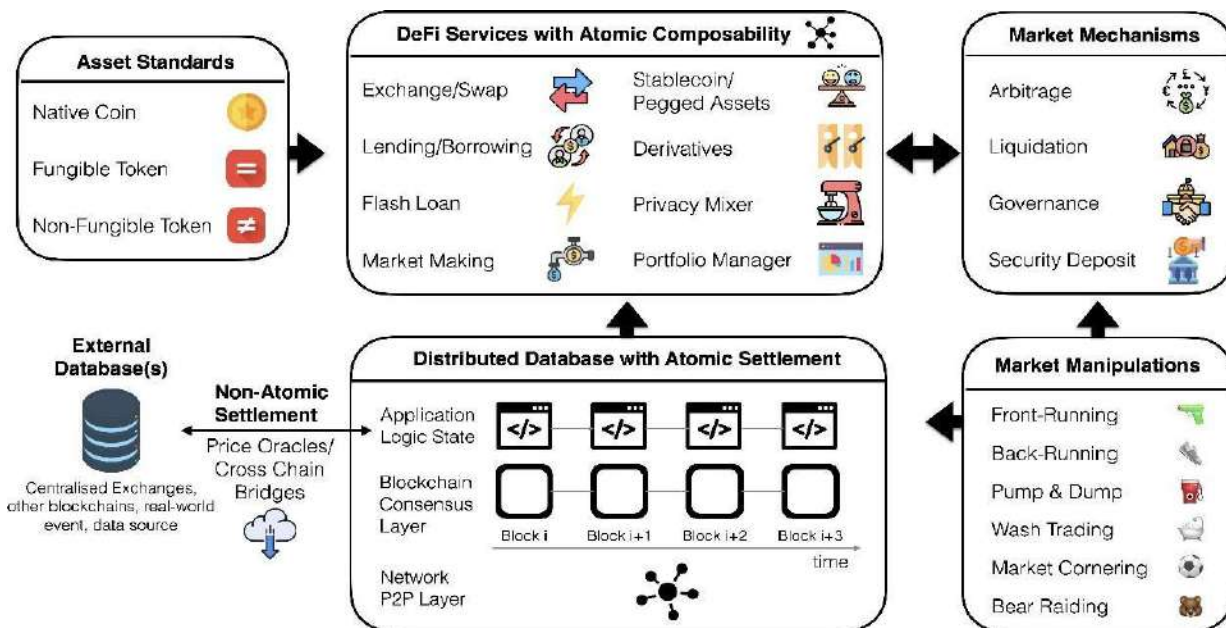
Figure 2.2. *High level systemization of Decentralized Finance*

3.3 <u>DeFi Services: Insurance</u>

Just as in the normal financial world, DeFi world also provides insurance for any harmthat might happen while people are investing their time and money in it. A lot of peopleare now turning to DeFi insurance to protect themselves against it. With the Defi Insurance, you are not connecting with the coverage companies. There are DeFi insurance companies but they do not underwrite your coverage. They run a platform that connects you to the coverage pool. DeFi insurance is decentralized because anyone can decide to give anyone else the coverage against DeFi risks. There is a decentralized pool of coverage providers insteadof the traditional way, which is the insurance company providing insurance through a policy. These providers charge for a percentage of each cryptocurrency unit to protectagainst hacks on certain exchanges or other adverse events.

The coverage can be of the following types-

1) Coverage type

2) Provider

3) Duration

Coverage can also be purchased for-

1. Attacks on DeFi protocols
2. Smart contract failures
3. Stable coin price crashes

Different coverage structures may have their own rules about claims and it being completely decentralized, does not have same rules as the traditional insurance policies.People can also get claims based on the type of insurance chosen. They can enter the coverage pool and claim their returns based on the rules of that pool. (**SIMBERG,2022**).

3.4. DeFi Services: Gaming (Play to Earn Games)

There have been many developments in the DeFi space- out of which gaming seems tobe the most interesting one. This shows that even though the industry is new and thereis a lot of violability, people are looking at and considering games.

The popularity increased due to people being bored during lockdown. They wanted totry their hand at different things and games in this platform seemed to something veryattractive. During the Covid lockdown, the users of Xbox increased by 40%. Even though the popularity of these games increased due to the lockdown and boredom of people, what kept the gaming in this area going was that the developers started using Play-to-earn approach. Gaming had been a centralized activity, makers of the game hadcontrolled assets and in-game currencies, but blockchain has changed this factor. Players are realizing that they can not only play games but also earn money that can beconverted into real life currency in most cases. (**Fredrich, 2021**)

3.5   DeFi Tokens: What are they and how can they be used?

DeFi tokens represent a diverse set of cryptocurrencies native to automated, decentralized platforms that operate using smart contracts. These provide users to a variety of financial applications and services built on the blockchain in which 75 billion dollars' worth of crypto has been locked. LUNA is the largest DeFi token followed by DAI, LINK, SETH etc. and can also be categorized under some governance tokens. Some DeFi tokens are linked to DeFi protocols, which in some instances are governed with almost entire community of users. To participate in the decision-making process of DeFi platforms, users are required to purchase governance tokens. These tokens hold special rights for all the owners who have rights their votes are

nominally binding on the developer team and their values are often proxies for confidence in the project. People who have more governance tokens have more rights than those who have fewertokens. Some of the governance tokens are –

PancakeSwap (CAKE)

Aave (AAVE)

Maker (MKR)

You might think that you can buy DeFi tokens only on DeFi protocols but that's not the case. Most centralized cryptocurrency exchanges CoinBase, Binance and FTX listmajor DeFi tokens. These can be traded or invested like just any other cryptocurrency.In order to participate in the protocol governance, you will need to hold the coins in DeFi wallet, and connect the wallet to the governance platform used by that particular protocol(**Genç,2022**).

How risky of an investment is DeFi?

> The truth of the matter is that DeFi is highly risky. Every protocol has a high rewardbut that means that it has a higher risk factor. Risks and rewards are simultaneous keeping in mind that a high reward means a high risk. There are 3 major types of risks-

Risk related to technology -

As told above, smart contracts are applications that are required to run on the DeFi platform. However, since the whole service is based on technology, any weakness in the protocol might lead to technological failure. A service based on internet is only asgood as the code is without mistakes. The time a code runs on a mistake the whole algorithm fails.

Risk related to asset -

While you are making a borrow on a DeFi app, other financial assets have to kept as acollateral as a requirement instead of other documents. For e.g.: - DeFi protocol makerskeep their loans as a collateral up to 150% on a DeFi platform.

Being Volatile, cryptocurrency value changes very frequently. But something that we must all be careful of is that the digital asset kept as collateral may decline in value at any given moment and many people in that situation may find their assets liquidated. That's why many people opt for stable coins, which are usually pegged to traditional currency and is less volatile in nature.

Product Risk:

What the developers feel is that the newer protocols or newer pools are with higher profits because they are untested. There is a big amount of risk in how the income is being generated. The insurance provided is also not fully guaranteed as there are no insurance companies but there is a coverage pool for insurance. Keeping in mind all these risks, a lot of research is recommended before you decide to invest in DeFi. **(Locke, 2021)**

The role of DeFi in solving the drawbacks of Traditional Finance

Well, we all know DeFi coming into the world and forming this new, rapid space and trying to take the place of traditional finance. But it has been successful to a certain extent as it is able to fill some gaps and solve some flaws in the traditional system. To take an example; you visit a bank to apply for a home loan, you will be required to share all your banking documents, your educational documentation proof, salary documents and declare all your assets – and even after following all these procedures, the loan application will be judged against a credit score, that will eventually decide if you get the loan or not. You have to put all this effort even after arranging collateral. Even after to avail the loan, you will have to pay a fixed commission to the agent who helped you get your loan sanctioned. DeFi wants to stop this system with the intermediaries. It truly wants to start a system where whoever wants to lend and borrow has full right to do so, without the need of any intermediary institutions, without paying any to hardly any commission, and keeping full control on your assets.

Then what's the problem with Banking system? To clearly understand DeFi, it is crucial to know the current financial system issues. Banking systems display the role of making the process of transactions easy to do, ignoring the restriction of transacting internationally or locally. We are duly experienced about the fact that local money transfers are rather simple than the international money transfers. However, sending money abroad is a huge and tedious process which requires crossing paths with red tapes and intermediaries. What most investors do while they want to invest money in the markets, they hire professionals or what we call

intermediaries. They are consideredto have professional knowledge about the markets and hence investors tend to trust them to handle their investments. Because of the high commission charged, theintermediaries earn a lot of money if they make the investors profit. This shows that people who are a part of the conventional financial method tend to give the control of their finances to other people. In reality, banks are using that money in ways that majority of the people are unaware about. Bank come across emergency situations can quickly result in shortage of liquid money.

Thousands of people lost their wealth after the 2008 financial crisis as banks failed. Even currency valuation manipulation was attempted by the banking systems, as it wasin China.

Many people are looking to future technologies, in this case, DeFi systems, to secure themselves from the threat posed by the global financial systems. So, what does the future look like? One thing is certain: the reason why this discussionand debate over CeFi and DeFi has started is due to wanting of a more transparent andsecure financial system. It is not surprising that DeFi is now used by many individualswho were earlier using the traditional banking system. This system seems to be truly democratic in nature, out of the governance and regulatory eye; simply for the people and by the people. To overcome the issue of data security, DeFi has come to your rescue. Global financial business has become easier as DeFi has led to people taken total control over their data and financial assets. So, we won't be getting sales and marketing calls from third parties to buy their policies. Further, using the open-source code and tools gives a platform to experiment and realize potential, since software developers will now be able gather pace and experiment and create new tools as the DeFi space starts to grow

Developers will be free to work whenever they want, without being constrained, eliminating hang-time and "lunch-time breaks" and enhancing the tools in the financial space. All processes, including loans and collateral, can be tokenized thanks to blockchain technology. As a result, everything will be conducted via smart contracts that are machine-readable and paperless.

Coexisting? Additionally, this applied to Blockchain. Banks were first dubious about it, but it is inevitable and many countries are looking into a Central Bank Digital Currency (CBDC). Not to mention, a number of banks have already begun to invest inbusinesses involved with cryptocurrencies and blockchains. This demonstrates that, despite how young it may appear, banks are actively adopting blockchain technology and learning from it. In DeFi space, the same holds true. Banks must realize that Decentralized finance is something that is going to take over in the future and no one can enviably stop that. **(Anshul Dhir, 2022)**

The best of both worlds

Financial industry disruption won't be going away any time soon. That result is causedby the rapid pace of technological advancement. Agility, openness, and strategic thinking are required to maneuver this frenetic pace. Consider blockchain as an example. Banks were first hesitant to adopt. Several big banks are now making investments in blockchain and cryptocurrency-related businesses. The situation is the same for DeFi. DeFi is here to stay, and traditional financial institutions can jump on board by integrating this technology into their current frameworks as they start to recognize this. The opportunity for cooperation in this areais well illustrated by ING Bank. The Dutch bank has examined the benefits and drawbacks of DeFi and published a paper titled "Lessons Learned from Decentralized Finance." After weighing the advantages and disadvantages, ING Bank concludes that centralized and decentralized financial services can work together to attain the "best of both worlds." (Kodari, 2022)

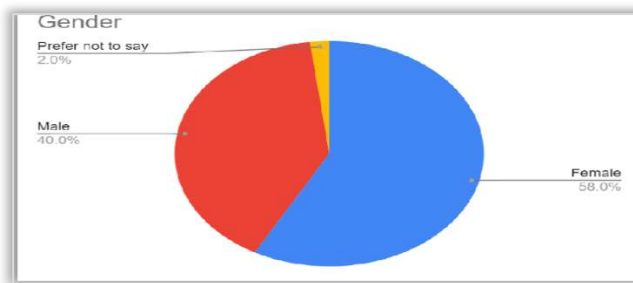## 4. DATA ANALYSIS & INTERPRETATION

Q1. Gender

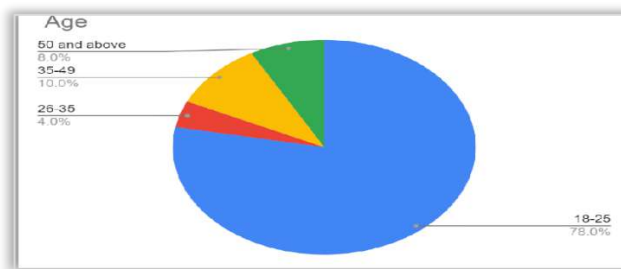Figure 6.1 Gender of respondents

Q2. Age

Figure 6.2 Age of the respondents

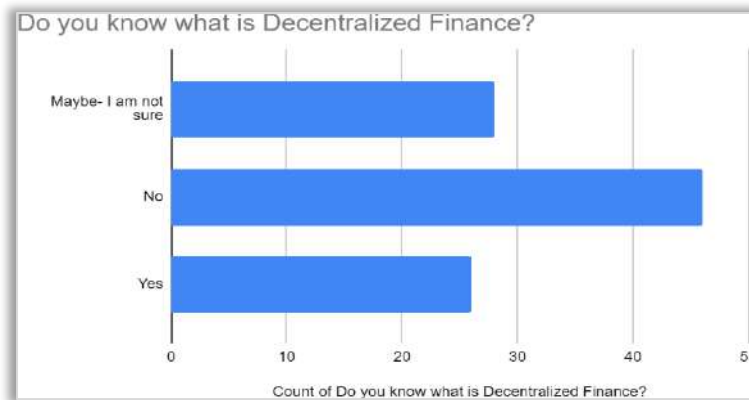**Q3. Do you know what is Decentralized Finance?**

Figure 6.3 Survey to showcase the respondent's knowledge regarding the term "DecentralizedFinance"

The horizontal bar chart illustrates the level of familiarity people have with "Decentralized Finance" based on a survey spanning three generations. Among 100 respondents, a significant 46% exhibit a lack of awareness about DeFi, indicating its nascent status in public consciousness. About 26% claim familiarity, while 28% are uncertain, likely indicating a lack of knowledge. This data emphasizes the infancy of DeFi's integration into people's lives. The predominant "No" responses can be attributed to several factors. Primarily, a majority of respondents are undergraduate students aged 18-20, potentially lackingexposure to the intricate technological facets of finance due to limited resources or opportunities. Additionally, the survey conducted in India, where DeFi is in its initial stages, reflects widespread confusion and incomplete understanding of technical terms, indicating the need for a more structured and accessible knowledge base in the country.

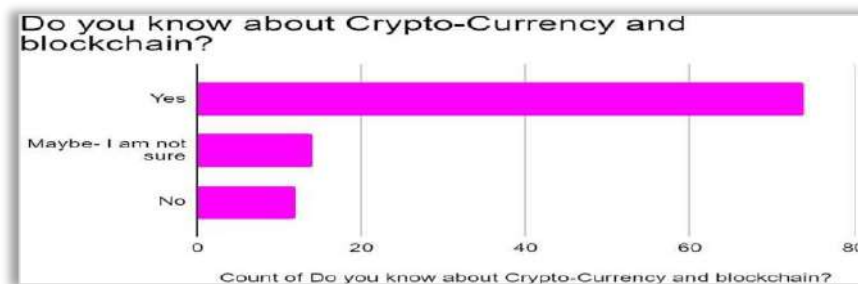**Q.4 Do you know about Cryptocurrency and Blockchain**

Figure 6.4 Survey to show the respondents knowledge regarding the terms "blockchain" and "cryptocurrency"

This horizontal bar chart above showcases the people's knowledge about the term "Cryptocurrency" and "blockchain". The question's objective was to try and understand if people who were surveyed know about these terms that are making the buzz in the financial world. Out of 100 people surveyed, 74 people answered the question as Yes, 14 answered as Maybe and 12 answered as No. The results show a clear picture that most people say yes when asked about these terms as compared to the results when asked about the term "Decentralized Finance".

This maybe because: As compared to DeFi which is comparatively a more technical term however when we talk about "blockchain" and "crypto-currency", they are terms used more casually in today's world. Every aspiring finance geek wants to learn about these new financial terms and a lot of sources like news, media, social media etc. provides them with the knowledge. At the same time, they might not really know about what is crypto and block chain actually based on.

Q5.   Have you ever traded/used Crypto-currency?
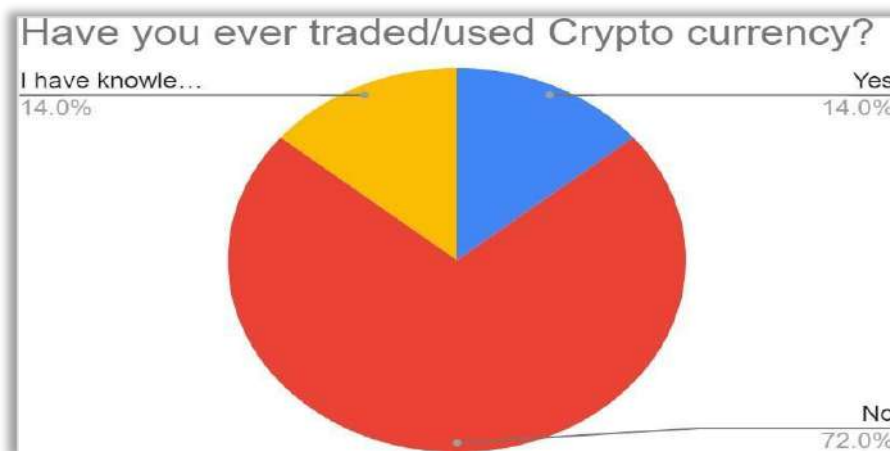

Figure 6.5 Percentage of people who have ever traded/used Cryptocurrency.

The pie chart above asks the users if they have ever traded in Crypto currency like bitcoin, Ethereum, and other Crypto-coins. The chart shows that 72 people out of a sample space of 100 people have not/never traded or used crypto in their real lives. 14people state that they have knowledge about it and the rest 14 say that they have tradedor used crypto currency in real life. Out of 100 people, merely 14% state that they haveexperience in the field, showing that DeFi is still in its infancy stage and not many people want to experiment with it. The contributory reasons may be –

Demographic Factors – the survey is taken in India and consists of responses from various age groups ranging from Generation Z to millennials and even have some respondents, who are above 50 and above. Talking about DeFi in India, the status is would be defined as "just beginning". It's more of an idea that people are starting to talk about. They are starting to learn about the terms and getting introduced with the technology; however, its long till we see frequent use of DeFi in India due to the following factors:

I.   **Cultural factors** – It depends on what kind of services have people been using since years and how ready would they be to modify their way of living and adjusting to the new way of availing services.

II.   **Social factors** – Every country is divided into social classes. India being 70% agricultural population and having a huge rural class, not everyone is educated enoughto use advanced technology as used in DeFi. This poses restrictions and limitations forthe people of the country. DeFi also carries high risk with itself. Not everyone has a high-risk capacity depending upon the ranges of income group the country is divided into.

III.   **Legal factors** – For a new type of technology or service to enter a country, there are certain rules and regulations for any country that have to be followed before the services in the country can begin. India needs to discuss and check out present and future prospects as to how to want to function with blockchain keeping in mind all rules, economic situation, RBI consultation and the type of economy India has.

IV.   **Technological factors** – DeFi being completely based on technology and internet, Indiaalso needs to keep the technological factors in mind including bringing in the technology from developed countries or building software in the country itself.

1)   **Trust Building:** DeFi being in its infancy stage, People of the country need time and proof so they can start believing in the process and take a step forward to experiment and experience the service. With the platform having the potential of high rewards, it'seasier to lure people but facing high-risks in the same can demotivate people to enter and continue with the service. Therefore, people need to be prepared mentally and financially depending on the amount of risk they are taking and their respective risk- appetites.

Q6. Have you ever faced a problem while making a purchase from adebit/credit card?
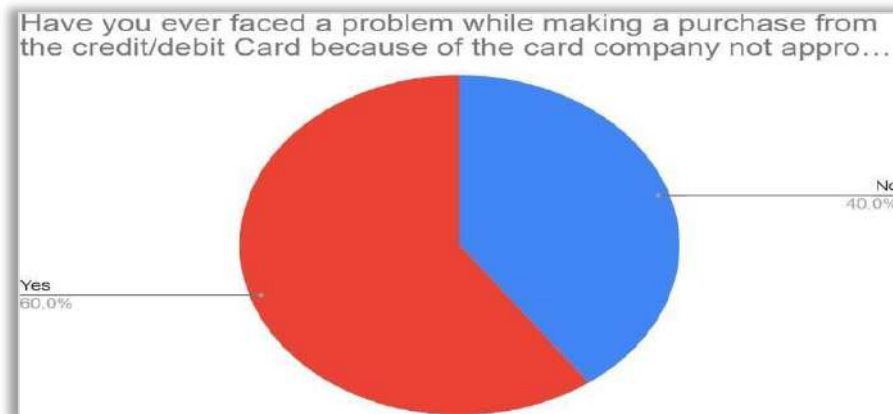
Figure 6.6 Percentage of people showcasing the problems faced while using Debit/credit cards

The pie chart depicts responses regarding payment card issues, with 60% of the surveyed individuals experiencing problems, while the remaining 40% expressed satisfaction with their card payment experiences. Further investigation revealed that those facing issues encountered technical problems resulting in funds being debited from their accounts but not reaching the intended recipient. Despite complaints, reimbursement was elusive due to unclear transaction paths maintained by the organizations involved.

Conversely, in the DeFi space, transparency and borderless transactions prevail. Unlike traditional systems, DeFi eliminates dependency on intermediaries, offering transparent and unalterable transaction paths. Transactions are visibly traceable from input to execution, ensuring clarity and reliability in every activity.

Q7. On a scale of 1-5(with 5 being the highest), how much do you trust financial institutions with your money, keeping in mind, frauds and mishaps that have happened in other institutions like banks?
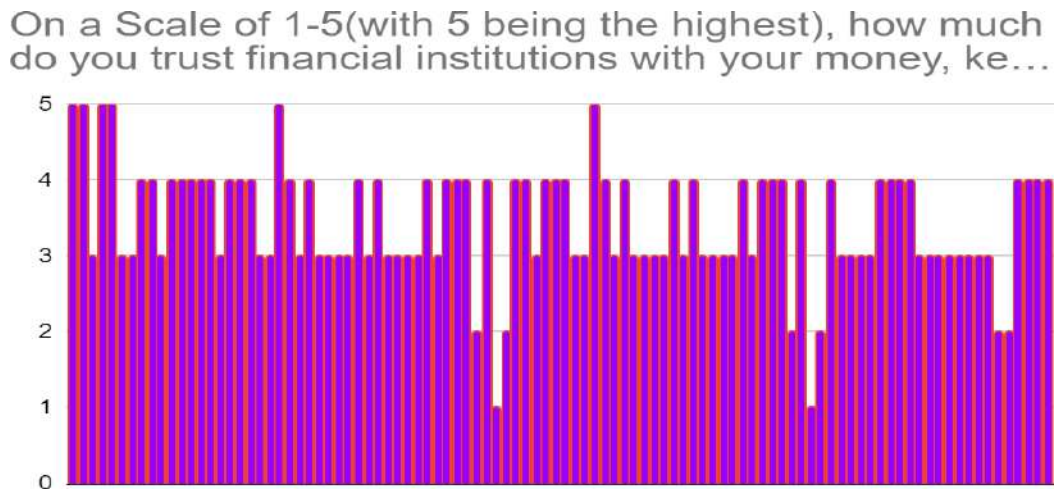

Figure 6.7 Analysis of the amount of trust people have in the financial institutions

The above graph shows the range of trust people have on the financial institutions keeping in mind the all the factors. According to the graph, the most Reponses are 3 which shows that people are neutral towards their trust on financial institutions. They are not blindly trusting people nor are they not trusting the institution at all. The second highest responses are to 4 which shows that people are more positively inclined when it comes to trusting financial institutions with money. Observing the graph carefully, there are very few responses that are towards 1 or 2 and the higher number goes towards 5 this shows that people have culturally and socially accepted these institutions and these institutions have built trust in people over all these years.

This response can also be interpreted as the fact that it's not easy to build trust in consumers and required constant effort and time to do so.

Q8. On a scale of 1-5(with 5 being the highest), how satisfied are you with the amount of time taken by financial institutions like banks for rendering services?
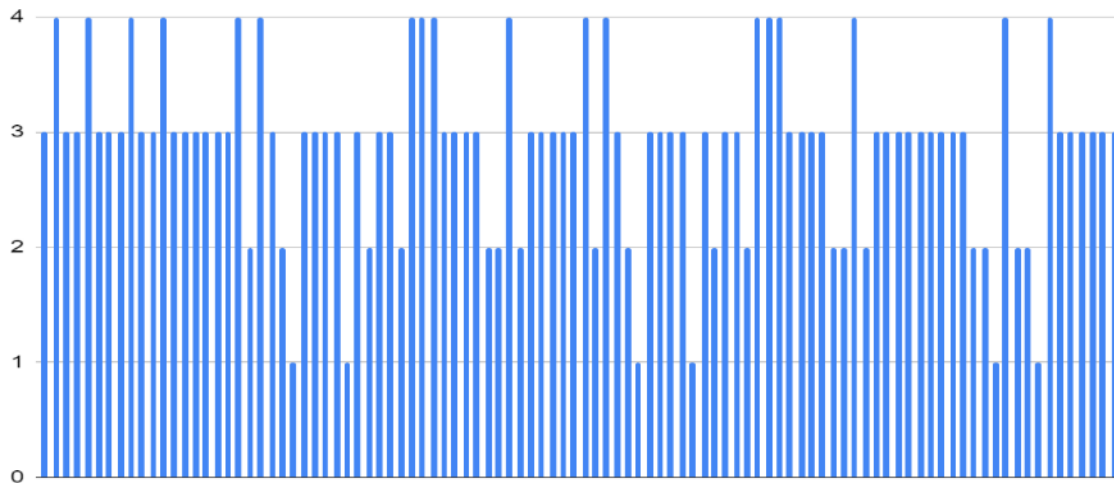

Figure 6.8 Analysis of satisfaction of people based on the time taken by financial institutions to render services

The above graph shows data of respondents about their satisfaction from the time taken by banks and other financial institutions to render services to its consumers. According to the graph, most people have responded with a 3 showing that they are very neutral to the above question. They are neither very satisfied nor very dissatisfied. People have even responded in the category of 2 showing that they are negatively bent towards satisfaction when it comes to the time.

What can be interpreted from this data is that people might want something that deliver services quicker as compared to traditional centralized systems.

Q9. On a scale of 1-5(with 5 being the highest), how ready are you to use technology to run everyday transactions and control your financial products and services instead of traditional intermediaries like banks?
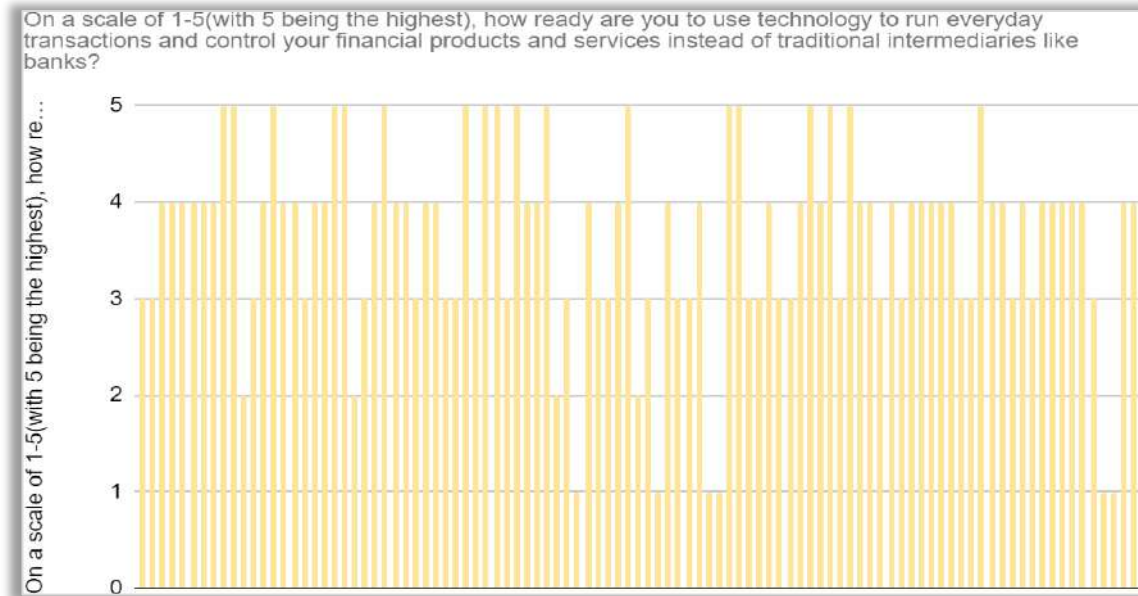

Figure 6.9 Survey of people showcasing their opinion to use technology for everyday transactions and financial services instead of using traditional intermediaries.

Data Analysis And Interpretation:

The above graph shows the responses of the people regarding the opinions of people to adopt technology to run everyday transactions and control our own financial products and services instead of traditional intermediaries. According to the graph, the maximum responses show 3 which shows that many people are neutral towards adopting the technology. However, a lot of respondents also have responses as 4 and 5 showing that they are positively inclined towards adopting technology.

What can be interpreted from this is that people are somewhat inclined towards using technology and replacing centralized mechanism of financing. Others do need time to adjust to it and are not really sure of how it is going to work or whether the platforms can be trusted completely.

5.   FINDINGS & CONCLUSION

Findings:

➢ The data is primarily conducted from different age groups to try and understand each generation's take on CeFi and their opinion towards some features of DeFi. The age groups included 78% responses from 18-25 years,10% from 26-35 years, 4% from 36- 49 years and 8% from 50 and above.

➢ 46% of the people did not know about what the term "Decentralized Finance" means. 28% were not sure about the term whereas 26% said yes to having knowledge about the term DeFi.

➢ 74% people said yes when asked if they are familiar with the terms "Blockchain" and "cryptocurrency". 14% were not sure about it whereas 12% said no for the same. This statistic clearly shows that as compared to DeFi, these terms are more common amongst the people however, not everyone knows about them or has a familiar line of thought regarding the same.

➢ When asked if any of the surveyed people have used/traded in Crypto-currency, 72% people denied, 14% claimed that they are knowledgeable regarding the process whereas 14% stated that they have traded in Crypto-currency.

➢ 60% of the people have faced certain kinds of problems while using a card for payment, whereas the rest 40% have had a good experience with the same.

➢ People are negatively inclined when it comes to them being satisfied with the amount of time banks and other financial institutions take in rendering services. Most are neutral about the same. There is a little response of those who feel that they are satisfied with the time taken for rendering the services.

➢ Majority of people are positively inclined towards using technology to run their transactions and use it in the financial space. Many people are still neutral about the same.

6.   CONCLUSION

This research paper is about understanding the concept of Decentralized Finance and tries to portray its meaning and its characteristics. Entering as a newcomer in the financial space, it gained huge popularity during lockdown because of boredom but the question remained if it's going to be able to stay the same and maintain its overgrowing status. DeFi has its advantages over the centralized system but it does not come without its disadvantages. There are various things that might bring down DeFi including technological failures, high-risks and the time liability till DeFi is able to gain everybody's trust but it is inevitable to stop it coming into practice due to it being able to replace some laid back features of CeFi and providing solutions to some problems like security, transparency, speed, dependence etc. It still cannot 100% or even near 100% state if DeFi is going to fully replace the centralized system but combining both the systems and taking benefits from their best parts is something that can definitely be predicted in the near future.

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