

ISSN 0976 - 1845

INDIAN JOURNAL OF CURRENT TRENDS IN MANAGEMENT SCIENCES

Peer Reviewed Interdisciplinary Journal

Vol. XVIII. No. II

August 2025



B.P.H.E. Society's

**INSTITUTE OF MANAGEMENT STUDIES
(CAREER DEVELOPMENT & RESEARCH)**

NAAC Re-accredited Institute
'Best Institute Award' by S. P. Pune University
Ahmednagar - 414 001. Maharashtra.

INDIAN JOURNAL OF CURRENT TRENDS IN MANAGEMENT SCIENCES

Vol. XVIII No. II

August 2025

EDITOR IN CHIEF

Dr. M. B. Mehta

Director & Research Head
IMSCD&R, Ahilyanagar (Maharashtra)

EDITOR

Dr. Rahul Khandelwal

Assistant Professor,
IMSCD&R, Ahilyanagar (Maharashtra)

EDITORIAL BOARD :

Dr. Mayank Saxena

Vice Chancellor, Sage University, Bhopal (Madhya Pradesh)

Dr. Sandip Bhatt

Dean, Faculty of Business Studies (Commerce)
Department of Business Studies, Sardar Patel University, (Gujrat)

Dr. Aashish Mehra

Professor, Galgotiya University, Greater Noida (Uttar Pradesh)

Dr. Parag Narkedhe

Associate Professor, IMR, Jalgaon (Maharashtra)

Dr. Rashmi Ranjan Panigrahi

Assistant Professor, Symbiosis Institute of Business Management,
Hyderabad (Telengana)

REVIEW BOARD

Dr. Pronoti Telore

Associate Professor, IMSCD&R, Ahilyanagar (Maharashtra)

Dr. Swati Barnabas

Librarian, IMSCD&R, Ahilyanagar (Maharashtra)

Prof. Guari Patil

Assistant Professor, IMSCD&R, Ahilyanagar (Maharashtra)

Prof. Poonam Tiwari

Assistant Professor, IMSCD&R, Ahilyanagar (Maharashtra)

Dr. Hari Lal Bhaskar

Assistant Professor, Rama University (Uttar Pradesh)

Dr. Ranjan Upadhay

Senior Professor (Adj), S.Gyan Vihar University, Jaipur (Rajasthan)

Views expressed in the articles are those of the authors.
Indian Journal of Current Trends In Management Sciences neither accepts nor
takes the responsibility for views expressed in the articles.

EDITORIAL

Digital transformation represents a fundamental organizational shift driven by the rapid spread of digital technologies. In today's landscape where Artificial Intelligence (AI) is deeply integrated into business environments organizations must rethink traditional models and strategies. At the same time, sustainable development emphasizes fulfilling present needs without jeopardizing the capacity of future generations to meet theirs.

The rise of e-commerce, which expanded two to five times during the pandemic, has boosted various connected industries. Many individuals who adopted digital platforms for the first time during that period continue to rely on them, marking a permanent change in consumer behaviour. To address the challenges posed by environmental changes and economic volatility, institutions and financial systems are now harnessing technology to promote sustainability especially through innovations in rural development, green energy, and AI-driven solutions.

This issue explores how digital innovation aligns with sustainability goals, particularly examining how multinational enterprises navigate digital globalization while fostering inclusive growth in rural regions. The journal aims to position sustainable development as a guiding framework for advancing human welfare, conserving natural ecosystems, and ensuring the responsible use of resources through smart technologies and renewable energy. In a rapidly evolving business environment shaped by globalization, technological revolutions, demographic shifts, and social imperatives, organizations face both new opportunities and challenges across Marketing, Finance, HR, and General Management. By integrating AI, green energy and rural development strategies, businesses can drive long-term sustainability and equitable growth for future generations.

	Article	Author	Page No.
1.	Corporate Social Responsibility And Youth Perception	Deependra Kumar Sinha, Drishti Sinha, Ayush Anand, Dr. Rakesh Kumar Dixit, Ekta Arya	1
2.	Empirical Analysis of Individuals' Green Energy Fund Stock Investment Intention In India	Dr. Pooja Singh	27
3.	“Social Impact of Corporate Social Responsibility (CSR) On Rural Development In India”	Mr. Kishor Jadhav, Dr.Dilip S.Chavan	47
4.	Globalization And Its Effect On Economic, Cultural, And Technological Development	Mr. Sandip D. Bhagat, Dr.DilipS.Chavan	54
5.	Viksit Bharat @2047: Demand of The Nation	Dr. Santosh Kumar	61
6.	Financial Support From Parents And Its Impact On Financial Satisfaction Among College Students.	Dr. Deependra Kumar Sinha, Dr. Rakesh Kumar Dixit, Shubham Prasad Kishan Anjan, Sandeep Dutta	78
7.	Pradhan Mantri Awas Yojana (pmay): Empowering The Poor	Dr. Swadesh Deepak, Dr. Ajay Singh Yadav	99

	Article	Author	Page No.
8	A survey on block chain - as - a - Service	Supriya Sapa, Shubhankar Sapa	119
9	Gamificationas A Tool For Implementing Nep 2020 And Ims Library Activities	Dr.Swati Barnabas	142
10	Silk In The Age of Ai: Transforming Tradition With Technology	Punita Bharti, Dr. Manju Kumari	158



CORPORATE SOCIAL RESPONSIBILITY AND YOUTH PERCEPTION

Deependra Kumar Sinha*, Drishti Sinha**, Ayush Anand***,
Dr. Rakesh Kumar Dixit****, Ekta Arya*****

ABSTRACT

This research paper aims to explore the level of awareness, perception, and expectations regarding Corporate Social Responsibility (CSR) among young individuals. In the modern business environment, CSR is no longer optional, it is increasingly expected by stakeholders, especially the youth, who represent the future of the consumer and workforce population. The central research problem addressed in this study is the apparent gap between awareness of CSR as a concept and the actual understanding of its implementation and impact.

To investigate this, a descriptive and analytical research design was adopted. Primary data was collected through a structured questionnaire distributed via Google Forms, targeting college students. The sampling method used was convenience sampling, and individual responses were collected. The questionnaire included a mix of multiple-choice, Likert-scale, and ranking questions. The data was analyzed using percentage analysis and visualized through charts to identify patterns and trends.

The results revealed that while a majority of respondents (87%) were aware of the term CSR, only a smaller percentage demonstrated a deep understanding of its practices. The most recognized CSR activities were environmental protection, healthcare, education, and charitable donations. Over 80% of participants acknowledged CSR as very important, with many viewing it as both a moral obligation and a strategic business tool. Significantly, more than 70% stated they would prefer buying from a socially responsible company, even at a higher price. Environmental sustainability and fair labor practices emerged as top priorities among respondents.

I. INTRODUCTION

Corporate Social Responsibility (CSR) means businesses commit to helping society and the environment, not just making profits. In India, CSR is now backed by law: large companies must spend at least 2% of their net profits on social projects (in areas like education, healthcare, and clean water). These efforts often align with global goals (the UN Sustainable Development Goals) and cover everything from rural development to climate action.

* Department of Vocational & management Studies, St. Xavier's College Ranchi

** Department of Bachelor of Business Administration (BBA), St. Xavier's College Ranchi

Carroll's classic CSR Pyramid illustrates this idea: companies have economic and legal duties at the base, and ethical and philanthropic goals at the top. Major Indian firms like the Tata Group, Infosys, Reliance and ITC put this into practice – for example, Tata runs large health and education programs and Infosys builds schools and training centers (tatasustainability.com/infosys.org). These real-world examples show how companies of all sizes can link everyday business with community support.

Corporate leaders and researchers also note that young people's views on CSR are especially important for the future of India. Many college students today admire companies that give back (Tata's rural projects, Reliance's health camps, etc.) and expect businesses to act responsibly. This study looks at what youth think about CSR and how it influences their behavior.

This research aims to explore how aware young individuals are about CSR, what they think of its role in business, and whether it influences their behavior— especially as consumers. The study uses primary data collected through a structured survey and provides practical insights into how CSR can be better communicated and practiced by companies in India.

Corporate Social Responsibility (CSR) refers to the ethical and voluntary commitment of businesses to contribute to economic development while improving the quality of life of employees, their families, the local community, and society at large. It goes beyond profit-making and compliance with the law, CSR emphasizes a company's obligation to act in a socially, environmentally, and economically responsible manner.

In the modern business world, CSR has evolved into a multidimensional concept that aligns a company's values and operations with the broader goals of sustainable development. Companies today are not only judged by their financial performance but also by their social and environmental impact. Issues such as climate change, income inequality, ethical labor practices, corporate transparency, and community engagement are at the forefront of public and investor interest.

II. EVOLUTION OF CSR:

The concept of Corporate Social Responsibility (CSR) has evolved significantly over the past century—from a philanthropic activity to a strategic business practice embedded in corporate governance and sustainability. This evolution reflects changes in society's expectations from businesses, driven by globalization, environmental awareness, ethical consumerism, and stakeholder activism.

- **Early 20th Century – Philanthropy Era**

In the early stages, CSR was synonymous with philanthropy. Industrialists such as Andrew Carnegie and John D. Rockefeller in the West, and Indian business leaders like J.R.D. Tata, supported charitable causes through personal wealth and corporate funds. Businesses operated with the belief that giving back to society was a moral obligation, but not a business priority.

- **1950s to 1970s – Ethical and Legal Expectations.**

The 1950s marked a shift with scholars like Howard R. Bowen, often called the "**Father of CSR**", who formally introduced the concept in his book "Social Responsibilities of the Businessman" (1953). During this period, there was a growing belief that businesses had responsibilities beyond profit, especially in areas like employee welfare, community development, and legal compliance.

- **1980s to 1990s – Strategic CSR and Stakeholder Theory.**

CSR began to take on a more structured form. The focus shifted from just doing good to integrating social and environmental concerns into business strategies. Edward Freeman's Stakeholder Theory (1984) emphasized that companies must serve not just shareholders but also employees, customers, suppliers, communities, and the environment. CSR began to be seen as a means of achieving long-term business sustainability.

- **2000s – Globalization and Sustainability**

As globalization intensified, multinational corporations were increasingly scrutinized for labor practices, environmental damage, and corporate scandals. Frameworks like the UN Global Compact (2000) and Triple Bottom Line (People, Planet, Profit) became influential. CSR became linked with corporate governance, transparency, and sustainability reporting.

- **Post 2010 – Mandatory CSR in India.**

India played a pioneering role by becoming the first country in the world to legislate CSR. With the Companies Act, 2013, CSR spending was made mandatory for large corporations. This legal framework formalized CSR as part of corporate accountability, focusing on inclusive growth and nation-building.

III. CSR IN INDIAN CONTEXT:

In India, the idea of businesses giving back to society is not new—it is rooted in the concept of "trusteeship" as advocated by Mahatma Gandhi, who believed that wealth should be used for the benefit of society. Business leaders like Jamsetji Tata, Ghanshyam Das Birla, and

others historically engaged in philanthropic activities by establishing schools, hospitals, and foundations long before CSR became a formal term.

However, the modern understanding of CSR in India took a significant turn with economic liberalization in the 1990s, which brought in greater corporate responsibility and global standards. The push for formal CSR regulation came in the wake of concerns over growing inequality, environmental degradation, and corporate misconduct.

• **Legal Framework: The Companies Act, 2013**

India became the first country in the world to make CSR mandatory through the Companies Act, 2013 (Section 135). As per this law: Companies with a net worth of ₹500 crore or more, or turnover of ₹1,000 crore or more, or net profit of ₹5 crore or more are required to spend 2% of their average net profit (last 3 years) on CSR activities. CSR activities must be in accordance with Schedule VII, which includes:

- Eradicating hunger and poverty
- Promoting education
- Empowering women
- Ensuring environmental sustainability
- Protection of national heritage
- Rural development

Contributions to government relief funds Companies are required to form a CSR Committee to plan and oversee their initiatives and report them annually in the Board's Report.

IV. CARROLL'S PYRAMID OF CSR:



Developed by Archie B. Carroll, this model is one of the most widely accepted frameworks to understand CSR. The Carroll Pyramid classifies CSR into four hierarchical levels, with each level representing a different type of responsibility that a corporation has toward society.

- **Economic Responsibility (Base of the Pyramid) – “Be profitable”**

This is the foundational responsibility of any business. Without profit, a company cannot survive, grow, or contribute to society. Companies are expected to provide goods and services that society needs at a fair price.

- **Legal Responsibility – “Obey the Law”**

Businesses must comply with local, national, and international laws. Legal responsibilities ensure that businesses operate within the framework of rules defined by society.

- **Ethical Responsibility – “Do what is right, just, and fair”**

These responsibilities go beyond legal requirements. Companies are expected to follow moral principles even when laws do not mandate them. For example, fair wages, safe working conditions, and honest marketing.

- **Philanthropic Responsibility (Top of the Pyramid) – “Be a good corporate citizen”**

This involves voluntary activities like donating to charities, sponsoring education, or supporting cultural events. It enhances a company's image and builds trust in the community.

V. REVIEW OF PAST STUDIES ON CSR:

The perception and practice of Corporate Social Responsibility (CSR) have undergone significant transformation globally. CSR has moved beyond mere philanthropy to become a core part of strategic business operations. The following section presents a review of notable academic studies, institutional reports, and global surveys that explore how CSR is perceived across regions, particularly by the youth.

- **Cone Communications CSR Study (2017, USA)**

This well-cited report revealed:

87% of consumers stated they would purchase a product because a company advocated for an issue they cared about.

76% would refuse to buy from a company if they learned it supported an issue contrary to their beliefs.

Millennials and Gen Z were more likely to research a company's CSR stance before

purchasing.

This reflects a **value-based consumer model**, particularly among younger populations, who demand ethical transparency.

Source- <https://engageforgood.com/2017-cone-communications-csr-study/>

• Nielsen Global Survey on Corporate Social Responsibility (2019)

Based on responses from over 30,000 consumers in 60 countries:

73% of global millennials are willing to pay more for sustainable products.

Environmental sustainability and social justice were key concerns.

Asia-Pacific markets, including India, showed a **strong increase in socially conscious spending**.

Source- <https://www.nielsen.com/insights/2019/can-corporate-citizenship-be-good-for-communities-and-the-bottom-line/>

• KPMG India CSR Reporting Survey (2020)

This comprehensive report reviewed CSR spending trends post the introduction of Section 135 of the Companies Act, 2013. Key insights include:

Over 90% of eligible companies complied with CSR spending requirements.

The majority of CSR funds were allocated to **education, healthcare, and rural development**.

The report emphasized the **need for impact measurement** and better communication strategies to build public trust. ■

• Stakeholder Theory of CSR

Stakeholder Theory, introduced by R. Edward Freeman in 1984, proposes that businesses should create value not just for shareholders (investors) but for all parties affected by their operations. These stakeholders include employees, customers, suppliers, communities, governments, and even the environment.

Unlike traditional business models that focus only on maximizing profits for shareholders, stakeholder theory emphasizes **ethical responsibility** and long-term relationships with diverse groups. In the context of **Corporate Social Responsibility (CSR)**, this theory supports the idea that companies must act in a socially responsible manner to maintain the trust and support of all stakeholders.



With the implementation of the Companies Act, 2013, CSR became mandatory for certain firms, leading to structured and impactful initiatives across industries.

The following table highlights some of the top Indian companies based on their CSR spending and the nature of their contributions.

Company	CSR Spend (? Crores)	Key CSR Areas	Notable
Godrej Consumer Products	34.08	Livelihood, waste mgmt, water conservation	Supported 9,000+ nano entrepreneurs , achieved zero waste-to-landfill, ensured water positivity
Infosys Ltd.	325.32	Digital education, community dev, sustainability	Launched 'Infosys Headstart', carbon neutral since 2020
Wipro Ltd.	182.5	Education, healthcare, sustainability	Focused on community development and environmental programs
Reliance Industries Ltd.	1,186	Rural dev, education, health, disaster response, arts & culture	CSR via Reliance Foundation, impacted 5.75+ crore lives
TCS (Tata Consultancy Services)	727	Skilling, employment, entrepreneurs hip, education	Benefited 1.7 million+ globally, employees volunteered 7 lakh+ hours
HDFC Bank Ltd.	736.01	Healthcare, education, sustainability, rural dev	CSR under 'HDFC Parivartan', reached 9.6+ crore people
ICICI Bank Ltd.	266.62	Rural initiatives, socio - economic development	Through ICICI Foundation, focus on inclusive growth and skill building
Hindustan Unilever Ltd.	157.58	Health, hygiene, education	Multiple national hygiene and awareness programs
Asian Paints Ltd.	90.8	Vocational training, hygiene, water sustainability	? 49.75 Cr for skill training, ? 23.26 Cr for water initiatives
Tata Consumer Products	20.12	Health, sanitation, skill dev, rural upliftment, environment	1.39 million+ beneficiaries, achieved Scope 1 & 2 carbon neutrality

Source: <https://thecsrjournal.in/top-100-companies-india-csr-sustainability-2021/>

VI. CHALLENGES IN CSR:

• Failure to Consider a Holistic View

Many companies focus CSR activities on isolated, short-term projects instead of integrating them into their overall business strategy. A holistic approach would involve aligning CSR goals with long-term community development, environmental sustainability, employee welfare, and ethical governance. The absence of such a view results in fragmented efforts that may fail to generate meaningful, sustainable change.

• Lack of Transparency

Transparency in fund allocation, implementation, and impact measurement is often missing in CSR practices. Many companies do not disclose full details about the execution and outcome of their projects. This lack of transparency not only raises doubts about the legitimacy of CSR spending but also weakens trust among stakeholders, including investors, communities, and regulatory authorities.

• Greenwashing

Greenwashing refers to the practice of exaggerating or falsely advertising a company's environmental and social responsibility. Some firms engage in CSR merely to boost their image, without truly committing to the cause. For example, a company may highlight tree-planting drives while continuing to pollute or exploit resources unsustainably. This erodes the credibility of CSR as a concept and misleads consumers.

• Lack of Sufficient Resources

Smaller companies and startups often struggle to allocate adequate financial, human, or managerial resources for CSR. Even among larger corporations, CSR is sometimes seen as a cost burden rather than an investment. This results in low-quality or limited outreach programs that fail to create significant societal impact.

• Lack of Participation

In many cases, the target communities are not involved in the planning or execution of CSR programs. This top-down approach leads to projects that may not address the actual needs or cultural context of the people they are meant to help. Community disengagement results in poor ownership, low impact, and the eventual failure of the initiative.

• Lack of Strategic Planning

CSR efforts often lack proper planning and long-term vision. Many companies initiate programs without conducting needs assessments, defining goals, or setting measurable

outcomes. As a result, the initiatives are inconsistent, unsustainable, or fail to scale. Without strategic planning, CSR becomes reactive and disjointed rather than proactive and impactful.

VII. RESEARCH METHODOLOGY

• Research Design

The research design is **descriptive** in nature. It aims to understand and explain the level of awareness, perception, and behavioral responses of youth towards CSR. Descriptive studies help in portraying an accurate profile of persons, events, or situations.

• Data Collection Method

The study is based on **primary data**, which was collected through a **structured online questionnaire** created using Google Forms. The form included:

- Multiple-choice questions
- Likert-scale based opinion questions
- Ranking-type questions
- Open-ended responses

This mixed-question format enabled both **quantitative** and **qualitative** insights.

• Sampling Method

The sampling technique used is **convenience sampling**, a non-probability method. Respondents were selected based on ease of access and availability. Although not statistically random, this method is suitable for exploratory studies among a specific group like students.

• Target Audience

The survey was directed toward mostly students and young adults in early stages of their careers. This group is highly relevant as it represents the future consumers, employees, and entrepreneurs who will shape and respond to CSR practices in coming years.

• Tools of Analysis

The collected data was analyzed using:

- Percentage Analysis
- Bar Charts and Pie Charts

- Average Ranking Technique
- Interpretation of open-ended responses

● Objectives and Scope of the Study

The study aims to explore and analyze the understanding, perception, and behavioral impact of Corporate Social Responsibility (CSR) among young individuals, particularly students and early-career professionals. The specific objectives include:

- To assess the level of awareness of CSR among youth respondents.
- To analyze the perception of CSR initiatives and their significance in modern business practices.
- To evaluate how CSR influences consumer behavior, particularly buying preferences.
- To understand which CSR domains (e.g., environment, education, healthcare) are considered most important by the youth.
- To identify the gap, if any, between awareness and action among young individuals regarding CSR.

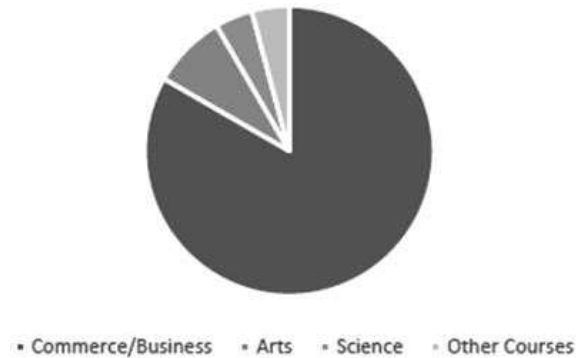
The scope of this study is defined by its focus on young individuals, including college students and early professionals, who represent future stakeholders—both as consumers and decision-makers in society. The study primarily revolves around their awareness, opinions, and behavioral responses related to Corporate Social Responsibility.

The scope does not include a detailed financial analysis or longitudinal impact of CSR projects over time. This research provides a snapshot view of youth perspectives and highlights key themes for companies and educators to consider while engaging the next generation in CSR discourse.

VIII. DATA ANALYSIS AND INTERPRETATION

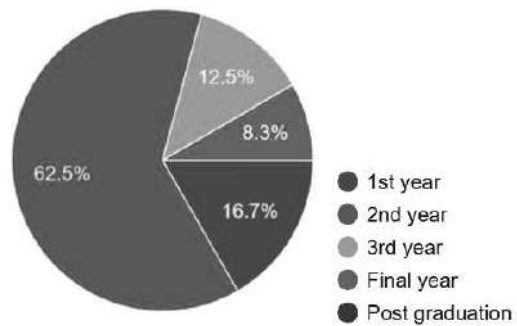
A significant majority of respondents (**83.3%**) belong to the Commerce/Business stream, indicating a strong representation from students with an academic background in finance, business, or economics.

The remaining participants are distributed among Arts (**8.3%**), Science (**4.2%**), and Other courses (**4.2%**).

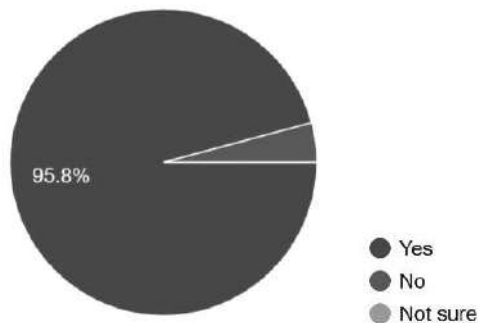


The majority of the respondents (62.5%) are in their 2nd year, reflecting active participation from mid-level undergraduate students.

1st-year students made up 16.7% of the responses, while 3rd-year and Final-year students constituted 12.5% and 8.3%, respectively



• **Awareness of CSR among Youth:**

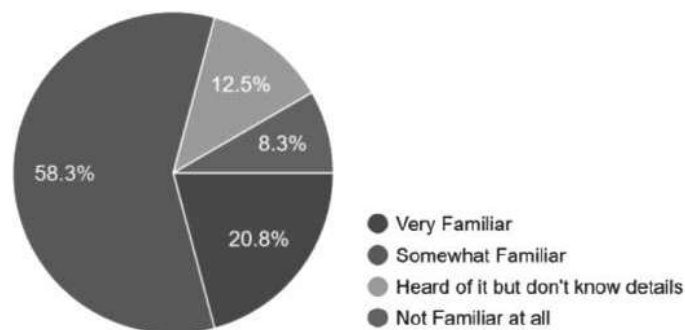


This overwhelming majority indicates **avery high level of basic awareness** of the term CSR among respondents. This suggests that CSR is a commonly encountered concept, likely introduced through academic curricula, corporate seminars, media, or internships.

While almost everyone has heard of CSR, the **depth of understanding varies significantly**. Only around one-fifth of respondents consider themselves *very familiar* with CSR practices, and over half claim *somewhat familiar* knowledge. This suggests a moderate level of engagement with real-world CSR implementations by corporations.

Notably, **20.8%** of the students are either not familiar or only vaguely aware of the actual practices and initiatives conducted under CSR.

This highlights a gap between **theoretical recognition** and **practical understanding**, pointing toward the need for better exposure to real examples and industry initiatives.



• **Possible reasons for this trend:**

1. Academic Exposure (High Awareness)

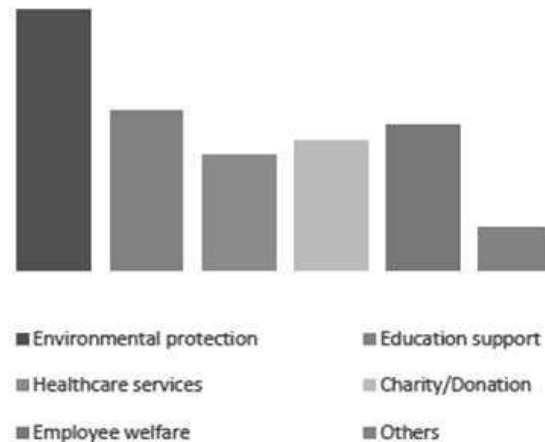
Most respondents belong to commerce or business courses, where CSR is often included as a topic in subjects like Business Ethics, Corporate Governance, or Environmental Studies. This explains the nearly universal recognition of the term.

2. Lack of Real-World Context (Moderate Familiarity)

Despite hearing about CSR, many students may not be deeply engaged with the actual strategies and programs executed by multinational companies. Without direct industry interaction, case studies, or practical projects, the knowledge tends to remain superficial.

3. Limited Industry Interaction (Low Familiarity for Some)

A portion of students, especially those in earlier academic years or non-business streams, might not have had sufficient opportunities for internships, corporate guest lectures, or CSR-focused research, resulting in limited exposure.

CSR Activities of MNCs:

To understand how well-informed students are about the types of Corporate Social Responsibility (CSR) activities multinational companies typically undertake, a multiple-response question was asked. Respondents were allowed to select more than one option, reflecting the diverse nature of CSR initiatives and their perception of company priorities.

IX. KEY FINDINGS FROM THE RESPONSES:**• Environmental Protection**

This was the most selected CSR activity, indicating a widespread belief that environmental sustainability is a top priority for companies. With rising global concern about climate change and environmental degradation, many corporations highlight eco-friendly practices such as reducing carbon emissions, switching to renewable energy, and investing in sustainable packaging.

• Education

Nearly half the participants believe companies actively support education, whether through scholarships, building schools, or digital literacy initiatives. This reflects growing awareness of the role corporations play in improving education infrastructure in underprivileged regions.

• Employee Welfare

The focus on internal stakeholders is also recognized, with many respondents acknowledging employee welfare programs like mental health support, workplace safety, and fair wages as CSR components.

- **Charity/Donation**

Traditional forms of CSR such as donations to NGOs, relief funds, and sponsorships remain a popular association. Though perhaps not as "strategic" as sustainability efforts, charitable giving is still seen as a visible indicator of social responsibility.

- **Healthcare Services**

Healthcare initiatives like free medical camps, COVID relief, or improving rural healthcare access are acknowledged by one-third of respondents. These programs were particularly highlighted during and after the pandemic, which likely influenced perception.

X. POSSIBLE REASONS FOR THIS TREND:

- **Visibility of Environmental Initiatives**

Environmental projects are often **publicized through media**, sustainability reports, and branding (e.g. "Go Green" initiatives). Hence, students are likely to notice and associate companies with such efforts more than others.

- **Education and Health as Priority Areas**

These sectors are **frequently chosen by companies to meet CSR mandates in India**, as specified in Section 135 of the Companies Act, 2013. Government encouragement and societal need also make them high-impact areas that corporations like to support.

- **Influence of Recent Events**

The COVID-19 pandemic increased public attention toward healthcare, donations, and employee well-being. Companies providing oxygen supplies, PPE kits, and employee medical assistance have helped shape these perceptions.

- **Broader Definition of CSR Among Students**

Responses across diverse categories suggest that students **understand CSR beyond simple charity**, recognizing strategic elements such as sustainable development and long-term stakeholder support.

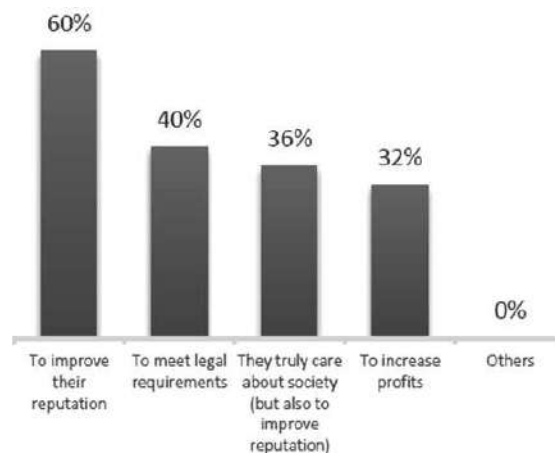
XI. IMPORTANCE OF CSR:

56% of respondents believe CSR is "Very important", indicating that a majority of participants see CSR as a core part of a company's values and strategy, not just an add-on.

Students perceive CSR as an essential part of modern business practices. This could stem from increased exposure to environmental and social challenges where companies are

expected to play an active role. The lack of negative or neutral responses suggests a strong normative belief that companies should contribute positively to society.

While students acknowledge that some companies may genuinely care about societal well-being, there is a prevailing belief that CSR is largely **strategic and reputation-driven**. The **perceived link between CSR and branding** is strong. Many respondents also understand that companies might be complying with **legal frameworks** or using CSR as a route to **indirect profitability**.



• **Key Responses:**

- 60% believe companies engage in CSR to improve their reputation.
- 40% think CSR is done to meet legal requirements, likely referencing government mandates such as India's CSR law under the Companies Act.
- 36% believe that companies genuinely care about society, though it's combined with a reputation motive in the phrasing.
- 32% feel CSR is pursued to increase profits (e.g. through brand loyalty or customer trust).
- 0% selected "Others", indicating that these options sufficiently covered the general perceptions

Social Responsibility and Profitability:

The relationship between **corporate social responsibility (CSR)** and **profitability** has been the subject of increasing interest in both academic and corporate circles. While some

argue that CSR is a cost burden, a growing body of evidence shows that socially responsible companies often outperform their peers financially in the long run. The central idea is: **CSR can drive profitability by building trust, enhancing brand value, and reducing risk.**

- **How CSR Contributes to Profitability:**

- 1. Enhanced Brand image & Customer Loyalty**

Socially responsible companies build stronger relationships with customers, who prefer to buy from brands that align with their values.

- 2. Investor Attraction**

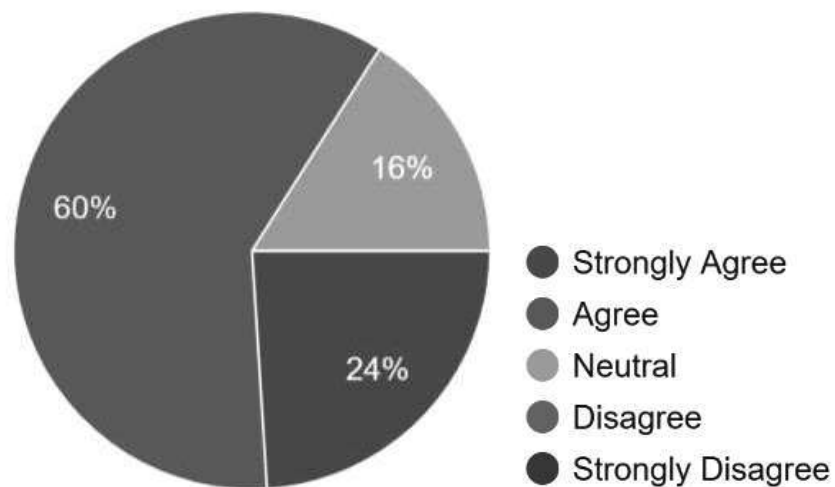
ESG (Environmental, Social, and Governance) investing is on the rise. Many investors now favor companies with robust CSR practices.

- 3. Employee Satisfaction & Retention**

CSR improves employee morale and helps attract and retain top talent, reducing hiring and training costs.

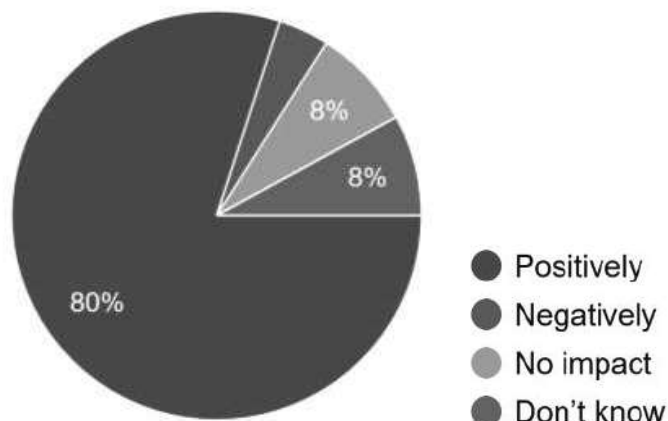
- 4. Risk Management**

Companies that follow ethical practices are less likely to face legal, reputational, and operational risks.



When conducted survey question on this, a strong **84% of respondents (Agree + Strongly Agree)** believe that **profitability and social responsibility can coexist**. This reflects a modern mindset where youth no longer see CSR as a burden, but as a smart and sustainable business strategy.

CSR and Consumer Decisions:



The vast majority believe CSR is **not a financial burden** but rather a **strategic advantage**. This aligns with modern business thinking where **sustainability and ethics** attract customers, employees, and investors — leading to better long-term performance.

XII. REAL-WORLD DATA:

A Harvard Business School study found that companies with strong CSR performance had higher stock returns and ROA (Return on Assets).

Nielsen's global report (2022) stated that 66% of consumers are willing to pay more for sustainable brands.

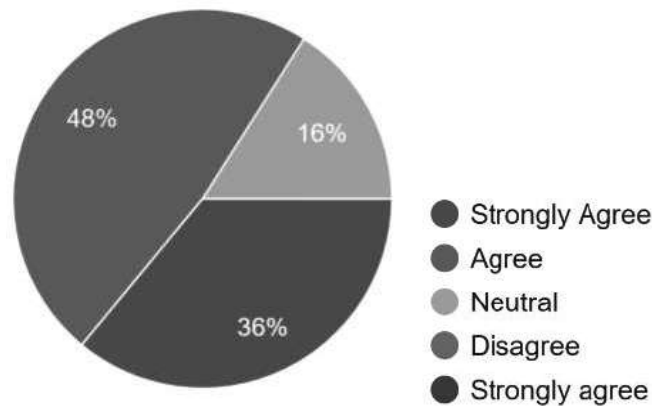
Unilever claimed that its “Sustainable Living Brands” grew 69% faster than the rest of its business and delivered 75% of the company's growth.

Sources: https://www.hbs.edu/ris/Publication%20Files/SSRN_id1964011_6791edac-7daa-4603-a220-4a0c6c7a3f7a.pdf

<https://csic.georgetown.edu/magazine/corporate-social-responsibility-matters-ignore-millennials-peril/>

<https://www.unilever.com/news/press-and-media/press-releases/2019/unilevers-purpose-led-brands-outperform/>

When we talk about balancing Profitability and ethical responsibilities, a combined **84% agree or strongly agree** that their company successfully **balances ethics with profit**. This reflects confidence that businesses can uphold values **without sacrificing financial performance**. The absence of negative responses shows strong support for CSR as a **core value** rather than a compromise

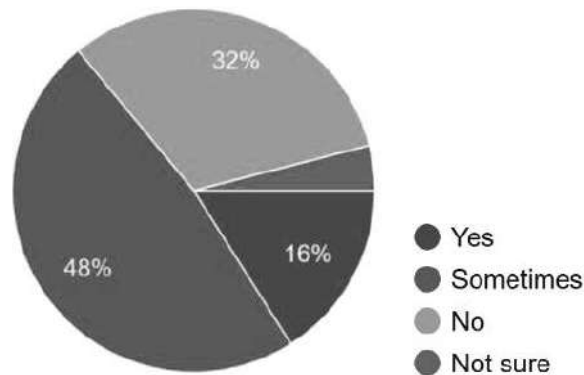


- A Deloitte study revealed that 70% of executives agree that companies can “do well by doing good.”
- Tesla integrates ethics (zero-emission transport) while being profitable — its 2023 net income was \$15 billion.
- Microsoft reports on ESG goals and has improved both its brand and profit margin by focusing on responsible AI, carbon neutrality, and digital inclusion.

XIII. COMPLEXITY OF CSR

A complexity arose when respondents were asked “ **Do you Believe that companies sacrifice profitability for ethical responsibility?**”

Nearly half believe companies occasionally compromise profits to do the right thing, while 32% disagree — suggesting that ethical behavior often coexists with profitability. Only a small portion believe that companies consistently lose money for ethics.



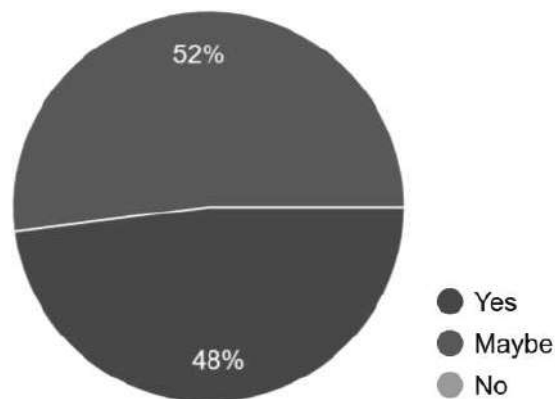
CSR might involve short-term costs, but many studies show long-term gains, Example: Patagonia gives away 1% of sales to environmental causes. They have a cult customer base and high margins.

Where if we look into Starbucks, they pay a premium for ethically sourced coffee — which increases operational costs, but builds brand trust among its customers.

A McKinsey report showed companies that score highly on ESG metrics have lower capital costs and less volatility.

Source: https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Strategy%20and%20Corporate%20Finance/Our%20Insights/Five%20ways%20that%20ESG%20creates%20value/Five-ways-that-ESGcreatesvalue.ashx?utm_source=chatgpt.com

XIV. CONSUMER EXPECTATIONS AND IMPACT:



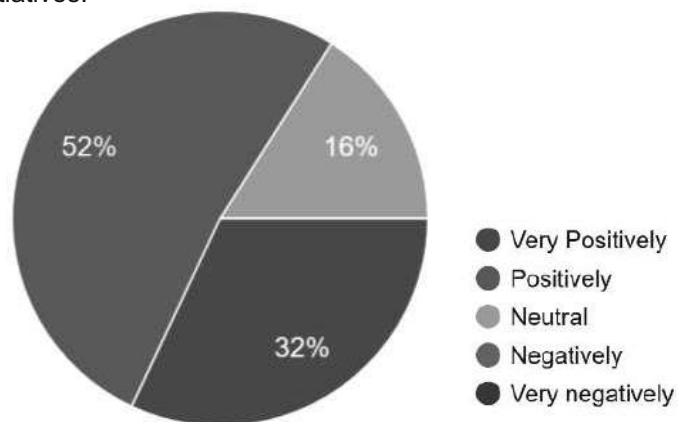
- A combined 100% of respondents are open to buying from socially responsible companies –48% are willing to pay a higher price, while 52% are unsure.
- The “Maybe” response (52%) reflects a critical insight into Indian consumer behavior. India is a **price-sensitive market**, where even socially aware consumers often have to weigh ethical choices against affordability.
- For many, price remains a top priority, and while CSR is appreciated, it may not always be the deciding factor in purchasing decisions — especially in **lower or middle-income segments**.

From our survey, CSR knowledge has a very strong influence on brand perception.

- 84% of respondents reported a positive or very positive perception of companies that practice CSR.
- No one viewed CSR negatively, reinforcing the belief that being socially responsible enhances brand image.
- CSR initiatives can be a key driver of trust, loyalty, and long-term customer relationships.

These results show that youth and modern consumers increasingly value ethics and sustainability. Even in price-sensitive markets, a strong CSR identity can justify a premium price. This is particularly relevant for:

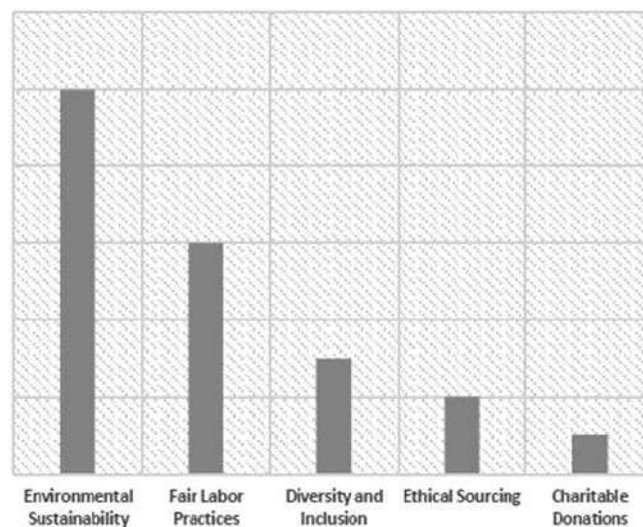
- Millennials and Gen Z, who are more likely to research a brand's values before making a purchase.
- Startups and small businesses, who can differentiate themselves with authentic CSR initiatives.



XV. CSR RANKING:

The survey asked participants to rank five Corporate Social Responsibility (CSR) areas in order of priority for a company (1 = highest, 5 = lowest). The results are summarized in the bar chart, which shows the following rankings:

- Environmental Sustainability: Ranked 1st (highest priority)
- Fair Labor Practices: Ranked 2nd
- Diversity and Inclusion: Ranked 3rd
- Ethical Sourcing: Ranked 4th
- Charitable Donations: Ranked 5th (lowest priority)



Key Observations:

- Environmental Sustainability is the top priority, reflecting growing societal and regulatory emphasis on climate change, resource conservation, and eco-friendly business practices.
- Fair Labor Practices follows closely, indicating concern for employee welfare and human rights in supply chains.
- Diversity and Inclusion ranks mid-tier, suggesting it is valued but may not be seen as urgent as environmental or labor issues.

- Ethical Sourcing is prioritized lower, possibly because it overlaps with fair labor or is less visible to stakeholders.
- Charitable Donations is ranked last, which may imply that philanthropy is viewed as less impactful than systemic CSR initiatives.

Limitations:

Small sample size

Lack of demographic context (e.g. industry, region) that could influence rankings.

XVI. BIGGEST CHALLENGES FOR MNCs IN BALANCING PROFIT AND ETHICS:**● Balancing Shareholder Pressure vs. Ethical Investment**

- One of the most commonly cited challenges is meeting shareholder expectations for short-term profitability, while investing in long-term CSR initiatives that may not show immediate returns.
- This creates a conflict: shareholders seek returns, while CSR requires upfront investment in sustainability, fair labor practices, or community development.

● Navigating Diverse Global Ethical Standards

- MNCs operate across countries with varying regulations, cultures, and moral expectations.
- A practice considered ethical in one country may be criticized elsewhere. Maintaining a consistent ethical brand identity across all markets becomes challenging.

● Cost of Ethical Implementation

- Hiring qualified CSR professionals, creating audit mechanisms, and offering ethical compensation across supply chains **increases operational costs**.
- Companies often struggle to justify these costs—especially when cheaper unethical options are available.

● Short-Term Profits vs. Long-Term Ethics

- Companies often face a temptation to cut ethical corners to stay competitive in tight markets.
- This includes greenwashing, exploiting tax loopholes, or overlooking poor labor practices.

● Stakeholder Conflicts & Cultural Expectations

- There's an ongoing tension between local stakeholders (NGOs, media, governments) and corporate profit goals.
- Prioritizing one side can alienate the other.

XVII. STRATEGIES TO IMPROVE CSR ACTIVITIES**● Set Focused and Measurable CSR Goals**

To make CSR initiatives truly impactful, companies need to avoid vague commitments and instead focus on clearly defined, measurable goals. When CSR objectives are tied to specific targets—like reducing carbon emissions by a certain percentage or improving access to education in a region—it becomes easier to track progress and demonstrate accountability. Incorporating these goals into executive performance metrics can ensure that CSR becomes a leadership priority rather than just a side activity.

● Collaborate with Local NGOs and Community Partners

Partnering with local NGOs helps companies better understand the needs of the communities they wish to serve. These organizations bring grassroots-level insights and credibility, allowing CSR efforts to become more relevant and sustainable. Whether it's conducting health camps, improving literacy, or running vocational training, such collaborations increase both the reach and the effectiveness of CSR programs.

● Launch Education and Awareness Campaigns

Empowering communities through knowledge is one of the most sustainable forms of CSR. Educational campaigns—on topics like hygiene, environmental sustainability, financial literacy, or digital skills.

● Ensure Transparency Through Impact Reports

Partnering with local NGOs helps companies better understand the needs of the communities they wish to serve. These organizations bring grassroots-level insights and credibility, allowing CSR efforts to become more relevant and sustainable. Whether it's conducting health camps, improving literacy, or running vocational training, such collaborations increase both the reach and the effectiveness of CSR programs.

● Involve Employees in CSR Initiatives

Employee involvement can bring fresh energy and ideas to CSR efforts. When employees participate in volunteering programs or suggest community projects, they feel a stronger

emotional connection to their workplace. It also helps align internal culture with external image. Structured employee engagement in CSR not only improves morale but also reflects the company's inclusive approach to responsibility.

● Integrate CSR into Core Business Operations

CSR should not be limited to donations or seasonal campaigns—it should be embedded in the company's supply chain, procurement practices, and operational policies. For example, choosing eco-friendly materials, ensuring fair labor standards, and reducing waste across operations can turn CSR from a cost center into a competitive advantage. This integration demonstrates that ethical responsibility is part of how the company does business every day.



Source: <https://ar.inspiredpencil.com/pictures-2023/corporate-social-responsibility-model>

XVIII. CONCLUSION

This study set out to explore the awareness, perceptions, and behavioral impact of Corporate Social Responsibility (CSR) among youth, particularly students and young professionals. Through a structured primary survey, the research revealed that a significant majority of young individuals are not only aware of CSR but also consider it an essential responsibility of businesses in today's world.

The data shows that while awareness of CSR is high, a knowledge gap remains in terms of detailed understanding. Respondents strongly associate CSR with environmental protection, education, healthcare, and employee welfare—indicating a socially conscious mindset.

The study also examined CSR challenges in the Indian context, including issues such as superficial implementation, lack of transparency, and greenwashing. Despite the existence of mandatory CSR provisions under the Companies Act, 2013, many firms struggle with strategic planning, long-term vision, and stakeholder alignment.

From a broader perspective, the findings underscore the importance of integrating CSR into the core business strategy, rather than treating it as an add-on or marketing tool. It also highlights the growing relevance of youth in shaping the CSR landscape—both as future decision-makers and as conscious consumers.

In conclusion, CSR is no longer a philanthropic obligation but a strategic necessity in today's socially aware and environmentally concerned business environment. For CSR to be truly effective, companies must adopt a transparent, inclusive, and well-planned approach.

XIX. REFERENCES

- Andersen, M. L., & Dejoy, J. S. (2011). Corporate social and financial performance: The role of size, industry, risk, R&D and advertising expenses as control variables. *Business and Society Review*, 116(2), 237–256.
- Arevalo, J. A., & Aravind, D. (2011). Corporate social responsibility practices in India: Approach, drivers & barriers. *Corporate Governance: The International Journal of Business in Society*, 11(4), 399–414.
- Australian Centre for Corporate Social Responsibility (ACCSR). (2011). *The State of CSR in Australia Annual Review 2010/11*.
- Boutin-Dufresne, F., & Savaria, P. (2004). Corporate social responsibility and financial risk. *The Journal of Investing*, 13(1), 57–66.
- Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60(11), 2835–2857.
- NielsenIQ. (2022). Socially conscious shoppers expect new levels of transparency :<https://nielseniq.com/global/en/insights/analysis/2022/socially-conscious-shoppers-expect-new-levels-of-transparency-from-brands/>
- Unilever. (2019). Unilever's purpose-led brands outperform. Retrieved from: <https://www.unilever.com/news/news-search/2019/purpose-led-brands-outperform/>
- McKinsey & Company. (2022). Why ESG is here to stay. Retrieved from: <https://www.mckinsey.com/capabilities/sustainability/our-insights/why-esg-is-here-to-stay>
- Carroll, A. B. (1991). The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders. *Business Horizons*, 34(4), 39–48.

- Companies Act, 2013. Section 135 – Corporate Social Responsibility. *Ministry of Corporate Affairs, Government of India*. Retrieved from: <https://www.mca.gov.in>
- Gupta, A., & Sharma, R. (2020). Youth Awareness and Perception Towards CSR Activities: An Empirical Study. *Journal of Business and Management*, 22(3), 56–64.
- Singh, N., & Verma, S. (2021). CSR Practices in India: Role of Youth and Stakeholder Engagement. *International Journal of Management Studies*, 9(1), 44–52.
- The CSR Journal. (2021). Top 100 Companies in India for CSR and Sustainability. Retrieved from: <https://thecsrjournal.in/top-100-companies-india-csr-sustainability-2021/>
- Law Audience. (2021). Corporate Social Responsibility in India: Issues and Challenges. Retrieved from: <https://www.lawaudience.com/corporate-social-responsibility-in-india-issues-and-challenges/>
- Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Boston: Pitman.
- World Economic Forum. (2022). Why CSR Matters in the Post-COVID Economy. Retrieved from: <https://www.weforum.org/agenda/2022/01/why-csr-matters-in-the-post-covid-economy/>



EMPIRICAL ANALYSIS OF INDIVIDUALS' GREEN ENERGY FUND STOCK INVESTMENT INTENTION IN INDIA

Dr. Pooja Singh *

ABSTRACT

In light of the theory of planned behavior, this study aims to understand the determinants of individuals' investment intentions in Green Energy Stock. Researcher employed non-probability methods to collect data from 246 respondents and used t-test, one-way ANOVA, Pearson Correlation, and multiple regression analysis to test the hypotheses. The outcomes revealed that the individuals' demographic characteristics, such as education and occupation, significantly influenced their saving habits, perceived risks, evaluation of the regulatory framework, and investment intentions in green energy stocks. Moreover, investment variables such as saving habits ($\beta = .56$), financial awareness about green energy stocks ($\beta = .39$), and evaluation of the regulatory framework ($\beta = .53$) significantly influenced individuals' investment intentions in green energy stocks. The findings of this study have both theoretical and practical implications.

Keywords- *Theory of Planned Behavior, Green Energy Stock, Saving Habit, Financial Awareness, Perceived Risks*

I. INTRODUCTION

India believes in the thought of “Sarve Bhavantu Sukhinah, Sarve Santu Niraamayaah; Sarve Bhadraanni Pashyantu, Maa Kashcid-Duhkha-Bhaag-Bhavet”, and is dedicated to fulfilling its responsibility towards humanity and the planet through climate protection actions and strategies. India proposed their 'Panchamrit Action Plan', i.e. target to achieve both short terms (such as the generation of 500 GW energy from non-fossil sources; fulfilling 50% of energy requirement from renewable energy, i.e., wind, solar, and hydro; 1 billion tons reduction in CO₂ emissions and 45% reduction in carbon intensity by 2030) and long-term objectives (i.e. net zero CO₂ emissions by 2070) (PIB, Delhi, 2023).

Renewable Energy (RE), also known as clean energy, is directly linked with regenerative natural sources that do not deplete over time, such as solar, wind, hydro, and bio-energy (Lal et al., 2022; Dey et al., 2022). India is blessed with an ample range of RE sources. The government continuously supports and encourages both the private sector and government

* Assistant Professor Vidya Mandir Degree College, Kaimganj Farrukhabad, Uttar Pradesh-209502.
Email ID- poojasingh.singh24@gmail.com

institutions to make efforts in enhancing investment in RE (Kumar et al., 2010; Raghuwanshi & Arya, 2019). In India, the RE encompasses various sources, including solar, wind, hydro, hydrogen, and bio-waste, as well as technologies such as the 2G Ethanol Pilot, Comfort Climate Box for tropical regions, hydrogen valleys, and a heating and cooling virtual repository (PIB, Delhi, 2023).

RE can transform the energy markets of the world. Globally, clean technology is considered the next big high-tech industry (similar to the information technology and telecommunications sectors). Thus, investments in RE would facilitate the creation of globally competitive industries that can provide new avenues for growth and leadership for corporate India (Dey et al., 2022, and references therein). Notably, India's use and development of RE are directly related to its 'Panchamrit Action Plan' objectives. Hence, the RE sector has become an attractive destination for investors.

● **Green Finance**

Green finance/sustainable finance/climate finance are used interchangeably depending upon the context. It is a form of financial arrangement to accomplish sustainable development goals (SDGs), such as environmental protection projects. Renewable energy projects require heavy investments; therefore, governments, financial institutions, and other concerned bodies around the world launched special new financial instruments such as green bonds, carbon market instruments (e.g., carbon tax), and new financial institutions (e.g., green banks and green funds) to finance them, and collectively these new financial instruments are known as green finance (Soundarrajan & Vivek, 2016; Ghosh et al., 2021; Tandon, 2022; Bhattacharyya, 2022; Kumar et al., 2023; Kumar & Kundalia, 2023).

As early as 2007, the Reserve Bank of India (RBI) issued a notification on "Corporate Social Responsibility, Sustainable Development and Non-financial Reporting – Role of Banks" and mentioned the challenges of global warming and climate change, and promoted green finance. In 2011, the Ministry of Finance constituted the "Climate Change Finance Unit (CCFU)" that coordinated with those institutions responsible for green finance in India. In 2017, the Securities and Exchange Board of India (SEBI) issued "Guidelines for the Issuance and Listing of Green Bonds," including climate change adaptation, sustainable management of waste, water, land, including forestry, agriculture, and biodiversity conservation. Moreover, the Ministry of Corporate Affairs imposed mandatory reporting of Corporate Social Responsibilities (CSR) by companies under the Companies Act 2013. Indian Renewable Energy Development Agency (IREDA) (2016), a government-backed agency, is India's first green bank promoting clean energy investments. India Infrastructure Finance Corporation Limited (IIFCL) has also launched the 'credit enhancement scheme'

that is dedicated towards funding infrastructure projects with bond tenors above five years (Ghosh et al., 2021). Additionally, several commercial banks, such as the State Bank of India, IDBI Bank, ICICI Bank, as well as foreign banks such as Standard Chartered and ABN Amro, have also begun to finance RE projects. Besides, SIDBI (Small Industries Development Bank of India) works as an active change agent and engages in activities that are aligned with the government's national priorities and the Millennium Development Goals that emphasize on three Ps, i.e., People, Planet, and Profit (Soundarrajan & Vivek, 2016). In the present paper, the researcher used the term "Green Energy Funds (GEFs)", which means investment in RE projects that are directly linked with increasing energy efficiency and meeting Sustainable Development Goal 7 (i.e., affordable and clean energy) in India. The current work is an attempt to understand the determinants of individuals' investment intention in GEFs with the use of the Theory of Planned Behavior (TPB) (Ajzen, 1991) model. The TPB model assumed that behavior is the outcome of individual intentions, and intention is defined as a perceived description of a person's willingness to try or perform the behavior. It is influenced by three factors such as subjective norm, attitude towards behavior, and perceived behavioral control (Ajzen, 1991). Moreover, TPB helps us in better understanding environment-related behavior (Zahedi et al., 2019).

II. LITERATURE REVIEW

This section is divided into two parts. The first part provides a literature review, identifying research gaps and questions that align with the study's objectives. The second part covers the formulation of hypotheses based on the objectives of this study.

- **Demographic Characteristics and Investment Behavior (such as saving habits, green energy funds awareness, perceived risks, evaluation of the regulatory framework, and the investment decisions)**

According to Baker et al. (2019), demographic variables such as age, occupation, and investment experience are the most significant factors that may lead to behavioral biases among individual investors. Moreover, males are more overconfident than females about their stock market information. In their study, Salim & Setyawan (2023) found that individuals' age, education, and income levels are all positively linked to their long-term investment decisions. According to Hendrawaty et al. (2020), demographic variables such as age, income, and gender significantly influence individuals' financial risk tolerance and their investment decisions. Bhavani and Shetty (2017) reported that age, education, occupation, and gender are significantly associated with individuals' selection of investment portfolios. Arianti (2018) found that income has a significant effect on individuals' investment decisions.

However, Mwangi & Onsomu(2018) found that age, education, and income level have an insignificant influence on decisions related to portfolio diversification. Another study, Asmara & Wiagustini (2021), found that income, age, and gender have no direct or indirect effect on investment decisions. On the other hand, in their study, Mohan & Singh (2017) also discovered that individuals' education, age, marital status, number of dependents, tax benefits from financial products, and loan structures significantly affected their financial risk tolerance. However, gender, income, and insurance coverage of investors insignificantly influenced their financial risk tolerance. Another study, Sutejo et al. (2018), showed that income has a significant positive impact, while gender, age, marital status, education, and occupation do not have a significant impact on financial risk tolerance. Zeeshan et al. (2021) revealed that gender and education are both positively and significantly linked with risk tolerance, whereas age, marital status, and work experience have a negative but significant correlation with risk tolerance. Additionally, income was insignificantly and negatively associated with risk tolerance.

Thus, based on the above findings and discussions, it is assumed that individuals' demographic features, such as gender, age, education, and occupation, may play a catalytic role in making saving habits, financial awareness, perceived risks, evaluation of the regulatory framework, and making 'Green Energy Funds' investment decisions.

● **Saving Habits and Investment Decisions**

According to Johnson and Sherraden (2007) and Sherraden (2013), individuals who have the financial capability may perform two major functions: one, to acquire/or have knowledge, skills, confidence, and motivation about financial products and institutions and second to search opportunities to make appropriate investments (Potocki & Białowas, 2023 and references therein). Similarly, Van Der Cruysen et al. (2021) argued that financially capable individuals may always be interested in learning more about financial products and services, as well as their providers. People have become smarter and more intelligent in this digital world, especially after the COVID-19 pandemic. They save a portion of their income for future goals and contingencies and invest in banks, government savings schemes, mutual funds, insurance, bonds, and other stocks. Undoubtedly, saving facilitates the ease of an individual's life from a different perspective, such as maintaining a better living standard and efficiently meeting future contingencies and financial goals (Satsios & Hadjidakis, 2018; Mishra et al., 2023, and references therein; Alam et al., 2022).

• **Green Energy Fund Awareness and Investment Decisions**

Loke (2017) said that financial knowledge significantly influences individuals' financial management behavior. Another, Kannadhasan(2015), disclosed that money management is directly related to an individual's investment intention. Hamid et al. (2023) revealed that financial knowledge and acquiring more financial products are significantly associated with higher savings of individuals. Mishra et al. (2023) found that individuals' financial awareness and saving behavior are positively linked with their investment intention. Hoelzl and Kapteyn (2011) identified that individuals' knowledge, skills, confidence, and attitudes about financial products and industry influenced their behavior. Thanki et al. (2022) found that people's awareness of socially responsible investment (SRI) positively influenced their attitude towards SRI. The financial products are complex to understand, so literacy and awareness of such financial products will enhance their investments, specifically in emerging countries, such as India. Potrich et al. (2016) argued that financial knowledge and financial attitude both have positive impacts on individuals' financial behavior. Shehata, et al. (2021) identified that financial knowledge and perceived risks both positively influenced investors' investment intention in the Saudi Arabian Stock Market. However, according to Nazir and Tian (2022), there is no significant difference between people's awareness of renewable energy technology and their purchase intention.

• **Perceived Risks and Investment Decisions**

Financial return and risk are both playing a very crucial role in making investment decisions. Warkentin et al. (2012) defined perceived risk as the citizen's subjective expectation of suffering a loss in pursuit of a desired outcome (Trang & Tho, 2017, and references therein). According to Ajzen (1999), perceived risk of individual investors is considered as one's attitude toward a behavior in TPB. In their study, Natsir et al. (2021) stock knowledge and perceived risk have a significant effect on investment intention in Indonesia. Trang & Tho (2017) found that perceived risk had a direct positive impact on both investment performance and intentions. According to Taghizadeh-Hesary et al. (2021), green projects are usually associated with 'high risk and low returns at the initial research and development stage'. Difficulties in accessing finance for green projects are especially the case in Asia, whose financial sector is dominated by banks; hence, banks are the main source of funding.

• Evaluation of the Regulatory Framework and Investment Decisions

According to Yee et al.(2022), evaluation of the regulatory framework is one of the most important determinants of renewable energy investments. However, the risk-aversion behavior of investors has no significant impact on renewable energy investment. Ali et al. (2023) found that in addition to attitude and perceived benefits, evaluating the monitoring structure is the critical factor that positively influences investors' actions in making financial decisions. In their study, Adil et al. (2023) found that in addition to the variables of TPB, trust in financial institutions, and financial literacy are significantly positively associated with investors' investment intention. Moreover, the theories and practices of behavioral finance assume that investors often act irrationally. Besides economic gains and wealth creation, several factors can influence individual investors' decisions, including psychological factors (such as cognitive and emotional aspects), demographic variables, economic conditions, socio-economic status, and political influences (Gill et al., 2018; Janardhanan, 2019; Haritha, 2020; Sattar et al., 2020; Singh et al., 2023). Several studies have explored the factors influencing individual investors' decisions to invest in socially responsible projects, products, and technologies by purchasing 'Green Bonds/Stocks' (Thanki et al., 2022; Nazir and Tian, 2022; Taghizadeh-Hesary et al., 2021; Yee et al., 2022). However, there has been limited research specifically focusing on the investment behaviors of individual investors towards 'Green Energy Funds' in India. Figure 1 shows the model of the current study. Furthermore, by addressing the following research questions in this paper, we strive to bring a fresh perspective to the existing literature of behavioral finance and 'Green Energy Funds' in the light of 'Theory of Planned Behavior' and offer innovative insights that may enhance the understanding of the individual investors' behavior in India.

• Research Gaps & Questions

- How the individual investors in India looking towards the purchase of green energy funds as an opportunity in making their investment decisions? What are their attitudes and perceptions towards the purchase of green energy funds?
- Do the demographic factors such as gender, age, education, occupation, and marital status of the individual investors influence their green energy fund investment intentions?
- Do the investment variables like saving habits, financial awareness, risk perceptions, and evaluation of the regulatory framework of the individuals influence their purchase decisions regarding green energy fund stocks?

• Objectives of the Study

- (a) To analyze the impact of demographic characteristics of individual investors on the purchase of green energy funds in India.

(b) To identify the linkage between demographic features of individual investors and their saving habits, risk perceptions, financial awareness, and evaluation of the regulatory framework in India regarding the purchase of green energy funds.

© To examine the association between individuals' saving habits, risk perceptions, financial awareness, and evaluation of the regulatory framework in India towards the purchase of green energy funds.

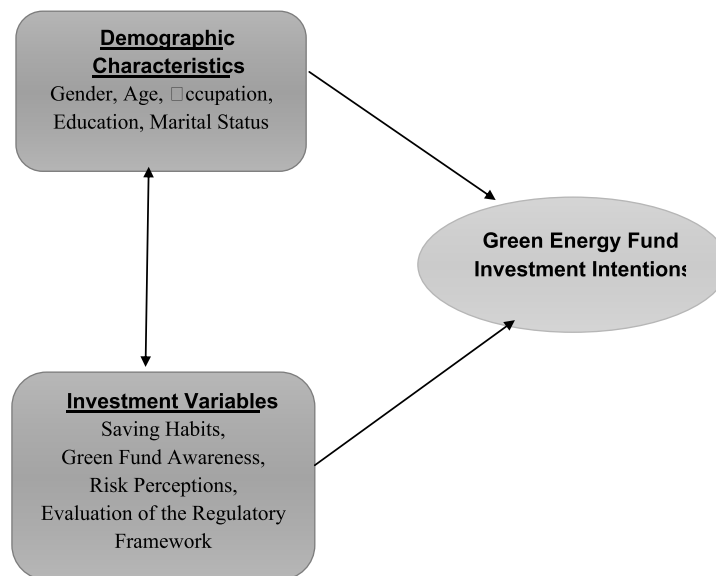
• Hypotheses of the Study

H1: There will be a significant difference among individuals based on their demographic characteristics, such as (a) gender; (b) age; (c) education; (d) marital status; and (e) occupations and their saving habits, financial awareness, perceived risks, and evaluation of the regulatory framework.

H2: There will be a significant difference among individuals based on their demographic characteristics, such as (a) gender; (b) age; (c) education; (d) marital status; (e) occupations, in making green energy fund purchase decisions.

H3: The individual investors' (a) saving habits, (b) financial awareness, (c) risk perceptions, and (d) evaluation of the regulatory framework will significantly impact their green energy fund investment intentions.

Figure 1: Model of the Study



III. METHODOLOGY OF THE STUDY

• Research Design and Data Collection

In a survey method, both online (Google Forms) and offline approaches were employed, utilizing self-administered questionnaires and non-probability sampling, to collect data. Individual investors are the unit of analysis in this study. Data were collected from April to September 2024. A total of 265 respondents filled out the survey. However, after removing incomplete responses, 246 valid responses were received. According to Hair et al. (2018), a minimum of 100 samples is required for most research. Large samples can provide statistically significant results with Type 1 error (Memon et al., 2020, and references therein).

• Research Constructs with Sources and Their Reliability

The questionnaire used in this study was divided into two parts. The first part included demographic information such as gender, age, education, occupation, and marital status. The second part consists of instruments related to saving habits (SH) ($\alpha = 0.73$), green funds awareness (FA) ($\alpha = 0.82$), and perceived risks (PR) ($\alpha = 0.79$); all three measures are taken from Mishra et al. (2023) and made some modification as per the requirements of the study; evaluation of the regulatory framework (ERF) ($\alpha = 0.65$), adapted from Rahmani et al. (2023); and green energy fund investment intentions (INGF) ($\alpha = 0.84$) is taken from Yee et al. (2022). Except for demographic questions, all variables were measured on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Moreover, the reliability of all these constructs is more than 0.7 or around 0.7; hence, they are acceptable regarding internal reliability and consistency for continuous variables (Cronbach, 1951).

• Statistical Tools

The data were analyzed by using descriptive statistics, t-test, one-way ANOVA, Pearson correlation, and multiple linear regression analysis in SPSS Version 25.

IV. DATA ANALYSIS, RESULTS, AND INTERPRETATIONS

This segment covers the results of the analyzed data. It includes two sections - The first part provides respondents' details, and the second part presents hypothesis testing.

• Respondents' Details

Table 1 presents the details of the respondents used in this study. Out of 246 respondents, 76% are male, and the remaining approximately 1/4th (24%) are female; and the majority (74%) are married. 40% of respondents belonged to the age group of 31-40 years, 26% were between 18 and 30 years, 21% fell between the ages of 41 and 50, and only 13% were more

than 50 years old. The 42% respondents hold a doctorate, 36% are post-graduates; the majority (66%) work in the government sector.

Table 1: Demographic Details of the Respondents

Demographic characteristics						
Gender		Age				
Male	Female	18-30	31-40	41-50	51-60	Above 60
187 (76%)	59 (24%)	63 (26%)	99 (40%)	52 (21%)	25 (10%)	7 (3%)
Education					Marital Status	
High school	Intermediate	Graduation	Post-graduation	Ph.D.	Married	Unmarried
5 (2%)	14 (5%)	31 (13%)	89 (36%)	107 (44%)	182 (74%)	64 (26%)
Occupation						
Job in the private sector	Job in the government sector	Business/entrepreneur/self-employed				
44 (18%)	163 (66%)	39 (16%)				

Source (s): Primary Data Analysis

• Hypothesis Testing

According to the outcomes of Table 2, there is no significant difference found in saving habits, green fund awareness, perceived risks, evaluation of the regulatory framework, and investment intentions in green energy stocks among individual investors based on their gender ($p < 0.05$). Thus, we reject our H1 (a) and H2 (a).

Table 2: Individuals' Gender and Green Fund Investment Variables

Gender and t-test results		Investment Variables				
		Saving Habits	Green Fund Awareness	Perceived Risks	Evaluation of the Regulatory Framework	Green Fund Investment Intentions
Male	Mean/S.D.	3.70 (.63)	3.41 (.90)	3.09 (.87)	3.81 (.71)	3.65 (.71)
Female	Mean/S.D.	3.62 (.87)	3.21 (.90)	3.05 (.86)	3.63 (.76)	3.54 (.82)
t-value		0.79	0.15	0.37	1.71	1.03
p-value		0.43	0.15	0.71	0.09	0.30

Source (s): Primary Data Analysis

The results of Table 3 show that there is no significant difference found in saving habits, green fund awareness, perceived risks, evaluation of the regulatory framework, and green fund investment intention among individuals based on their age ($p > 0.05$). Thus, we reject H1 (b) and H2 (b).

Table 3: Individuals' Age and Green Fund Investment Variables

Age and F-value		Investment Variables				
		Saving Habits	Green Fund Awareness	Perceived Risks	Evaluation of the Regulatory Framework	Green Fund Investment Intentions
18-30	Mean/S.D.	3.53 (.78)	3.34 (.93)	3.33(.96)	3.59 (.94)	3.58(.78)
31-40	Mean/S.D.	3.76 (.68)	3.40 (.91)	3.02(.85)	3.79(.63)	3.70(.69)
41-50	Mean/S.D.	3.81 (.55)	3.35(.89)	2.98(.86)	3.92(.55)	3.69(.75)
51-60	Mean/S.D.	3.55 (.79)	3.33(.89)	3.02(.63)	3.82(.71)	3.37(.76)
Above 60	Mean/S.D.	3.43 (.53)	2.95(.91)	2.93(.67)	3.47(.71)	3.38(.84)
F-value		2.02	.43	1.64	1.89	1.33
p-value		.09	.79	.17	.11	.26

The outcomes of Table 4 presents that there is a significant difference found in saving habits ($F_{(4,241)} = 4.35$, $p < 0.05$), evaluation of the regulatory framework ($F_{(4,241)} = 5.66$, $p < 0.05$), and investment intentions towards green energy funds ($F_{(4,241)} = 3.18$, $p < 0.05$) in relations to individuals' education. However, individuals have no significant difference in their green financial awareness and perceived risks based on their education. In addition, it concludes that people who hold higher education degrees have higher saving habits, evaluate the country's regulatory framework, and have investment intentions towards green energy stocks in the financial market. Thus, we fully accept H2 (c), while partially accepting H1(c). According to the results of Table 4, it is identified that there is a significant difference in saving habits ($F_{(4,241)} = 4.35$, $p < 0.05$), evaluation of the regulatory framework ($F_{(4,241)} = 5.66$, $p < 0.05$), and investment intentions towards green energy funds ($F_{(4,241)} = 3.18$, $p < 0.05$). However, there is no significant difference in green financial awareness and perceived risks based on individuals' education. To sum up, people who have higher educational degrees have higher saving habits, evaluate the country's regulatory framework, and have investment intentions in green energy stocks. Thus, we partially accept H1(c), yet fully accept H2 (c).

Table 4: Individuals' Education and Green Fund Investment Variables

Education and F-value		Investment Variables				
		Saving Habits	Green Fund Awareness	Perceived Risks	Evaluation of the Regulatory Framework	Green Fund Investment Intentions
High School	Mean/S.D.	2.87 (1.07)	2.47(1.17)	2.50(1.27)	2.60(1.09)	2.67(1.27)
Intermediate	Mean/S.D.	3.33 (.94)	3.02(1.14)	3.25(1.07)	3.71(.92)	3.40(.96)
Graduation	Mean/S.D.	3.46 (.81)	3.26(.88)	2.95 (.84)	3.47(.72)	3.51(.79)
Post-graduation	Mean/S.D.	3.74 (.58)	3.43(.88)	3.25(.85)	3.80(.73)	3.63(.65)
Ph.D.	Means/S.D.	3.79 (.65)	3.41(.88)	3.00(.83)	3.88(.61)	3.72(.71)
F-value		4.35	2.05	1.94	5.66	3.18
p-value		0.00	.09	.11	0.00	.01

Table 5 reveals there is no significant difference found in individuals' perceived risks, green fund awareness, evaluation of the regulatory framework, and green fund investment intentions ($p < 0.05$) about individuals' marital status. However, there is a significant difference in the saving habits of individuals based on their marital status [$t_{(244)} = 2.85$, $p < 0.05$]. It concludes that married people are more tend to save their money compared to unmarried people. Thus, we partially accept H1 (d) and reject H2 (d).

The outcomes of Table 6 revealed that there is a significant difference found in saving habits ($F_{(2,243)} = 5.96$, $P < 0.05$), perceived risks ($F_{(2,243)} = 3.66$, $P < 0.05$), evaluation of the regulatory framework ($F_{(2,243)} = 5.41$, $P < 0.05$), and investment intentions in green energy stocks ($F_{(2,243)} = 5.49$, $P < 0.05$), based on individuals' occupation. However, there is no significant difference in green fund awareness of individuals whether they worked in the private sector, the government sector, or as entrepreneurs. It is also found that individuals who worked in the government sector have higher saving habits, evaluate the country's framework, and have investment intentions in green energy stocks. At the same time, individuals have higher risk perceptions in comparison to individuals who are self-employed or work in the private sector. Thus, we fully accept H2 (e) and partially accept H1 (e).

Table 5: Individuals' Marital Status and Green Fund Investment Variables

Marital Status and t-value		Investment Variables				
		Saving Habits	Green Fund Awareness	Perceived Risks	Evaluation of the Regulatory Framework	Green Fund Investment Intentions
Married	Mean/S.D.	3.76 (0.63)	3.35 (0.88)	3.05 (0.79)	3.79 (0.67)	3.64 (0.71)
Unmarried	Mean/S.D.	3.47 (0.81)	3.39 (0.99)	3.18 (0.104)	3.68 (0.87)	3.57 (0.82)
t-value		2.85	-.38	-.99	1.09	0.63
p-value		0.01	0.71	0.32	0.27	0.53

Table 6: Individuals' Occupation and Green Fund Investment Variables

Occupation and F-value		Investment Variables				
		Saving Habits	Green Fund Awareness	Perceived Risks	Evaluation of the Regulatory Framework	Green Fund Investment Intentions
Private Job	Mean/S. D.	3.57(.72)	3.40(.80)	3.38(.78)	3.56(.71)	3.49(.73)
Government Job	Mean/S. D.	3.78(.63)	3.39(.90)	2.99(.86)	3.87(.66)	3.72(.69)
Business/Self- employed/Ent repreneur	Mean/S. D.	3.39(.84)	3.17(1.01)	3.17(.93)	3.55(.91)	3.33(.85)
F-value		5.96	.91	3.66	5.41	5.49
p-value		.003	.40	.03	.005	.005

Table 7 shows the mean values and standard deviation of variables are listed as follows: saving habits (M = 3.68, S.D. = 0.69); green funds awareness (M = 3.36, S.D. = 0.91); evaluation of the regulatory framework (M = 3.77, S.D. = 0.73); perceived risks (M = 3.09, S.D. = 0.87); and green energy fund investment intentions (M = 3.62, S.D. = 0.74). All mean scores are higher than the midpoint, indicating that individuals have higher saving habits, awareness about financial products like green stocks, made in the evaluation of the regulatory framework, and green energy fund investment intentions. However, individuals have higher risk perceptions towards green energy fund investment decisions.

Table 7 also shows the correlation matrix among green energy fund investment variables are as follows- individuals' awareness about green energy stock is weak positive but significant correlated with their evaluation of the Indian regulatory framework ($r = 0.378$), perceived risks ($r = 0.172$), saving habits ($r = 0.369$), and investment intentions towards green energy stocks ($r = 0.487$). Another individual's evaluation of the Indian regulatory framework is weakly positive, but significantly correlated with their saving habits ($r = 0.459$) and investment intentions related to green fund stock ($r = 0.519$). Moreover, there are

positive and significant correlations found between individuals' perceived risks and their saving habits ($r = 0.308$), and individuals' saving habits and their investment intention in green fund stocks ($r = 0.529$). However, there are no correlations exist between individuals' perceived risks, evaluation of the regulatory framework, and investment intentions in green fund stocks. Furthermore, the researcher used multiple regression analysis to examine the causal relationship between individuals' education, saving habits, green funds awareness, evaluation of the regulatory framework, and green fund investment intention.

Table 7: Correlation Matrix with Descriptive Statistics of Investment Variables

Investment Variables	GFA	ERF	PR	SH	GFII
GFA	1				
ERF	.378**	1			
PR	.172**	.063	1		
SH	.369**	.459**	.308**	1	
GFII	.487**	.519**	.021	.529**	1
Mean	3.36	3.77	3.09	3.68	3.62
Standard deviation	0.91	0.73	0.87	0.69	0.74
Note(s): GFA- Green fund awareness; ERF- Evaluation of regulatory framework; PR- Perceived risk; SH- Saving habits; GFII- Green Fund Investment intention; **p< 0.01 level; *p< 0.05 level; Source (S): Primary Data Analysis					

The outcomes of Table 8 indicated that the individuals' saving habits ($\beta = 0.562$, $t = 9.73$, $F = 94.69$), financial awareness in green stocks ($\beta = 0.397$, $t = 8.69$, $F = 75.67$), and evaluation of the regulatory framework ($\beta = 0.529$, $t = 9.48$, $F = 89.86$) are significantly influenced that investment intentions in green fund stock ($p < 0.05$). Furthermore, individuals' saving habits, financial awareness about green energy stocks, and evaluation of the regulatory framework caused 28%, 24%, and 27% changes in their investment intentions in green fund stocks, respectively. Thus, we accepted H3 (a), (b), and (d) and rejected H3 (c).

Table 8: Causal Relationship among Green Energy Fund Investment Variables

Hypotheses	Path coefficient		t-value	R ²	F-statistic	P	Remarks
H3 (a)	SH → GFII	0.56	9.73	0.28	94.69	0.000	Accepted
H3 (b)	GFA → GFII	0.39	8.69	0.24	75.67	0.000	Accepted
H3 (d)	ERF → GFII	0.53	9.48	0.27	89.86	0.000	Accepted
Note(s) p<0.05; GFA- Green fund awareness; ERF- Evaluation of regulatory framework; SN - Subjective norms; PBC- Perceived behavioral control; SH- Saving habits. Source (S): Primary Data Analysis							

V. DISCUSSIONS AND IMPLICATIONS OF THE STUDY

In light of the theory of planned behavior, the current study aims to examine the determinants of individuals' investment intentions in "Green Energy Funds" in India. The outcomes of the present work revealed that the individuals' demographic features, such as gender and age do not significantly influence their investment variables, such as saving habits, financial awareness about green energy stock, perceived risks, evaluation of the country's regulatory framework, and their investment intentions in the green energy stock. In addition, married people have higher saving habits, but are not aware of green energy stock and investment intentions.

On the other hand, individuals' education and occupation have a significant impact on their saving habits, evaluation of the country's regulatory framework, and green energy stock investment intentions. In addition, there is a difference in risk perceptions among people based on their occupation. Thus, the findings of the current study align with the previous work of Asmara & Wiagustini (2021); partially support the outcomes of Bhavani & Shetty (2017).

In the current study, it is also identified that people's saving habits, financial awareness about green energy stock, and evaluation of the country's regulatory framework significantly influenced their investment intentions in green energy stock. However, individuals' risk perceptions do not influence their investment intentions in green energy stocks. Thus, it supports the previous findings of Mishra et al. (2023), Thanki et al. (2022), Potrich et al.

(2016), and Yee et al. (2022). The contributions of the present work are valuable to the existing literature on green funds and behavioral finance domains. First, it adds to the knowledge about green energy stocks that would enhance the decision-making capabilities of individual investors. Second, it enhances the financial awareness among individuals about renewable energy and related stocks. Third, this study is among the few studies that examine the determinants of individuals' green energy stock investment intention. This study has some practical implications for governments and institutions that regulate and facilitate individuals' investment behavior in green energy/renewable energy stocks. An understanding of individual investors' investment behavior about green energy stocks would also have great practical value, especially for fund managers of companies seeking to manage energy stock trading effectively and recognize individual stock investors' needs for the improvement of the services of their firms. In addition, the Government and private sector both will formulate strategies that increase financial literacy, financial awareness, and financial products (e.g. green energy stocks) that have minimum risks, especially targeting women investors (housewives and working both).

VI. CONCLUSIONS, LIMITATIONS, AND DIRECTIONS FOR FUTURE WORK

Currently, India has more than 1.4 billion populations and considering the population, geographical diversity, the sample of the present study is small, and it uses cross-sectional data. Therefore, further studies will be conducted on a large sample with longitudinal data. Moreover, further studies could also assess investors' behavior by adding other variables like knowledge about changes in global scenarios, environmental literacy (Law et al., 2023), perceived usefulness, and returns with advanced statistical tools like structural equation modeling that are deemed to help predict financial behavior in relation to green energy stocks investment. Lastly, future studies will examine the relevance of the stimulus-organism-response model in investment decisions related to renewable energy stocks.

VII. REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211.
- Arianti, B. F. (2018). The Influence of Financial Literacy, Financial Behaviour and Income Investment Decision. *Economics and Accounting Journal*, 1 (1).
- Asmara, I. P. W. P., & Wiagustini, L. P. (2021). the Role of financial literacy in mediation of sociodemographic effects on investment decisions. *International Journal of Business Management and Economic Review*, 4(04), 133-152.
- Alam, M. A. Z., Yong, C. C., & Mansor, N. (2022). Predicting savings adequacy using machine

learning: A behavioural economics approach. *Expert Systems with Applications*, 203, 117502.

- Ali, S., Yan, Q., Dilanchiev, A., Irfan, M., & Balabeyova, N. (2023). Economic development, social media awareness, and technological innovation in biogas sector under climate change in the post-COVID-19 pandemic conditions. *Environmental Science and Pollution Research*, 1-20.
- Adil, M., Singh, Y., Subhan, M., Saleh Al-Faryan, M. A., & Ansari, M. S. (2023). Do trust in financial institution and financial literacy enhances intention to participate in stock market among Indian investors during COVID-19 pandemic?. *Cogent Economics & Finance*, 11(1), 2169998.
- Bhavani, G., & Shetty, K. (2017). Impact of demographics and perceptions of investors on investment avenues. *Accounting and Finance Research*, 6 (2), 198-205
- Baker, H. K., Kumar, S., Goyal, N., & Gaur, V. (2019). How financial literacy and demographic variables relate to behavioral biases. *Managerial Finance*, 45(1), 124-146.
- Bhattacharyya, R. (2022). Green finance for energy transition, climate action and sustainable development: overview of concepts, applications, implementation and challenges. *Green Finance*, 4(1), 1-35.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(1), 297-334.
- Dey, S., Sreenivasulu, A., Veerendra, G. T. N., Rao, K. V., & Babu, P. A. (2022). Renewable energy present status and future potentials in India: An overview. *Innovation and Green Development*, 1(1), 100006.
- Gill, S., Khurshid, M. K., Mahmood, S., & Ali, A. (2018). Factors effecting investment decision making behavior: The mediating role of information searches. *European Online Journal of Natural and Social Sciences*, 7(4), 758.
- Ghosh, S., Nath, S., & Ranjan, A. (2021). Green finance in India: Progress and challenges. *RBI Bulletin*, 61-72.
- Hoelzl, E., & Kapteyn, A. (2011). Financial capability. *Journal of Economic Psychology*, 32(4), 543-545.
- Hendrawaty, E., Irawati, N., & Sadalia, I. (2020). Financial literacy, demographic differences and financial risk tolerance level: A case study. *Journal of Security and Sustainability Issues*, 9(M), 187-201.
- Haritha, P. (2020). Impact of Investor Sentiment on Investment Decision and Stock Market Volatility. Ph.D. Thesis, School of Management Science. National Institute of Technology Karnataka.

- Hamid, F. S., Loke, Y. J., & Chin, P. N. (2023). Determinants of financial resilience: insights from an emerging economy. *Journal of Social and Economic Development*, 25(2), 479-499.
- Janardhanan, A. K. (2019). Determinants of Investor's Behavior: An Analytical Review. *SSRN Electronic Journal*, 22.
- Kumar, A., Kumar, K., Kaushik, N., Sharma, S., & Mishra, S. (2010). Renewable energy in India: current status and future potentials. *Renewable and sustainable energy reviews*, 14(8), 2434-2442.
- Kannadhasan, M. (2015). Retail investors' financial risk tolerance and their risk-taking behaviour: The role of demographics as differentiating and classifying factors. *IIMB Management Review*, 27(3), 175-184.
- Kumar, S. & Kundalia, L. (2023). Green Bonds - Role and scope in India's financial and fiscal landscape. *The Journal of Indian Institute of Banking & Finance*.
- Kumar, B., Kumar, L., Kumar, A., Kumari, R., Tagar, U., & Sassanelli, C. (2023). Green finance in circular economy: a literature review. *Environment, development and sustainability*, 1-41.
- Loke, Y. J. (2017). The influence of socio-demographic and financial knowledge factors on financial management practices of Malaysians. *International Journal of Business and Society*, 18(1).
- Lal SR, S., Herbert GM, J., Arjunan, P., & Suryan, A. (2022). Advancements in renewable energy transition in India: A review. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 1-31.
- Law, J. W., Lye, C. T., & Ng, T. H. (2023). Can environmental literacy and integrated behavioral factors encourage green practices at home? Evidence from Malaysia. *Cleaner and Responsible Consumption*, 10, 100134.
- Mohan, R. & Singh, S. (2017). An Empirical Study on Financial Risk Tolerance of Investors in India. *IUP Journal of Financial Risk Management*, 14 (3), 40-58.
- Mwangi, E., & Onsomu, Z. (2018). Effect of financial literacy on portfolio diversification at the Nairobi Securities Exchange Market, Kenya. *Journal of Finance and Investment Analysis*, 7(4), 1-3.
- Memon, M. A., Ting, H., Cheah, J. H., Thurasamy, R., Chuah, F., & Cham, T. H. (2020). Sample size for survey research: Review and recommendations. *Journal of Applied Structural Equation Modeling*, 4(2), 1-20.
- Mishra, A. K., Bansal, R., Maurya, P. K., Kar, S. K., & Bakshi, P. K. (2023). Predicting the antecedents of consumers' intention toward purchase of mutual funds: A hybrid PLS SEM neural network approach. *International Journal of Consumer Studies*, 47(2), 563-587.
- Natsir, K., Arifin, A. Z., & Bangun, N. (2021, August). The influence of product knowledge and

perceived risk on investment intention of stock investors in the Covid-19 pandemic era. In International Conference on Economics, Business, Social, and Humanities (ICEBSH 2021) (pp. 473-479). Atlantis Press.

- Nazir, M., & Tian, J. (2022). The influence of consumers' purchase intention factors on willingness to pay for renewable energy; mediating effect of attitude. *Frontiers in Energy Research*, 10, 837007. doi: 10.3389/fenrg.2022.837007
- Potrich, A. C. G., Vieira, K. M., & Mendes-Da-Silva, W. (2016). Development of a financial literacy model for university students. *Management Research Review*, 39(3), 356-376.
- Potocki, T., & Białowas, S. (2023). What Factors Predict a Positive Change in a Consumer's Financial Capability over Time? The New Evidence from Poland. *Journal of Family and Economic Issues*, 44(3), 634-654.
- PIB, Delhi (28th September, 2023). India is committed to achieve the Net Zero emissions target by 2070 as announced by PM Modi, says Dr. Jitendra Singh. <https://www.pib.gov.in/PressReleaseframePage.aspx?PRID=1961797>
- Raghuwanshi, S. S., & Arya, R. (2019). Renewable energy potential in India and future agenda of research. *International Journal of Sustainable Engineering*, 12(5), 291-302.
- Rahmani, A., Mashayekh, J., Aboojafari, R., & Naeini, A. B. (2023). Determinants of households' intention for investment in renewable energy projects. *Renewable Energy*, 205, 823-837.
- Soundarrajan, P., & Vivek, N. (2016). Green finance for sustainable green economic growth in India. *Agricultural Economics/Zemědělská Ekonomika*, 62(1).
- Sutejo, B. S., Pranata, Y. K. N., & Mahadwartha, P. A. (2018). Demography factors, financial risk tolerance, and retail investors. In *International Annual Symposium on Management Insyma*, Bangkok, Thailand.
- Satsios, N., & Hadjidakis, S. (2018). Applying the Theory of Planned Behaviour (TPB) in saving behaviour of Pomak households. *International Journal of Financial Research*, 9(2), 122-133.
- Sattar, M. A., Toseef, M., & Sattar, M. F. (2020). Behavioral finance biases in investment decision making. *International Journal of Accounting, Finance and Risk Management*, 5(2), 69.
- Shehata, S. M., Abdeljawad, A. M., Mazouz, L. A., Aldossary, L. Y. K., Alsaeed, M. Y., & Noureldin Sayed, M. (2021). The moderating role of perceived risks in the relationship between financial knowledge and the intention to invest in the Saudi Arabian stock market. *International Journal of Financial Studies*, 9(1), 9.

- Salim, A., & Setyawan, I. R. (2023). The Effects of Demographic Factors on Investment Decision: Financial Literacy and Behavioral Bias as Mediating Variables. *International Journal of Application on Economics and Business*, 1(1), 409-417.
- Singh, Y., Adil, M., & Haque, S. I. (2023). Personality traits and behaviour biases: The moderating role of risk-tolerance. *Quality & Quantity*, 57(4), 3549-3573.
- Trang, P. T. M., & Tho, N. H. (2017). Perceived risk, investment performance and intentions in emerging stock markets. *International Journal of Economics and Financial Issues*, 7(1), 269-278.
- Taghizadeh-Hesary, F., Yoshino, N., & Phoumin, H. (2021). Analyzing the characteristics of green bond markets to facilitate green finance in the post-COVID-19 world. *Sustainability*, 13(10), 5719.
- Thanki, H., Shah, S., Rathod, H. S., Oza, A. D., & Burduhos-Nergis, D. D. (2022). I am ready to invest in socially responsible investments (SRI) options only if the returns are not compromised: individual investors' intentions toward SRI. *Sustainability*, 14(18), 11377.
- Tandon, S. (2022). Scaling up sustainable finance in India. *Scaling Up Sustainable Finance and Investment in the Global South*, 28.
- Yee, H., Al-Mulali, U. & Ling, G.M. (2022). Intention towards renewable energy investments in Malaysia: extending theory of planned behaviour. *Environ Sci Pollut Res* 29, 1021–1036. <https://doi.org/10.1007/s11356-021-15737-x>
- Zahedi, S., Batista-Foguet, J. M., & van Wunnik, L. (2019). Exploring the public's willingness to reduce air pollution and greenhouse gas emissions from private road transport in Catalonia. *Science of the total environment*, 646, 850-861.
- Zeeshan, A., Sattar, A., Babar, S., Iqbal, T. & Basit, A. (2021). Impact of Demographic Factors on Investment Risk Tolerance. *IJBEA*, 6 (2).



SOCIAL IMPACT OF CORPORATE SOCIAL RESPONSIBILITY (CSR) ON RURAL DEVELOPMENT IN INDIA

Mr. Kishor Jadhav *, Dr.Dilip S.Chavan**

ABSTRACT

Corporate Social Responsibility (CSR) has emerged as a critical driver of inclusive development in India, particularly in rural areas where poverty, unemployment, and lack of infrastructure persist. This paper explores the social impact of CSR on rural development, focusing on initiatives in education, healthcare, livelihood generation, women empowerment, and infrastructure creation. Based on secondary data sources and indicative survey analysis, the study highlights how CSR contributes to improving living standards, generating employment opportunities, and fostering sustainable rural growth. The findings suggest that while CSR has created significant positive social outcomes, challenges remain in terms of regional disparities, monitoring, and long-term sustainability.

Keywords: CSR, Rural Development, Impact CSR, Development

I. INTRODUCTION

Corporate Social Responsibility (CSR) has emerged as a crucial instrument for promoting inclusive growth and sustainable development in India. Traditionally, corporations were expected to focus primarily on profit maximization; however, globalization, stakeholder awareness, and the need for equitable growth have expanded their role beyond business to include social responsibility. With the enforcement of the Companies Act, 2013, CSR became mandatory in India for companies meeting certain financial thresholds, requiring them to allocate at least 2% of their average net profits over the previous three years towards CSR activities. This provision has institutionalized corporate contributions to social welfare and has significantly transformed the rural development landscape of the country.

Rural India, where nearly 65–70% of the population resides, is marked by persistent challenges such as poverty, unemployment, inadequate healthcare, lack of education, poor infrastructure, and limited access to resources. These socio-economic constraints hinder the holistic development of rural areas and widen the rural–urban divide. In this context, CSR initiatives act as catalysts for rural transformation by addressing basic needs, improving

* Research Student SBES College of Arts and Commerce, Chh.Sambhajinagar.
Email Id :kishorj2015@gmail.com

** Professor & Research Guide SBES College of Arts and Commerce, Chh.Sambhajinagar.
Email id: dilu81@rediffmail.com

infrastructure, promoting entrepreneurship, fostering women's empowerment, and enabling skill development. Companies from diverse sectors such as IT, pharmaceuticals, banking, and manufacturing have invested in rural health camps, education programs, agricultural innovation, renewable energy, water conservation, and livelihood projects. CSR interventions have not only contributed to tangible outcomes like building schools, providing clean drinking water, or upgrading rural healthcare facilities, but also intangible benefits such as empowering marginalized communities, improving social inclusion, and creating sustainable livelihood opportunities. Moreover, CSR encourages collaboration among corporate, government, and local communities, thereby promoting participatory development models. Despite the progress, challenges remain in aligning CSR projects with actual community needs, ensuring transparency, and avoiding tokenistic or one-time initiatives. There is also a need to assess the long-term sustainability of CSR projects and their impact on the quality of life in rural areas. Thus, evaluating the social impact of CSR on rural development is essential for identifying best practices, gaps, and strategies for improving the effectiveness of CSR as a tool for rural transformation.

II. REVIEW OF LITERATURE

Kumar & Prakash (2019) examined CSR-led skill development programs in rural India, particularly vocational training, digital literacy, and entrepreneurship promotion. Their findings indicated that such programs significantly improved rural youth employability by enhancing their technical and managerial skills. The study also noted that CSR projects aligned with local employment opportunities—such as agricultural mechanization, dairy farming, and handicrafts—helped in generating sustainable livelihoods and reducing rural-to-urban migration.

Patra (2020) research focused on CSR initiatives aimed at women's empowerment in rural regions. The study highlighted the growing role of corporates in supporting Self-Help Groups (SHGs), microfinance initiatives, and entrepreneurial training for women. These CSR interventions increased women's participation in income-generating activities, boosted their household decision-making power, and enhanced community leadership. Patra concluded that women-focused CSR programs not only uplift individuals but also strengthen rural socio-economic structures.

Narwal & Sharma (2021) evaluated CSR contributions to rural infrastructure development, with particular attention to sanitation, clean drinking water, and renewable energy. Their research demonstrated that corporate initiatives—such as building toilets under the Swachh Bharat Mission or setting up community water purification systems—resulted in improved health outcomes and reduced rural health hazards. The authors also observed that

infrastructure-related CSR projects helped create an enabling environment for further rural development by improving living standards and reducing disease burden.

Sharma & Bansal (2022) critically assessed CSR implementation in India, pointing out gaps in monitoring, transparency, and long-term sustainability of projects. While acknowledging positive contributions, they highlighted issues such as duplication of efforts, lack of coordination with government schemes, and tokenistic spending by some corporations. The study recommended stronger governance frameworks, community participation, and third-party evaluations to ensure that CSR activities create sustainable and measurable social impact in rural areas.

III. IMPORTANCE OF THE STUDY

The present study is important as it highlights how Corporate Social Responsibility (CSR) initiatives contribute to reducing the rural–urban development gap by improving education, healthcare, employment, and women empowerment in villages. It provides useful insights for policymakers and corporates to design effective strategies for rural development while ensuring corporate accountability under the Companies Act, 2013. The study also emphasizes the role of CSR in promoting sustainable rural entrepreneurship through skill development and self-help groups, thereby reducing poverty and migration. Furthermore, it guides future CSR strategies by showcasing successful models and adds value to academic research on CSR and rural development in India.

• Objectives of the Study

- To assess the role of CSR initiatives in rural development in India.
- To analyze the social impact of CSR on education, healthcare, employment, and women empowerment in rural areas.

• Hypothesis

H1: CSR initiatives have a significant positive impact on rural development in India.

• Research Methodology

This study adopts a descriptive and analytical research design to examine the role of Corporate Social Responsibility (CSR) in rural development. Both primary and secondary data are used to achieve the research objectives.

• Data Collection

Primary Data: Collected through structured questionnaires and interviews with CSR managers, rural peoples.

Secondary Data: Drawn from company CSR reports, government publications, academic journals, policy documents, and previous research studies.

• Sample Size

Around 250 respondents including CSR officials, rural entrepreneurs, and community members are considered for the study. Used by A purposive sampling technique is used to select companies involved in CSR activities in rural areas. Rural entrepreneurs and beneficiaries are selected from regions where CSR projects are actively implemented.

IV. ANALYSIS & FINDINGS

Table 1: Sector-wise CSR Impact on Rural Development

CSR Focus Area	No. of Beneficiaries	Percentage (%)
Education & Skill Dev.	90	36%
Healthcare & Sanitation	70	28%
Livelihood & Employment	55	22%
Women Empowerment	25	10%
Infrastructure	10	4%
Total	250	100%

Interpretation: Most CSR benefits were seen in education, healthcare, and livelihood generation, directly contributing to rural development.

Table 2: Perceived Social Impact of CSR in Rural Areas.

Impact Area	High Impact (%)	Moderate Impact (%)	Low/No Impact (%)
Education	70	20	10
Healthcare	60	30	10
Employment	55	25	20
Women Empowerment	50	30	20
Infrastructure	40	40	20

Interpretation: CSR has high impact on education and healthcare, while infrastructure projects showed mixed outcomes.

Hypothesis Testing (Chi-Square – Tentative)

- Calculated χ^2 value = 18.65
- Critical χ^2 value at 5% level (df=4) = 9.49
- Since *calculated* > *critical*, H1 is accepted → CSR initiatives significantly impact rural development.

V. ROLE OF CSR INITIATIVES IN RURAL DEVELOPMENT IN INDIA

Corporate Social Responsibility (CSR) has emerged as a powerful tool for driving rural development in India. Its impact can be seen across various dimensions

- Education and Skill Development – CSR initiatives have significantly contributed to improving rural education by building schools, providing scholarships, and training teachers. Many companies also invest in vocational training and digital literacy programs, which enhance employability and reduce rural-to-urban migration.
- Healthcare and Sanitation – Corporates play a major role in providing healthcare facilities in underserved villages through mobile health units, maternal and child health programs, and vaccination drives. They also support the Swachh Bharat Mission by constructing toilets and spreading awareness on hygiene, thereby improving public health standards.
- Women Empowerment – CSR programs empower rural women through Self-Help Groups (SHGs), microfinance support, and entrepreneurship training. Such initiatives allow women to engage in income-generating activities like tailoring, dairy farming, and handicrafts, promoting financial independence and gender equality.
- Infrastructure Development – Companies utilize CSR funds to improve rural infrastructure, including roads, clean drinking water, renewable energy sources, and community centers. These facilities enhance the standard of living and create an enabling environment for economic development.
- Agricultural and Livelihood Support – CSR initiatives often target farmers by promoting sustainable farming practices, organic cultivation, and crop diversification. Some corporates also facilitate direct market linkages and provide financial literacy programs, which help farmers increase income and reduce exploitation by middlemen.
- Environmental Sustainability – Many CSR projects focus on environmental protection in rural areas through afforestation drives, watershed development, renewable energy projects, and waste management systems. These efforts ensure ecological balance while securing the livelihoods of rural populations.

- Community Development and Social Inclusion – CSR contributes to holistic community development by supporting tribal welfare, promoting child rights, and encouraging social awareness programs. These initiatives strengthen community bonds, reduce inequality, and foster inclusive growth in rural areas.

Social Impact of CSR in Rural Areas

CSR Focus Area	Key Initiatives	Social Impact in Rural Areas
Education	School construction, scholarships, digital learning tools, teacher training	Improved literacy rates, reduced dropout, better employability, and increased digital literacy
Healthcare	Rural hospitals, health camps, sanitation programs, clean drinking water initiatives	Reduced infant mortality, better maternal health, improved hygiene, lower disease prevalence
Employment	Vocational training, agricultural support, microfinance, entrepreneurship promotion	Increased rural employment, higher incomes, reduced migration, sustainable livelihood creation
Women Empowerment	SHGs, skill development, microfinance, entrepreneurship training	Enhanced financial independence, gender equality, stronger community participation

- **Suggestions**
 - Companies should align CSR with local needs and community participation.
 - Strengthen monitoring and transparency in CSR projects.
 - Encourage public-private partnerships for large-scale rural development.
 - Promote skill-based entrepreneurship models for rural youth.
 - Ensure long-term sustainability rather than one-time CSR investments.

VI. CONCLUSION

CSR has emerged as a transformative tool for rural development in India, contributing to education, healthcare, livelihood, and women empowerment. Statistical analysis confirmed a significant positive social impact of CSR activities. However, disparities in fund allocation,

lack of awareness, and weak monitoring reduce its overall effectiveness. With better alignment, accountability, and community involvement, CSR can be a powerful driver of inclusive rural growth in India.

VII. REFERENCES

- Chatterjee, B. (2017). *CSR and rural development: An Indian perspective*. Journal of Business Ethics, 142(1), 25-40.
- Kumar, R., & Prakash, A. (2019). *CSR and skill development in rural India*. International Journal of Rural Management, 15(2), 112-128.
- Patra, S. (2020). *Women empowerment through CSR initiatives in India*. Indian Journal of Social Development, 20(3), 45-59.
- Narwal, M., & Sharma, T. (2021). *CSR and infrastructure development in Indian villages*. Journal of Rural Studies, 82, 34-48.
- Sharma, P., & Bansal, A. (2022). *CSR in India: Issues and challenges in implementation*. Economic and Political Weekly, 57(3), 52-60.



**GLOBALIZATION AND ITS EFFECT ON ECONOMIC,
CULTURAL, AND TECHNOLOGICAL DEVELOPMENT**

Mr. Sandip D. Bhagat*, Dr.DilipS.Chavan**

ABSTRACT

Globalization has emerged as a defining force of the 21st century, reshaping the way nations interact economically, socially, culturally, and politically. This study investigates the broad-ranging impacts of globalization, with a particular focus on how it influences economic growth, labor markets, cultural identity, and technological development across developed and developing nations. Using a mixed-methods approach, the research integrates statistical data from global financial institutions and a comprehensive review of scholarly literature to provide a balanced understanding of globalization's dual nature.

The findings reveal that globalization has played a vital role in expanding international trade, increasing foreign investment, enhancing communication technologies, and promoting cross-cultural exchange. These changes have enabled countries to integrate into the global economy more efficiently, leading to increased productivity and access to broader markets. However, the study also identifies significant challenges, including growing income inequality, the marginalization of local cultures, and environmental concerns driven by industrial expansion and resource exploitation. Based on the analysis, the research proposes several strategies to address these imbalances, including inclusive economic policies, sustainable development practices, protection of cultural heritage, and global cooperation on regulation and environmental issues. The conclusion emphasizes the importance of managing globalization responsibly to ensure that it serves as a tool for global equity rather than division. This study contributes to the ongoing discourse on globalization by offering a nuanced perspective that recognizes both its transformative potential and its unintended consequences.

Keywords:- Globalization, economy, culture, technology, economic reforms, LPG

I. INTRODUCTION

Globalization is a complex and multifaceted process that has increasingly shaped the modern world. It refers to the growing interconnection and interdependence of the world's economies, cultures, populations, and political systems, brought about by cross-border trade in goods and services, technology, capital flows, information, and the movement of

* Research Student SBES College of Arts and Commerce, Chh.Sambhajinagar. Email Id :sandipD124@gmail.com

** Professor & Research Guide SBES College of Arts and Commerce, Email id: dilu81@rediffmail.com

people. While globalization is not a new phenomenon having its roots in ancient trade routes and colonial expansion—its current scale, speed, and intensity are unprecedented, largely driven by advancements in technology, transportation, and communication.

In recent decades, globalization has profoundly influenced how countries operate and interact. Economically, it has led to the rise of global markets and supply chains, creating opportunities for businesses to expand beyond national borders. Politically, it has encouraged cooperation and alignment between nations through international organizations and agreements. Culturally, it has facilitated greater exchange of ideas, traditions, and values, leading to a more interconnected world society. Technologically, it has accelerated innovation and made information more accessible than ever before.

However, globalization is not without controversy. Critics argue that it disproportionately benefits wealthy nations and multinational corporations, while contributing to income inequality, job displacement, cultural erosion, and environmental degradation in less developed regions. The COVID-19 pandemic, the Russia-Ukraine war, and rising nationalism in several parts of the world have further complicated the discourse around globalization, raising questions about its resilience and future trajectory. This study aims to examine the comprehensive impact of globalization, focusing on both its positive contributions and its adverse effects. By analyzing data trends and scholarly research, the paper explores how globalization influences key sectors such as trade, labor, culture, and technology. The objective is to provide a balanced understanding and to suggest policy recommendations that can make globalization more inclusive, equitable, and sustainable.

● Globalization

Globalization refers to the process of increasing interconnectedness and interdependence among countries through the exchange of goods, services, information, people, and culture.

It involves the integration of national economies into the global economy through trade, investment, technology, and communication. Globalization affects multiple dimensions of life—economic, cultural, social, political, and environmental.

● Economy

In the context of globalization, the economy refers to the global economic system shaped by international trade, investment, and financial markets. Globalization has allowed countries to participate in global markets, access foreign investments, and outsource production. However, it has also led to economic challenges such as income inequality, job loss in certain sectors, and increased competition for local businesses.

- **Culture**

Culture encompasses the beliefs, values, customs, languages, and traditions of people. Globalization has facilitated cultural exchange and the spread of global media, food, fashion, and entertainment. While this can promote understanding and diversity, it may also lead to the erosion of local cultures, languages, and identities as dominant global cultures—especially Western gain more influence.

- **Technology**

Technology plays a key role in accelerating globalization. Advances in communication (e.g., the internet, mobile phones), transportation (e.g., air travel, shipping logistics), and digital platforms have made it easier to connect people and businesses across borders. Technology enables real-time communication, global collaboration, and access to information, but it also raises concerns about the digital divide between developed and developing regions.

II. REVIEW OF LITERATURE

Joseph Stiglitz, (2002), Stiglitz, a Nobel laureate in economics, offers a critical view of globalization, particularly how international institutions like the IMF and World Bank have implemented globalization policies. He argues that while globalization has the potential to help developing nations, poor policy choices and a lack of transparency have often deepened inequality and poverty.

Thomas Friedman, (2005), Friedman describes globalization as a "flattening" of the world, where technological advances and open markets have leveled the global playing field. He emphasizes the opportunities globalization presents for innovation, entrepreneurship, and job creation across borders.

Anthony Giddens, (1990), Giddens explores globalization from a sociological perspective. He identifies it as a major force transforming social relationships, cultures, and institutions. He emphasizes the intensification of global interactions and the shifting boundaries of time and space in social life.

David Held, (1999), Held and his co-authors offer a comprehensive framework for understanding globalization through political, economic, and cultural lenses. They argue that globalization is not a singular or uniform process, but rather a series of complex, interrelated developments with varying impacts in different regions.

Jeffrey Sachs, (2005), Sachs presents globalization as a pathway to economic development, particularly for low-income countries. He highlights the role of foreign aid, trade liberalization, and international cooperation in reducing poverty through global

integration.

● RESEARCH GAP

- Uneven Impact Across Regions: Many studies focus on broad, global trends without addressing how globalization differently affects regions and socio-economic groups, especially in developing countries.
- Integration of Multiple Domains: Most research tends to isolate the economic, cultural, or technological impacts of globalization rather than examining their interdependence in a holistic way.
- Post-2020 Developments: There is limited updated research that reflects how recent global crises—such as the COVID-19 pandemic, global supply chain disruptions, and rising geopolitical tensions—have reshaped the dynamics of globalization.
- Policy-Oriented Approaches: Few studies offer actionable policy recommendations for making globalization more inclusive, equitable, and sustainable.

III. METHODOLOGY

● Research Design

This study employs a mixed-methods approach, combining both qualitative and quantitative research techniques to provide a comprehensive understanding of globalization's impact.

Data Collection

● Quantitative Data

Secondary Data Analysis: Economic indicators, trade statistics, foreign direct investment (FDI) figures, and employment data from international organizations such as the World Bank, IMF, WTO, and UNCTAD will be collected for the period 2000-2024.

Surveys: Structured questionnaires will be distributed to 300 participants, including business owners, employees, and consumers, across different sectors in three selected countries representing developed, developing, and underdeveloped economies. The survey will measure perceptions of globalization's effects on job security, income, cultural change, and market access.

● Qualitative Data

Interviews: Semi-structured interviews will be conducted with 20 experts including economists, policymakers, and sociologists to gain deeper insights into the nuanced social and cultural impacts of globalization.

Case Studies: In-depth case studies of multinational corporations (MNCs) and local businesses affected by globalization will be analyzed to understand micro-level impacts.

● Sampling

Quantitative Sampling: A stratified random sampling technique will be used for the survey to ensure representation across different socioeconomic groups and regions within each country.

Qualitative Sampling: Purposive sampling will be employed to select interviewees and case study subjects with relevant expertise and experience.

● Data Analysis

Quantitative Data: Statistical analysis will be performed using SPSS software. Descriptive statistics, correlation analysis, and regression models will be applied to identify trends and relationships between globalization indicators and economic/social variables.

Qualitative Data: Thematic analysis will be conducted on interview transcripts and case study documents to identify key themes, patterns, and narratives related to globalization's impact.

IV. LIMITATIONS

Indicator	United States (Developed)	India (Developing)	Ethiopia (Underdeveloped)
Average GDP Growth Rate (%)	2.5	6	4
FDI Inflows (Billion USD)	250	50	3
Employment in Manufacturing (%)	12	25	10
Internet Penetration Rate (%)	88	55	25
Gini Coefficient (Income Inequality)	0.41	0.35	0.44
Job Security Survey Score (1-5)	4.3	3.2	2.5
Cultural Homogenization Index (1-10)	7	5	3

The study acknowledges potential limitations such as the availability and reliability of secondary data, language barriers during interviews and the generalizability of findings across different regions.

V. ANALYSIS OF GLOBALIZATION IMPACT INDICATORS

GDP Growth Rate India leads with an average GDP growth rate of 6.0%, reflecting its rapid economic development and integration into global markets. Ethiopia, although underdeveloped, shows a relatively strong 4.0% growth, indicating some benefits from globalization and development initiatives. The United States, as a developed economy, has a steady but slower growth rate of 2.5%, typical for mature economies.

Foreign Direct Investment (FDI) Inflow the U.S. attracts the highest FDI inflows at \$250 billion, underscoring its established economic strength and investor confidence. India receives a moderate \$50 billion, showing growing foreign interest as a developing market. Ethiopia's \$3 billion FDI inflow is low, reflecting challenges such as limited infrastructure and investment climate issues common in underdeveloped countries.

Employment in Manufacturing India has the highest manufacturing employment share (25%), consistent with its role as a global manufacturing hub. The U.S. shows only 12%, reflecting a service-oriented economy with some offshoring of manufacturing. Ethiopia's 10% indicates some industrial activity but remains limited by developmental constraints. **Internet Penetration Rate** the U.S. has the highest internet penetration at 88%, facilitating digital globalization and advanced communication. India's 55% shows improving connectivity but still significant room for growth. Ethiopia's low 25% highlights the digital divide, which limits access to global information and technology benefits.

Income Inequality (Gini Coefficient) The U.S. shows the highest inequality (0.41), which aligns with concerns over globalization disproportionately benefiting the wealthy. India's 0.35 indicates moderate inequality, while Ethiopia's 0.44 suggests significant income disparity despite being less economically developed. **Job Security Perception (Survey Score 1-5)** Respondents in the U.S. report the highest job security (4.3), possibly due to stronger labor protections and social safety nets. India's moderate score (3.2) reflects uncertainty amid rapid economic changes. Ethiopia's low score (2.5) suggests greater vulnerability to job displacement and informal employment.

Cultural Homogenization Index the U.S. scores highest (7), indicating strong influence in spreading global culture, which may overshadow local traditions abroad. India's moderate score (5) suggests balancing global and local cultural identities. Ethiopia's low score (3) reflects less exposure to global cultural homogenization, partly due to limited connectivity and economic integration.

VI. CONCLUSION

The comparative analysis of globalization's impact on the United States, India, and Ethiopia reveals a clear pattern of uneven benefits and challenges across different stages of economic development. While developed countries like the U.S. enjoy substantial foreign investment, advanced technological infrastructure, and relatively high job security, they also face significant income inequality and cultural homogenization. Developing countries such as India experience robust economic growth and expanding manufacturing sectors but still grapple with moderate digital access and job security concerns. Underdeveloped countries like Ethiopia show promising growth rates but remain constrained by limited foreign investment, low internet penetration, and vulnerable labor markets. These disparities highlight that globalization is a multifaceted phenomenon with both positive outcomes and adverse effects, disproportionately favoring more developed economies. To harness globalization's full potential, policymakers must promote inclusive economic strategies, enhance technological access, protect cultural diversity, and address social inequalities. Only through responsible and equitable management can globalization serve as a driver of sustainable development and shared prosperity worldwide.

VII. REFERENCES

- Bhagwati, J. (2004). In Defense of Globalization. Oxford University Press. (Discusses the benefits and challenges of globalization from an economic perspective.)
- Dicken, P. (2015). Global Shift: Mapping the Changing Contours of the World Economy (7th ed.). Guilford Press. (A comprehensive overview of global economic restructuring and globalization impacts.)
- International Monetary Fund (IMF) (2024). World Economic Outlook <https://www.imf.org/en/Publications/WEO>
- Sachs, J. D. (2005). The End of Poverty: Economic Possibilities for Our Time. Penguin Press. (Highlights globalization as a means for poverty reduction through trade and international cooperation.)
- World Bank. (2024). World Development Indicators. <https://data.worldbank.org> (A key source for economic and social indicators relevant to globalization research.)



VIKSIT BHARAT @2047: DEMAND OF THE NATION

Dr. Santosh Kumar *

ABSTRACT

India has transformed remarkably over 75 years. The crucial milestones include improvement in widespread economic reforms, enhanced nuclear capabilities, food security, development of indigenous satellites, and being a global software hub. India's growth rate has increased from 2.9% in 1951-52 to 7.6% in 2023-24, and is projected to reach new highs in the coming year. GDP is expected to surpass USD 4.8 trillion economy by 2025 and USD 7 trillion economy by 2030. PHDCCI projects India will become USD 34.7 trillion economy by 2047. India is ready to leapfrog as the 2nd largest in the Asia-Pacific region, the 3rd largest economy in the World by 2030, and "Viksit Bharat" by 2047.

India's economy is experiencing consistent growth, leading to higher GDP and per capita income. It is estimated to increase substantially, reaching USD 4667 by 2030 and USD 21,000 by 2047. This growth is expected to stimulate consumer demand, boost the industry sector, and spur private investments. The agriculture sector in India, contributing 20% to total GDP in FY23 and employing 55% of the population, is projected to contribute 12% TO GDP by FY 2047. The industrial sector contribution to GDP is expected to reach to 34% by FY 2047. Within industry, manufacturing sector contribution to GDP is expected to reach to 25% by FY 2047 while the services sector contribution in GDP is expected to remain stable at around 54% by FY 2047. This current paper first introduce the India's Roadmap for 2047 and for achieving it also study the role of sector and manufacturing as well as find out all Key pillars to bolster economic growth.

Keywords: Viksit Bharat, private investments, industrial sector, GDP, manufacturing sector etc.

I. INTRODUCTION

Hon'ble Prime Minister shared his vision for AmritKaal and 2047 In his 2021 Independence Day speech,, when the india would celebrate 100 years of independence. To achieve these goals, he gave the slogan, "SabkaSaath, SabkaVikas, SabkaVishwas, and SabkaPrayas." The Hon'ble Prime Minister, in his 2022 Independence Day speech, mentioned how the entire country celebrated AzadiKaAmritMahotsav and shared PanchPran of AmritKaal (Goal

* Assistant Professor, Department of Commerce, Seth P. C. Bagla (P.G.) College,
Hathras (Uttar Pradesh) India, E-mail:drsantoshkumar8783@gmail.com

of developed India), to remove any trace of the colonial mindset, take pride in our roots, unity and a sense of duty among citizens. He urged the citizens to nurture new possibilities, realize new resolutions and move ahead with confidence. To take the country forward he also underlined the need of collective efforts and teamwork

II. Vision 2047:

The Union Finance Minister, in her Union Budget FY 2022-2023 speech, shared that during the AmritKaal (India from 75 to India at 100), the government aims to:

- Complement the macro-economic level growth focus with a micro-economic level all-inclusive welfare focus.
- Promote digital economy & fintech, technology-enabled development, energy transition, and climate action.
- Rely on virtuous cycle beginning from private investment with public capital investment Supporting to crowd-in private investment.

Elaborating more on the goals for 2047, the Union budget for 2023-2024, the first budget in the AmritKaal, envisioned India as a technology-driven and knowledge-based economy with strong public finances and a robust financial sector. It reemphasized that Jan Bhagidari through SabkaSaath, SabkaPrayasis essential and delineated the Saptarishiprinciples: Inclusive Development;

II. RESEARCH METHODOLOGY:

Secondary data has been used. The data has been collected from internet, Various Journal, newspapers etc. As far as analyze the data is concerned Percentile method has been used.

● Research Objectives (RO):

RO1: To study the India's Roadmap for 2047

RO2: To study the Sectoral Value Added in India's GDP

RO3: To study the Key Enablers for India as a Manufacturing Hub

RO3: To study the Key pillars to bolster economic growth

● India: Roadmap for 2047:

Marching forward with Hon'ble Prime Minister Shri Narendra Modi's vision to make India a developed Nation by 2047, the Government is deliberating on the preparation of the Action Plan and Vision Document of India@2047. The Government of India is in the process of

finalizing a national vision plan to make India a developed nation by 2047 and ensure that the country doesn't slip into a middle-income trap that several countries have fallen into at similar stages of development. Prime Minister Narendra Modi is expected to unveil the plan once it's ready. The plan would include an outline of reforms and outcomes to be achieved by 2030, along with structural changes in governance that will be critical to make India a \$30 trillion economy by 2047 with a per-capita income of \$18,000-20,000.

Table-1 Growth Path of Indian Economy

Indicator	Units	2030	2040	2047
GDP at current prices	Rs. Trillion	609.04	1759.79	3604.94
Per capita GDP at current prices	Rupees	4,02,008	10,93,037	21,84,812
Exports	\$ Trillion	1.58	4.56	8.67
Imports	\$ Trillion	1.88	5.92	12.12
Investment	Rs. Trillion	195.5	591.1	1273.40
Savings	Rs. Trillion	207.8	649.4	1339.70

● **Source: NITI Aayog**

The NITI Aayog is giving finishing touches to the plan called „Vision India@2047“ that has been in the works for almost two years and was presented to Cabinet Secretary Rajiv Gauba in October 2023. Meetings were held with various stakeholders and think tanks in November 2023, such as Tim Cook, Sundar Pichai, Gautam Adani, Mukesh Ambani, K.M. Birla, N. Chandrasekharan and Indra Nooyi, for their insights.

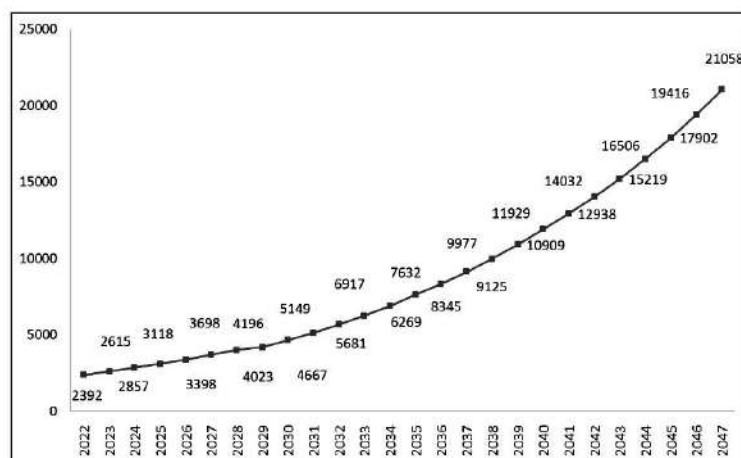
As for as NITI Aayog Chief Executive Officer B.V.R. Subrahmanyam is concerned. “By December, we will have the draft version of the plan ready, and several States are also in the process of preparing their own road maps.” While India's share of the global GDP has tripled from 1.1% in 1991 to 3.5% in 2023 and it has become the world's fifth largest economy, none of the world's largest banks, accountancy firms, contractors are from India. With vision@2047 India through its varied firms is aiming to dominate parts of these landscapes. India is the world's largest IT sector in terms of exports but still waits to become the biggest software developer. The „Vision India@2047“ document also explores which sectors and companies can be pushed to become global champions besides focusing on developing the skill sets that India's young population need to meet global needs.

III. INDIA'S PER CAPITA INCOME:

The Indian economy has been growing consistently at new highs with higher GDP growth rates. Indian economy's resilient growth is seeping down to each citizen making them richer on an average. The per capita income of India was USD 2392 in 2002. The per

capita income will grow to the level of USD 4667 by 2030 It is projected . By 2047 the size of the economy is estimated to be USD 34 trillion and per capita income is estimated to be USD 21000. As for as higher per capita income is concerned it will generate higher consumer conscience and demand strengthen the industry sector and uplifting private investments for higher growth.

Figure-1: India's Per Capita Income



Source: PHD Chamber of Commerce & Industry (2024) Viksit Bharat @2047, New Delhi

Sectoral Value Added in India's GDP:

IV. AGRICULTURE AND ALLIED SECTORS:

The agriculture sector has emerged as one of the most supportive sectors to the growth of India's economy and is boosting economic resilience. During the last six years, the agriculture sector in India has grown at an average annual growth rate of 4.6 percent. The sector has contributed to 20 percent in total GDP for FY 23 and is a primary source of livelihood for approx. 55 percent of its population.

India has signified a remarkable growth route from a food-scarce to a food- sufficient, to a food-surplus country. The allied sectors of Indian agriculture - livestock, forestry & logging and fishing & aquaculture are gradually becoming sectors of buoyant growth and a potential source of better farm incomes. The sector is poised to bring better productivity and is predicted to contribute 17% by FY 2030, 14% by FY 2040 and 12% by FY 2047 to the total GDP.

This sector is guided by rapid population growth in India, combined with rising income levels in both rural and urban areas, which have powered demand for agricultural products nationwide. Furthermore, the adoption of advanced technologies such as block chain, artificial intelligence (AI), geographic information systems (GIS), drones, remote sensing, and the proliferation of e-farming applications are further stimulating market growth.

Table-2: India's Sectoral Value Added in percent

Share	Agriculture	Industry	Manufacturing	Services
2023	20	26	16	54
2030	17	29	18	56
2040	14	32	22	54
2047	12	34	25	54

Source: PHD Chamber of Commerce & Industry (2024) Viksit Bharat @2047, New Delhi

● **Industry:**

Industry holds a prominent position in the Indian economy, accounting for 26 percent of total GDP, during FY 2023. The sector contributes to economic growth through various direct and indirect linkages. Moreover, industrial growth has multiplier effects, driving employment opportunities and fostering growth in services sectors like banking, insurance, and logistics. The industrial sector is projected to grow, reaching 29% of the GDP by FY 2030, 32% by FY 2040, and 34% by FY 2047, showcasing its increasing importance in India's economic landscape.

● **Manufacturing:**

Contributing substantially to the nation's GDP, the manufacturing sector stands as a crucial driver of economic expansion in India,. Manufacturing Gross Value Added (GVA), constituting over 50% of the industrial GVA, underscores its paramount importance in the broader economic framework. Double-digit growth has been registered by manufacturing sector in Q3 of FY24 run by a flow in investment, enhanced investor confidence, and strong domestic demand conditions making India a manufacturing hub. Anticipated trends showcase a gradual uptick in the manufacturing sector's contribution to GDP, with forecasts indicating an increase to 18% by FY 2030, 22% by FY 2040, and 25% by FY 2047.

● **Services:**

The services sector of India contributing to more than 50% in the total GDP in FY23 remains the engine of growth for India's economy. The services sector stands as the most attractive sector for FDI inflows contributing around USD 108 Bn (16%) in the total FDI equity inflow from April 2000 to December 2023. The Government undertaken measures such as

the launch of the National Single-Window system and enhancement in the FDI vaulting through the automatic route, have played a crucial role in supporting investment.

The sector is poised to attain a contribution of 56% in FY 2030, 54% in FY2040 and 54% in FY2047 in the total GDP. The projections for the services sector to maintain a significant share of India's GDP reflect its growing importance in the economy, driven by structural shifts, changing consumer preferences, technological advancements, and supportive government policies.

Table-3: Sectoral Distribution of Advanced Economies and India during 2022 (%)

Economies	Agriculture	Industry	Services
Switzerland	0.6	24.9	71.8
Norway	1.7	49.1	41.8
Unites States (2021)	1.0	17.9	77.6
Australia	2.7	27.5	63.3
Canada (2020)	1.8	22.5	69.6
Germany	0.9	26.9	62.7
United Kingdom	0.8	16.7	72.7
France	1.9	16.8	70.7
Italy	1.8	23.8	64.3
Japan	1.0	26.9	71.4
India	20.2	25.6	54.2

Source: PHD Chamber of Commerce & Industry (2024) Viksit Bharat @2047, New Delhi

The sectoral contribution in GDP for the advanced economies highlights significant trends in economic structure (according to IMF). The sectoral value added of different sectors depict a distinct scenario. The advanced countries exhibit a dominance of the service sector followed by industry in most of the advanced countries. However, India is a different country. Predominantly an agrarian economy, agriculture contributes around 20% to GDP.

V. KEY ENABLERS FOR INDIA AS A MANUFACTURING HUB:

India is rapidly positioning itself as a prime destination for new ventures and investments, bolstered by proactive government initiatives aimed at stimulating private investment. The initiatives such as the Government e Marketplace (GeM portal) have revolutionized public procurement processes, fostering transparency, efficiency, and inclusivity, thereby enhancing the overall ease of doing business. Additionally, schemes like the Production Linked Incentive (PLI), Make in India, and Start-up India hold immense potential to further catalyze production growth and propel India's manufacturing sector to new heights. The government's concerted efforts to streamline regulations have resulted in a

significant reduction of over 40,000 compliances and the decriminalization of more than 3,400 legal provisions, further enhancing the business environment.

Furthermore, India's emergence as a global startup hub is evident, with over 100,000 startups and a remarkable 100 unicorns, underscoring the country's vibrant entrepreneurial ecosystem. The ongoing expansion of sunrise industries, driven by technological advancements and developed consumer preferences, underscores the vital for increased investments to help growth momentum.

Despite these advancements, there remains a pressing need to address various challenges to further catalyze manufacturing growth. Efforts must focus on reducing the cost of doing business including, costs of capital, costs of power, costs of logistics, costs of compliance, costs of land, availability of land, availability of skilled labor, and costs of labor. Although, there is a need to ensure the widespread acquiring of ease of doing business principles at the grassroots level, promote combination with global supply chains, and increase digital connectivity for enterprises. To sustain the trajectory of startups and unicorns, it is imperative to provide robust support mechanisms, including enhanced access to technology and AI-based development, as well as strengthening incubation frameworks to nurture and scale innovative ventures.

VI. KEY PILLARS TO BOLSTER ECONOMIC GROWTH:

The precondition for achieving economic growth in a country is a praising business environment. India, one of the World's fastest-developing countries, has the potential to surpass top leading countries in terms of business opportunities. India will be a USD 4 trillion economy in the current financial year 2024-25, USD 5 trillion in 2026-27, and USD 7 trillion economy by 2030, and USD 34 trillion by 2047. We are all set to position ourselves as the 2nd largest in the Asia-Pacific region and the 3rd largest in the World by 2030 and "Viksit Bharat" by 2047.

The government has introduced several industry-friendly policies to enable ease of doing business and reduce cost of doing business. These include, Remission of Duties and Taxes on Exported Products (RODTEP), PM Gati Shakti, Production Linked Incentive schemes, India Industrial Landbank, the National Logistics Policy and the National Single Window System. Further, reduction in corporate taxes, financial market reforms, consolidation of public sector banks, enactment of four labour codes, Foreign Direct Investment (FDI) policy reforms. More than 3,400 legal provisions have been decriminalized and more than 40,000 compliances have been removed and to increase Ease of Doing Business in the country.

VII. MSMES BOLSTERING GROWTH OF INDIA:

The Micro, Small, and Medium Enterprises (MSMEs) sector serves as a cornerstone for fostering socio-economic development within the country. In India, this sector plays a pivotal role in boosting entrepreneurship, particularly in semi-urban and rural regions, thereby catalyzing economic growth and job creation in these areas.

According to the ministry of Micro, Small, and Medium Enterprises (MSMEs), the MSME sector has been classified based on their investment in Plant and Machinery or Equipment, along with their Annual Turnover.

Micro enterprises, the smallest category, enclosed businesses with investments not exceeding Rs. 1 crore and annual turnovers not surpassing Rs. 5 crore. Small enterprises are defined by investments not exceeding Rs. 10 crore and annual turnovers not marked Rs. 50 crore. Medium enterprises, the largest within this classification, contain businesses with investments not marked Rs. 50 crore and annual turnovers not marked Rs. 250 crore. This classification system provides a framework for assessing the scale and scope of businesses operating within the MSME sector, facilitating targeted policies and support mechanisms tailored to the specific needs of each category.

In FY22, in India an estimated 634 lakh MSMEs, with a regional distribution showing 49% located in urban areas and 51% in rural regions. The sector contributes around 30% share in the total GDP and the share of MSMEs in Manufacturing Gross Value Output is around 33%. This contribution reflects the substantial economic output generated by these small and medium-sized enterprises across various sectors, including manufacturing, services, and trade.

MSMEs have been instrumental in generating employment opportunities within India's labor market, contributing significantly to the country's workforce. Collectively, these enterprises have generated 1110 lakh jobs, providing substantial livelihood to rural (498 lakhs jobs) and urban (612 lakhs jobs) regions of the economy.

The MSME sector contributes significantly to India's total exports, accounting for approximately 49% of the country's export earnings, highlighting its vital role in driving international trade. This participation not only expands market access but also fosters innovation and enhances competitiveness, ultimately contributing to economic growth and prosperity. International trade allows MSMEs to access new markets, diversify revenue sources, and gain exposure to global best practices, leading to increased productivity and economic expansion.

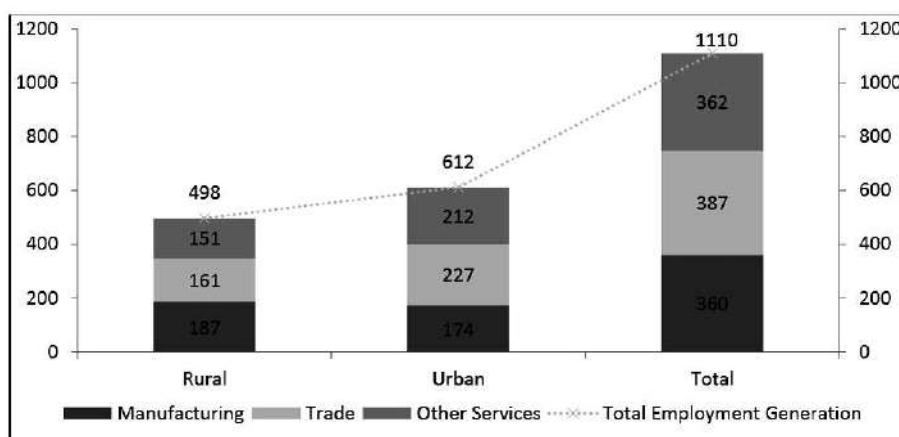
The government's unwavering support for Micro, Small, and Medium Enterprises (MSMEs) has been instrumental in propelling India's economic growth and development.

Initiatives such as the PradhanMantri Mudra Yojana (PMMY) and the revamped credit guarantee scheme underscore the commitment to bolster the MSME sector. In FY23, PMMY sanctioned a staggering Rs. 4.56 lakh crore to over 6.2 crore MSMEs, exceeding the targeted amount.

Furthermore, the infusion of Rs. 9,000 crore into the credit guarantee scheme, along with the provision of collateral-free automatic loans worth Rs. 3 lakh crore, demonstrates the government's proactive measures to facilitate easier access to credit and reduce financial burden for MSMEs. This steadfast support is crucial, considering the significant contributions of MSMEs to GDP, manufacturing output, exports, and employment generation.

By empowering MSMEs, the government is not only fostering inclusive growth but also fostering entrepreneurship, innovation, and resilience across various sectors. Such mutual efforts between the government and the MSME sector cover the way for India's journey towards economic success and flexibility, line up with the vision of Viksit Bharat by 2047.

Figure-2: Employment Generation by MSMEs in India (in lakhs)



Source: PHD Chamber of Commerce & Industry (2024) Viksit Bharat @2047, New Delhi

VIII. RENEWABLE ENERGY- MOVING TOWARDS CLEAN ENERGY:

India has a staggering population of 140 crore and is rapidly advancing with an increasing appetite for energy. As GDP is expected to exceed USD 7 billion by 2030 and 34 trillion by 2047, the demand for energy is expected to rocket. Given the concerns about climate change, it is important to focus on sustainable development. To meet sustainability goals, it is crucial to focus on renewable energy.

India has the 4th position worldwide in overall renewable energy. India has 44% cumulative installed capacity from non-fossil fuel sources as of February 2024. Within renewable energy, solar power takes the lead with an installed capacity of 76 GW, followed by wind energy with 45 GW. Additionally, large hydro projects contribute 47 GW, small hydropower adds 5 GW, bio power accounts for 10 GW, and nuclear power contributes 8 GW to India's installed capacity.

Energy generated from renewable sources has numerous benefits. It produces cleaner and more sustainable power, as well as greener environment. Moreover, the integration of newer technologies in this sector creates additional employment opportunities for the working population. By harnessing renewable sources, we can strive towards achieving goals such as providing round-the-clock electricity to every household and promoting sustainable modes of transportation.

IX. ENERGY AND ENVIRONMENT:

India currently relies on imports for 90% of its oil and 80% of its industrial coal (Abhyankar et al., 2023b). The volatility in global energy markets, as evidenced in recent years, strains India's foreign exchange reserves, leading to economy-wide inflation. The PM's dreamed to Atmanirbhar Bharat target to achieve energy independence for India by 2047. India's CO₂ emissions are projected to peak in the early 2030s, subsequently decreasing to around 800 million tonnes/year by 2047—equivalent to 85-90% progress towards achieving net-zero emissions (Menon, 2022). Energy security and independence are paramount, ensuring that India can meet its energy requirements reliably and sustainably while reducing reliance on external sources. So, it is vital to chart a course for VB to meet its rocket energy demands and attain nearly complete energy self-sufficiency by 2047.

Given that much of India's energy infrastructure is yet to be constructed, it is crucial to ensure that the majority of new energy assets are environmentally friendly. The government target to install over 500 GW of non-fossil electricity generation capacity by 2030, attaining an 80% green grid by 2040 and reaching 90% by 2047 (PTI, 2023a). Almost all new vehicle sales could be electric by 2035. Heavy industrial production would mainly move towards using green hydrogen and electrification, targeting for 90% of iron and steel, 90% of cement and 100% of fertilisers to be produced using these methods by 2047. Furthermore, India aims to position itself as a global hub for the production and export of green hydrogen, recognising the vast potential of hydrogen as a clean and versatile energy carrier capable of playing a pivotal role in decarbonising various sectors such as transportation, industry and power generation.

Due to increasing needs for transportation, industrial electrification and the production of green hydrogen, the most energy-heavy sectors, there could be a nearly fivefold increase in electricity demand by 2050, rising from 1300 TWh/yr to over 6600 TWh/yr. Achieving this would necessitate a substantial escalation in the deployment of green energy to 40 GW/year by 2030, escalating to approximately 100 GW/year between 2030 and 2050. The deployment of green energy will require significant capital investment, with an estimated net additional outlay of ₹11-15 million crores between 2023 and 2047, compared to the BAU scenario. An aggressive transition towards green energy could prevent over 4 million premature deaths related to air pollution between 2023 and 2047.

Table-4: Installed Capacity of Renewables in India

S. No.	Source of Renewable Energy	Installed Capacity(GW) as on Feb 2024
1	Solar	76
2	Wind	45
3	Small hydro	5
4	Large hydro	47
5	Biopower	10
6	Nuclear	8
	Total	191

Source: PHD Chamber of Commerce & Industry (2024) Viksit Bharat @2047, New Delhi

Table-4: Total Installed Renewable Energy Capacity of India(GW)

Year	2023	2030	2040	2047
Total Installed Renewable Energy(RE) Capacity of India	191	500	900	1500

Source: PHD Chamber of Commerce & Industry (2024) Viksit Bharat @2047, New Delhi

R&D serves as the base of economic advancement, driving innovation and rational growth. India's R&D landscape offers a conducive environment for fostering innovation and steering progress across various sectors.

Backed by a catalytic R&D policy, India has invested in upgrading its infrastructure to global standards, enhancing the efficiency and effectiveness of R&D activities. India's supportive R&D ecosystem, complemented by market potential, skilled workforce, infrastructure development, and fiscal incentives, positions the nation as a hub for innovation-driven economic growth. By giving preference to R&D, India is assured to unlock new avenues of progress and prosperity on the global stage.

The Global Innovation Index (GII) ranks World economies according to their innovation proficiency. Containing of roughly 80 indicators, grouped into innovation inputs and outputs, the GI target to capture the multi-dimensional facets of innovation.

Table-5: Global Innovation Index of India

S. No.	Year	Rank
1	2019	52
2	2020	48
3	2021	46
4	2022	40
5	2030	Among the top 20 countries
6	2040	Among the top 10 countries
7	2047	Among the top 5 countries

Source: PHD Chamber of Commerce & Industry (2024) Viksit Bharat @2047, New Delhi

In India's Global Innovation Index ranking, there has been a notable ascent from 52nd place in 2019 to 40th place in 2022. Projections indicate a trajectory towards even greater innovation prowess, with expectations of India positioning in the top 20 countries by 2030, in the top 10 by 2040, and ultimately obtaining a place among the top 5 by 2047. These projections underscore India's commitment to fostering innovation and its potential to emerge as a global leader in the realm of innovation and creativity.

X. DYNAMICS OF EXPORTS:

The presence of unrestricted and open trade has stimulated dynamic competition, creativity, and economies of scale, enabling individuals and enterprises to benefit from reduced costs and numerous opportunities. So, billions of individuals Worldwide have been able to break free from the limitations of subsistence agriculture and riverpoverty that have defined the majority of humanity's existence.

Exports promote growth in a country by expanding markets, generating revenue, driving productivity improvements, and facilitating specialization, making them integral to the nation's economic development. On the other hand, imports are necessary to provide access to products, services, and technology that a country may not be able to produce or meet its needs due to limited resources. Thus, trade is beneficial as it has multiple linkages.

XI. TOTAL EXPORTS OF INDIA TO WORLD & SHARE IN GDP OF INDIA:

India's export dynamics highlights substantial growth in exports from 2010 to 2023. Total exports have rushed from USD 275 billion in 2010 to USD 776 billion, in 2023, respectively.

Exports have reecorded a double digit growth from 2010 to 2019 as they rushed from USD 275 Bn to USD 538 Bn respectively. Thenafter, it increased to USD 776 Bn in 2023. This growth signifies a robust recovery post-COVID-19 pandemic, as exports exceeded USD 700 billion in 2022-23. However, the exports have registered a drop during the years 2014, 2020 (COVID pandemic) and 2021 (Post Covid Period) due to global slowdown and Covid-19 Pandemic. The trend in the contribution of total exports to GDP demonstrates the increasing significance of exports as a key driver of economic growth. The share of exports has risen from 16% in 2010 to 21% in 2023.

In spite of several adverse events, such as disodering in the global supply chains, fight in the Red Sea, risee in geopolitical developments and high interest rates, fluctuations in commodity prices, India's exports are capable to make a positive tern in 2023-24. The exports increased from USD 776.4 in 2022-23 to USD 776.6 in 2023-24.

Table 6: Pattern of Total Exports of India to World and % Share of Exports in GDP (2010 to 2023)

Year	Exports to World (USD Bn)	GDP (USD Bn)	Exports of Goods & Services (% of GDP)
2010	275	1708	16
2011	375	1823	20
2012	448	1828	24
2013	448	1857	24
2014	466	2039	22
2015	469	2104	22
2016	416	2295	18
2017	440	2651	16
2018	499	2703	18
2019	538	2836	19
2020	526	2672	19
2021	497	3150	16
2022	676	3390	20
2023	776	3732	21
2030	2000	6993	28
2040	5504	18978	29
2047	10408	34692	30

Source: PHD Chamber of Commerce & Industry (2024) Viksit Bharat @2047, New Delhi

Move on, the future holds a promising outlook for India's export flight as the government is visionarily implementing reforms, increasing Ease of Doing Business, boosting supply chains and becoming increasingly motivate of free trade while the rest of the World is heading toward protectionism. Recently India has concluded free trade agreements with the European Union Free Trade Association following those with Australia and the UAE. The

projection suggests that by 2040, exports are expected to reach USD 5.5 trillion and further increase to USD 10.4 trillion by 2047. This growth can be attributed to a significant rise in GDP, which is projected to reach USD 34.7 trillion. Moreover, the share of exports to GDP is expected to rise from 16 percent to 30 percent by 2040.

XII. CHALLENGES AND OPPORTUNITIES:

India's ambitious vision of becoming a developed nation by 2047 through Viksit Bharat 2047 faces several potential obstacles and challenges, in this section, we identify the key challenges and opportunities confronting Vikshit Bharat, these include economic inequality, infrastructure deficiencies, education and skill gaps, environmental degradation, governance, and corruption issues, geopolitical tensions, and demographic pressures. Bridging the income gap, improving infrastructure, addressing education quality and relevance, balancing economic growth with environmental sustainability, strengthening governance institutions, resolving geopolitical tensions, and managing demographic challenges are crucial for India's development. However, with resilience, determination, a holistic approach, innovation, inclusive growth, and strong governance, India can overcome these obstacles and achieve its development goals. For success, Collaboration, concerted efforts, and political will are essential. Viksit Bharat's goal is being obstructed by changes in population and the way people live. Additionally, the facilities, rules, and taxes are also causing trouble for people. The traditional focus on GDP also ignores important social measures and the human and social aspects of growth. In recent times, Vikshit Bharat 2047," numerous challenges confront the nation, with employment emerging as the foremost concern. In the unorganized sector, at present, 94 per cent of the population remains employed. Notably, while efforts to augment GDP are underway, it's crucial to acknowledge that GDP calculations primarily encompass organized sectors. The exclusion of the unorganized sector from GDP assessments poses a significant challenge. Moreover, inflation persists as a pressing issue in India, exacerbating the challenge of enhancing people's incomes. The nexus between unemployment and stagnant incomes further complicates matters, as subdued purchasing power impedes economic transactions, thereby stymying production and investment. So, the economy proofed a decline in the production of goods and services. Addressing the issue of unemployment assumes paramount importance, as mitigating this challenge can potentially alleviate various other problems. Additionally, the allocation of a mere 2.8 or 2.9 per cent of GDP towards education, underscores the critical requirement to prioritize higher education and skill development. However, those opposed to Vikshit Bharat highlight legitimate worries about its execution and its downsides. One important topic of debate is the viability of reaching such an ambitious target within time constraints. Critics argue that bureaucratic redtape, political instability and socioeconomic inequality impeder's development path, potentially impending progress towards achieving vikshit Bharat.

XIII. CONCLUSION:

India is on the path to becoming the second largest economy in the world by 2047. Hon'ble Commerce and Industries Minister have also forecasted that India will be a global powerhouse with the size of economy around \$ 35 trillion by 2047. Expanding digital economy, Country's demographic dividend, prospering middle class and sustainability-focused economy are going to act as pillars of strength in successfully achieving our vision for 2047. However, the country needs to be conscious of impending challenges like middle income trap, gradually ageing population, requirement of maintaining higher growth rate, geopolitical issues, among others which traversing ahead to realise the vision@2047 in its holistic.

The new financial year 2024-25 is coming with a strong backdrop of resilient economic indicators, and aspirations for a prominent gung-ho in the financial year 2024-25. The post-COVID years have witnessed prominent momentum in economic activity; GDP growing robustly at 7.6% in 2023-24. The financial year 2025-26 is also expected to remain robust to maintain growth at the high road.

The economy is forecasted to experience aggressive growth, soaring to USD 34.7 trillion by 2047. Over the coming decades, this track underscores India's remarkable journey of economic expansion and development. It is forecasted that the per capita income will increase to the level of USD 4667 by 2030 and USD 21000 by 2047.

India's sustained growth is being improved by a new economic segment of startups. Start-Ups and New businesses are becoming employment-creating innovation ecosystems in India. India is the World's 3rd largest, Asia's 2nd largest, and South Asia's 1st largest startup ecosystem, with more than 1 lakh startups, and over 100 unicorns, generating more than 12 Lakh jobs in the country. India got a significant position within the realm of startups, standing greatly in the Asian startup ecosystem. Our nation has made an international position, as five (Bengaluru-Karnataka, Kerala, Odisha, Tamil Nadu, and Telangana) Indian startup ecosystems have made places among the top 15 startup ecosystems in Asia.

XIV. REFERENCES:

- https://loksabhadocs.nic.in/Refinput/New_Reference_Notes/English/16012024_112431_102120474.pdf
- www.phdcci.in/wp-content/uploads/2024/04/Viksiti-Bharat@2047-A-Blueprint-of-Micro-and-Macro-Economic-Dynamics.pdf
- www.niti.gov.in/sites/default/files/2024-07/WP_Viksiti_Bharat_2024-July-19.pdf
- <https://www.niti.gov.in/sites/default/files/2024-06/document-34.pdf>

- <https://innovateindia.mygov.in/viksitbharat2047/viksitbharat2047-dashboard/>
- www.jnu.ac.in/sites/default/files/current_events/ViksitBharat-Vision.pdf
- <https://www.deccanherald.com/india/explained-what-is-viksit-bharat-2047-and-what-does-it-aim-to-achieve-2920441>
- <https://pib.gov.in/PressReleaseframePage.aspx?PRID=1985077>
- <https://assets.kpmg.com/content/dam/kpmg/in/pdf/2024/05/decoding-indias-economic-growth.pdf>
- <https://kpmg.com/in/en/home/insights/2023/03/india-2047-vision-and-strategic-roadmap-for-technical-textiles.html>
- <https://www.pwc.in/research-and-insights-hub/immersive-outlook/india-at-2047.html>
- <https://www.pwc.com/gx/en/issues/c-suite-insights/publications/india-rising-5-springboards-to-developed-nation-status-by-2047.html>
- <https://pib.gov.in/PressReleasePage.aspx?PRID=1746062#:~:text=I%20can%20be%20proud%20that,the%20heart%20of%20all%20Indians>
- <https://pib.gov.in/PressReleasePage.aspx?PRID=1852024#:~:text=Compliments%20to%20my%20dear%20countrymen,who%20love%20their%20country%20immensely>
- <https://www.indiabudget.gov.in/doc/bspeech/bs202223.pdf>
- https://www.indiabudget.gov.in/doc/budget_speech.pdf
- <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1768712>
- <https://pib.gov.in/PressReleaseframePage.aspx?PRID=1895313>
- <https://pib.gov.in/PressReleasePage.aspx?PRID=1855437>
- https://www.niti.gov.in/sites/default/files/2019-01/Strategy_for_New_India_2.pdf
- <https://pib.gov.in/PressReleasePage.aspx?PRID=1902288>
- <https://www.investindia.gov.in/team-india-blogs/developed-india-vision-progress-towards-2047>
- Virmani, A. (2024). Viksit Bharat, Unshackling job creators & empowering growth drivers. NITI Working Paper. Retrieved from https://www.niti.gov.in/sites/default/files/2024-07/WP_Viksit_Bharat_2024-July-19.pdf
- Indian Express (2023), 'PM Modi in Varanasi: What is Viksit Bharat Sankalp Yatra and the Kashi Tamil Sangamam?', Explained Desk, updated December 18, 2023, Retrieved, from <https://indianexpress.com/article/explained/pm-modi-varanasi>

- Chengappa, R. (2023). Newsmaker of the year. India Today. Retrieved from <https://www.indiatoday.in/magazine/cover-story/story/20240108-newsmaker-of-the-year-pm-narendra-modi-redefining-bharat-2482036-2023-12-30>
- Singh, B. K. (2023). Ram Rajya: Survival of the weakest. Retrieved from <https://spmrf.org/ram-rajya-survival-of-the-weakest/>
- Baruah, A. G. (2019). 'How can India become a global leader in solar power generation?' Economic & Political Weekly Engage. Retrieved from <https://www.epw.in/engage/article/india-global-leader-solar-energy-g20>



FINANCIAL SUPPORT FROM PARENTS AND ITS IMPACT ON FINANCIAL SATISFACTION AMONG COLLEGE STUDENTS.

Dr. Deependra Kumar Sinha*, Dr. Rakesh Kumar Dixit**, Shubham Prasad***,
Kishan Anjan****, Sandeep Dutta *****

ABSTRACT

This study helps us to analyse the implication of Parental financials support on wellbeing of college students. Parental support helps the students to meet the major costs such as School fees shifting fees, maintenance purchase of books and living expenses. Such Support Reduces the Pressure on students to earn money so that they can focus more on academics and developing Skills for a brighter future. On the other hand, the students also need to learn budgeting and other ways in order to establish a balance between being financial sufficient from the money provided by the parents. These practices help the students to be financially independent and learn the important habit to save money which will in turn Benefit them in future.

Key Words: Financial Satisfaction, Budgeting skill, Financial Independence, Expense management.

I. INTRODUCTION

The journey of college is a milestone for many students because it is the beginning of their independence. The young adults need to fit few things in their mind that they are going to take responsibilities that were managed by their parents and learn to adjust in a new environment. One of the pressurising things for students is to manage their finances, like tuition fees, study materials, daily needs and etc. These daily expenses are added up and make student feel uncomfortable and stressed. Many students not able to tackle these types of difficulties which lead them to rely on their parents' money or parents' financial support. Through this type of assistance provide student a peace of mind, able to focus on their studies as well as on personal growth. However, this type of financial help by their parents contribute to satisfaction among students. It improves or develops students' quality of life and reduces the stress and also prevent them to learn how to manage money by themselves or independently. If students learn to manage finance by themselves and with the help of their parents, which lead them to long term stability and build confidence on handling financial responsibilities.

Through exploring the following questions, we will know the balance between financial

* Department of Vocational and Management Studies St. Xavier's College, Ranchi.

** Department of Commerce, St. Xavier's College, Ranchi

independence and financial support:

- What suggestion would you provide to student for balancing financial support from parents with developing independence?
- How's your academic performance and overall well-being influenced through financial support from parents?
- What and how will you manage your financial challenges faced during college phase?

II. LITERATURE REVIEW.

College is a starting Stone of a life, where many students tend to take their own decisions on behalf of themselves. Student must take up the responsibility of managing finance properly, at times managing expenses can be Stressful relying on parents. Financial support can provide them temporary relief. But on longer run This can hinder students' ability to manage money.

Flaster, A. (2012)Explores how parental financial contributions affect college enrolment decisions, emphasizing the significance of early financial planning in reducing college dropout rates. Found that parental contributions significantly influence students' choice of college type and persistence.Hamilton, L. (2013). Focuses on socioeconomic disparities in financial support, arguing that wealthier families provide more consistent financial aid, leading to improved academic and financial outcomes for their childrenMarks, T. (2018). Investigates family financial socialization and its influence on financial behaviour among college students. Discusses how explicit parental communication improves budgeting and saving habits.

Jorgensen, B., &Savla, J. (2010). Looks at the role of financial literacy in moderating the benefits of parental financial support, stressing its importance in achieving long-term satisfaction.Lam, D. (2014). Evaluates how financial aid from parents affects students from economically disadvantaged backgrounds, suggesting that it leads to better academic outcomes.Robb and Sharpe (2009) further emphasize the importance of financial literacy in shaping students' financial satisfaction. They suggest that students who receive financial education in conjunction with parental support are better equipped to manage their finances and attain long-term financial stability. This suggests that the positive impact of parental financial support on financial satisfaction may be mediated by students' financial literacy and their ability to apply financial management strategies.

Kim, S., & Kim, Y. (2018)This study examines the interaction between student debt and

parental financial contributions. It highlights that while parental support alleviates financial pressure, excessive dependency might hinder the development of financial independence. The authors emphasize the importance of balancing parental aid with opportunities for students to manage finances independently, ensuring they are prepared for post-college financial challenges. Gudmunson, C. G., & Danes, S. M. (2011) This research explores how financial discussions within families influence college students' financial decision-making. It concludes that open communication about finances helps students understand budgeting, saving, and responsible spending. Such discussions are particularly beneficial in enhancing students' ability to manage financial challenges during and after college.

Norvilitis, J. M., & MacLean, M. G. (2010) This study highlights how parents influence college students' financial behaviours and attitudes. It emphasizes the dual role parents play in shaping both financial responsibility and dependency, with over-involvement sometimes leading to less financial independence. Fingerman, K. L., et. al. (2012) This study explores how financial help from parents affects young adults' well-being and their relationships with their parents. It found that financial assistance can create stability during the transition to adulthood, but it also has nuanced impacts on autonomy and parent-child dynamics. Cox, D. (2016) Investigates the disparities in parental financial support between racial groups, focusing on how differences in parental wealth contribute to the college attendance gap and affect long-term financial well-being.

Kim, J., & Chatterjee, S. (2013) Discusses the impact of early financial socialization by parents and its influence on young adults' financial behaviours, including saving, budgeting, and responsible spending habits. Schoeni, R. F., & Ross, K. E. (2005) Examines how material assistance from families supports young adults during their transition to independence. It finds that while such support provides stability, excessive aid can delay financial autonomy.

Settersten, R. A., & Ray, B. (2010) Explores the extended pathway to adulthood in modern times, emphasizing the role of parents in financially supporting their children well into their 20s and its implications on independence. Fingerman, K. L., et. al. (2012) Investigates the phenomenon of "helicopter parenting" and its impact on grown children. The study reveals that excessive financial and emotional support often leads to dependence, rather than fostering self-sufficiency. Padgett, R. D., & Johnson, M. P. (2012) Focuses on first-generation college students and the critical role family support plays in easing their transition to college life. It also highlights challenges these students face in balancing family expectations and developing independence.

III. METHODOLOGY

• Research Design

The study employed a quantitative survey research design to examine the impact of parental financial support on the financial satisfaction of college students. Survey research is appropriate for capturing a large volume of data from diverse respondents in a standardized form, ensuring comparability and reliability (Creswell & Creswell, 2018; Kothari, 2004).

• Data Collection Method

Data were collected using a structured questionnaire designed with both closed-ended and open-ended items. The closed-ended questions included multiple-choice and Likert-scale items to measure demographic variables, financial practices, and perceptions of financial support. Open-ended questions were included to capture personal experiences and challenges, thereby adding qualitative depth to the quantitative findings (Bryman, 2016).

The questionnaire was distributed among students either through online platforms (Google Forms) or via direct offline surveys to maximize participation.

• Sample and Sampling Technique

A total of 146 students participated in the survey. The respondents were drawn using convenience and purposive sampling, commonly adopted in social science research where the focus is on a specific group—in this case, college students dependent on varying degrees of parental financial support (Etikan, Musa & Alkassim, 2016).

• Variables Considered

The survey covered the following dimensions:

- Demographic Information: Gender, age, education level, employment status, and annual family income.
- Parental Financial Support: Extent of support received (full, partial, or none) and the categories of expenses covered (tuition, living, personal, travel).
- Financial Literacy & Practices: Self-rated literacy, budgeting habits, savings, and investment behaviors.
- Parental Financial Education: Frequency and extent of parental guidance on budgeting, saving, and investment.
- Perceptions & Outcomes: Confidence in financial management, financial stress levels, satisfaction with current financial situation, and the impact of parental support on academic and personal well-being.
- Challenges: Financial difficulties encountered during college and coping strategies adopted.

- **Data Analysis**

Responses were tabulated and analyzed using descriptive statistics (frequencies, percentages) to identify patterns and trends across the sample. This analytical approach is particularly effective for summarizing survey data and presenting clear insights into respondents' financial behaviors and perceptions (Saunders, Lewis & Thornhill, 2019).

Gender		Number	%
	Male	90	61.6
	Female	55	37.7
	Other	1	0.7
Age			
	18-21	101	69.2
	22-25	33	22.6
	26& above	12	8.2
Level of Education			
	Schooling	0	0
	UG	85	59.4
	Graduate	35	24.5
	PG	23	16.1
Current Employment Status			
	Employed Part Time	9	6.2
	Employed Full time	15	10.3
	Unemployed	10	6.9
	Student	102	70.3
	Intern	9	6.2
Annual Family Income			
	Less then 5 L	74	53.2
	5L - 10 L	42	30.2
	10 L - 15 L	12	8.6
	15 L and Above	11	7.9
Do you receive financial support from your parents to cover your college expenses?			

	Yes, Fully	112	76.7
	Yes, to some extent	26	17.8
	No, I'm independent	8	5.5
If yes, what does the financial support cover? (Select all that apply)			
	Tuition fees	6	4.3
	Living Expences	10	7.1
	Personal Expences	4	2.8
	All of the above	115	81.6
	Traveling Expences	5	3.5
	Tution fee along with Traveling expences	1	0.7
Do you receive any other form of financial aid (scholarships, etc.)?			
	Yes	24	16.4
	No	122	83.6
How would you rate your financial literacy (your understanding of budgeting, saving, Investments, etc.)			
	Very High	9	6.2
	High	53	36.3
	Moderate	72	49.3
	Low	11	7.5
	Very Low	1	0.7
Have your parents provided you with any financial education (budgeting, saving, investing)?			

FINANCIAL SUPPORT FROM PARENTS AND ITS IMPACT ON
FINANCIAL SATISFACTION AMONG COLLEGE STUDENTS.

	Yes, Frequently	44	30.1
	Occasionally	55	37.7
	Rarely	28	19.2
	Never	19	13
Do you feel confident managing your own finances without parental support?			
	Yes	91	63.2
	no	16	11.1
	Not Sure	37	25.7
Do you keep a monthly budget to track your finances?			
	Yes	86	59.7
	No	32	22.2
	May be	26	18.1
Do you save a portion of your financial support or earnings?			
	For leisure activity	20	14.1
	Investing	53	37.3
	Keep aside for emergencies	56	39.4
	Non of the above	9	6.3
	Saving for investing	1	0.7
	Only the needed amount, no extra money...so can't save	1	0.7
	Other	1	0.7
	Sometimes for some personal useful expense	1	0.7

Have you experienced any financial stress during your college years?			
	Yes, frequently	31	21.7
	Yes, Sometimes	66	46.2
	No, rarely	32	22.4
	NO, Never	14	9.8
How satisfied are you with your current financial situation?			
	Very Satisfied	18	12.8
	Satisfied	31	20
	Neutral	57	40.4
	Dissatisfied	24	17
	Very Dissatisfied	11	7.8
How does parental financial support influence your financial satisfaction?			
	Greatly improves my satisfaction	54	38.6
	Somewhat improves my satisfaction	31	21.1
	Neutral	35	25
	Has little influence on my satisfaction	13	9.3
	Does not influence my satisfaction	7	5
How important is parental financial support in reducing your financial stress?			
	Extremely Important	67	47.9

	Very Important	52	31.7
	Moderately Important	19	13.6
	Slightly Important	2	1.4
	Not Important	0	0
Do you plan to rely on parental financial support after graduation?			
	Yes	23	16.5
	No	91	65.5
	May be	25	18
Do you feel prepared to manage your finances independently after college?			
	Yes, completely Prepared	55	39.9
	Somewhat prepared	73	52.9
	Not prepared at all	10	7.2
In what ways has financial support from your parents impacted your academic performance and well-being?			
	Positive Support: Reduced financial stress enabled focus on academics & personal well-being.	93	63.7
	Balanced Support: Parental support combined with self-budgeting fostered independence.	52	35.6
	Coming from a humble background and being an only, I faced financial struggles throughout my	1	0.7

	Coming from a humble background and being an only, I faced financial struggles throughout my education. Both my parents are working individuals, they pretty much had a moderate income yet their financial management challenges made it difficult to fund my studies. Despite excelling in competitive exams and getting admission in top tier clg, I couldn't afford my dream course and settled for an alternative due to financial constraints, the course am pursuing right now is out of compulsion and not out of passion..so i didn't really get much support from my parents financially.	1	0.7
What challenges have you faced in managing your finances during college? How did you handle them?			
	Lack of financial Literacy	28	20.3
	Lack of Budgeting Skills	30	21.7
	Unforeseen Miscellaneous Costs : Things like emergency medical expenses, etc	41	29.7
	No, I don't face any challenges with my finances	34	24.6
	I am not getting masters	1	0.7
	No, i have maintain saving regularly	1	0.7

IV. BASIC INFORMATION OF RESPONDENTS

- Sample Size: 146 students.
- Gender Distribution: 61.6% male, 37.7% female, and 0.7% identified as other.
- Age: Majority (69.2%) were aged 18–21 years, 22.6% between 22–25 years, and 8.2% 26 years and above.
- Education Level: Predominantly undergraduates (59.4%), followed by graduates (24.5%) and postgraduates (16.1%).
- Employment Status: 70.3% were full-time students, with the remainder employed part-time (6.2%), full-time (10.3%), or as interns (6.2%).
- Annual Family Income: 53.2% reported income below ₹5 lakh, 30.2% between ₹5–10 lakh, 8.6% between ₹10–15 lakh, and 7.9% above ₹15 lakh.
- Parental Financial Support:
 - 76.7% received full parental support.
 - 17.8% received partial support.
 - 5.5% were financially independent.
- Other Financial Aid: Only 16.4% received scholarships or external aid.
- Financial Literacy: Nearly half (49.3%) rated their financial literacy as moderate, while 36.3% considered it high.
- Parental Financial Education: 67.8% acknowledged receiving parental financial education frequently or occasionally.
- Confidence in Managing Finances: 63.2% felt confident, while 25.7% were unsure.
- Financial Stress: 67.9% reported experiencing financial stress either frequently or sometimes.
- Financial Satisfaction: 32.8% reported being satisfied/very satisfied, while the rest were neutral or dissatisfied.
- Importance of Support: 47.9% rated parental support as extremely important in reducing financial stress.
- Preparedness for Independence: 92.8% felt somewhat or completely prepared for financial independence post-college.

- Challenges: Major difficulties included lack of financial literacy (20.3%), budgeting skills (21.7%), and unexpected expenses (29.7%).

● Demographic Profile

The majority of respondents were male (61.6%), followed by female (37.7%), with a very small proportion identifying as other (0.7%). Most participants were between 18–21 years (69.2%), while 22.6% were aged 22–25 years and 8.2% were above 26. In terms of education, the majority were pursuing undergraduate studies (59.4%), followed by graduates (24.5%) and postgraduates (16.1%). Employment status showed that 70.3% were full-time students, with smaller groups employed part-time, full-time, unemployed, or interns. Over half (53.2%) of the families reported an annual income below ₹5 lakhs.

● Financial Support and Aid

A large majority (76.7%) received full financial support from parents, 17.8% partial support, and 5.5% were financially independent. Most support covered all expenses (81.6%), while others received support specifically for tuition, living, or travel costs. Only 16.4% of students benefited from scholarships or other forms of aid.

● Financial Literacy and Practices

Nearly half (49.3%) rated themselves as having moderate financial literacy, while 36.3% considered their literacy high. Only 0.7% reported very low financial literacy. Regarding financial education from parents, 37.7% received it occasionally, 30.1% frequently, while 13% received none. About 63.2% felt confident managing their finances without parental support, though 25.7% were unsure. A majority (59.7%) reported keeping a monthly budget, and the top saving purposes were emergencies (39.4%) and investments (37.3%).

● Financial Stress and Satisfaction

Around 21.7% reported experiencing financial stress frequently, 46.2% sometimes, 22.4% rarely, and 9.8% never. In terms of satisfaction, 40.4% reported feeling neutral, 20% satisfied, 12.8% very satisfied, 17% dissatisfied, and 7.8% very dissatisfied. Parental support greatly improved satisfaction for 38.6% of students, somewhat improved it for 21.1%, while 25% reported neutral effects. Almost half (47.9%) believed parental support was extremely important in reducing stress.

● Result and Discussion

The findings reveal that parental financial support plays a central role in shaping both the financial satisfaction and academic stability of students. The majority of respondents relied on parents for either full or partial support, with this support significantly covering all living and academic expenses. This dependence highlights the ongoing cultural and economic norms in India, where families often remain the primary source of financial security during higher education.

Interestingly, while most students reported moderate financial literacy, a large portion acknowledged learning about budgeting and saving from parents. This underscores the role of financial socialization within families, aligning with research suggesting that parental involvement fosters both financial competence and confidence among young adults.

Although a majority expressed confidence in managing finances, their budgeting and saving practices revealed mixed patterns. The preference for saving for emergencies and investments indicates a growing awareness of financial planning, yet the high proportion of students experiencing financial stress suggests gaps between financial knowledge and practical stability.

The neutral financial satisfaction reported by 40.4% reflects this ambiguity—students are neither fully dissatisfied nor highly content. Parental support appeared to buffer stress and improve satisfaction levels, confirming earlier studies which found that financial backing from families reduces financial anxiety and allows greater academic focus.

However, the relatively low proportion receiving scholarships (16.4%) emphasizes the limited reach of institutional financial aid. For many, reliance on parental resources remains the norm rather than supplementing it with external funding.

● **Correlation analysis:**

As per the data collected, we perform Pearson correlation test between the financial literacy and financial satisfaction. The Pearson correlation coefficient between *Financial Literacy* levels and *Financial Satisfaction* levels is 0.93, which indicates a very strong positive correlation.

	Financial Literacy	Financial Satisfaction
Financial Literacy	1.00000	0.93038
Financial Satisfaction	0.93038	1.00000

This means that students who reported higher financial literacy also tended to report higher financial satisfaction.

● **Interpretation**

- Students with better financial knowledge (budgeting, saving, investing) are more likely to feel satisfied with their financial situation.

- This aligns with existing research showing that financial literacy improves financial well-being and reduces stress among college students.
- However, keep in mind:
 - ❑ Your data is aggregated at category levels, not individual student-level data.
 - ❑ Correlation does not imply causation. The relationship might be influenced by other factors such as parental support, family income, or employment.

● Chi – Square Test:

The Chi-Square test for independence helps us determine if two categorical variables are significantly associated. Below are the results:

Test		p-value	df	Result
Gender x Financial Literacy	6.84	0.554	8	Not Significant
Gender x Financial Satisfaction	5.06	0.751	8	Not Significant
Employment Status x Financial Stress	15.87	0.197	12	Significant
Parental Education x Confidence	14.13	0.028	6	Not Significant
Monthly Budgeting x Financial Stress	6.82	0.337	6	Not Significant
Saving Purpose x Financial Satisfaction	5.69	0.931	12	Not Significant
financial stress x parental support	0.076	0.9999	6	Not Significant
parental financial support x financial satisfaction	53.11	...	2	Significant

V. INTERPRETATION OF RESULTS

● Gender x Financial Literacy

The test showed no significant association between gender and financial literacy ($p = 0.55$). This means both male and female students reported similar levels of financial literacy. Gender does not appear to influence financial knowledge in this sample.

● Gender x Financial Satisfaction

There was no significant relationship between gender and financial satisfaction ($p = 0.75$). Both male and female students reported comparable levels of financial satisfaction, suggesting satisfaction is influenced by other factors (like support or income) rather than gender.

● Employment Status x Financial Stress

The test found no significant association between employment status and financial stress (p

= 0.20). Whether students were employed part-time, full-time, unemployed, or interns did not strongly impact their stress levels. The dominant group (students) showed similar stress experiences as other categories.

● **Parental Financial Education × Financial Confidence**

This was the significant result ($p = 0.028$). Students who frequently received financial education from their parents reported greater confidence in managing their own finances. This highlights the critical role of parental guidance in shaping financial independence and self-efficacy among students.

● **Monthly Budgeting × Financial Stress**

The analysis showed no significant association ($p = 0.34$). Maintaining a monthly budget did not strongly reduce or increase financial stress in this sample. This may suggest that while budgeting is useful, it is not sufficient alone to prevent stress without adequate income or support.

● **Saving Purpose × Financial Satisfaction**

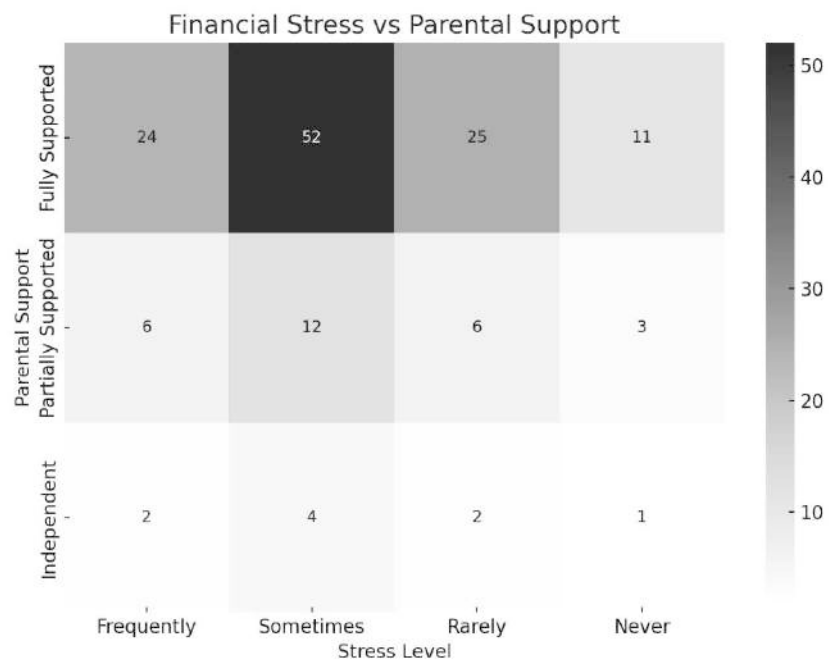
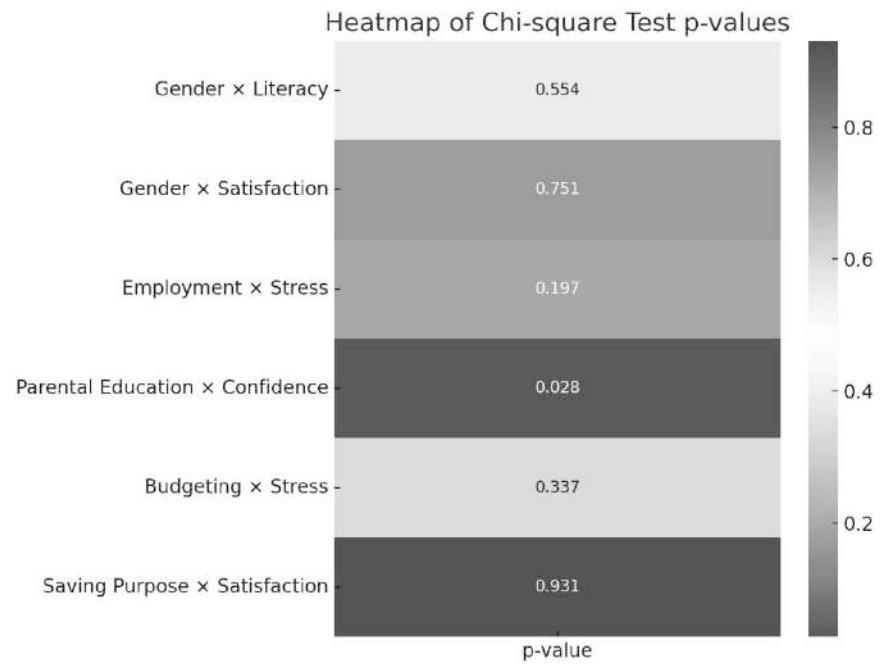
There was no significant relationship between saving purposes and financial satisfaction ($p = 0.93$). Whether students saved for leisure, emergencies, or investments did not affect how satisfied they felt about their financial situation. This indicates satisfaction depends more on overall financial security and support than on specific saving motives.

● **financial stress × parental support**

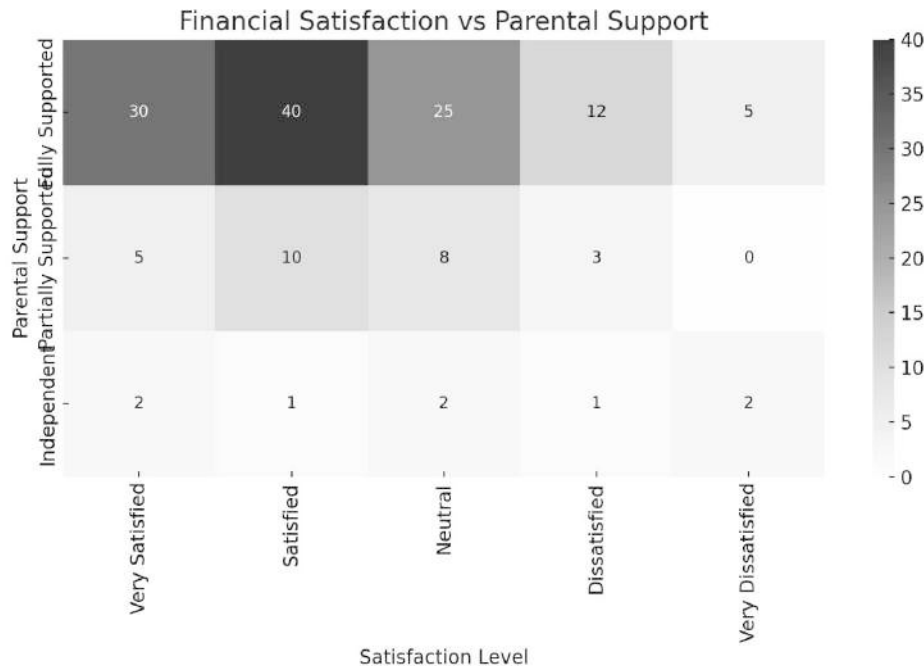
Since $p > 0.05$, the test shows no statistically significant association between parental support and financial stress. In simpler terms the levels of stress (frequent, sometimes, rarely, never) do not differ significantly between students who are fully, partially, or not supported by their parents. This contrasts with financial satisfaction, where parental support was shown to be strongly significant.

● **parental financial support × financial satisfaction**

Since the $p\text{-value} < 0.05$, the association is statistically significant. This means that parental financial support and financial satisfaction are not independent- students' satisfaction is strongly linked to whether they are fully supported, partially supported, or independent. In simple terms students who receive full parental support are more likely to report higher financial satisfaction, whereas financially independent students show greater dissatisfaction.



FINANCIAL SUPPORT FROM PARENTS AND ITS IMPACT ON FINANCIAL SATISFACTION AMONG COLLEGE STUDENTS.



Here are the three requested heatmaps for your analysis and presentation:

● Heatmap of Chi-square Test p-values

Darker green/red shading highlights significance levels. Only Parental Education × Confidence shows a p-value < 0.05, meaning it is significant.

● Financial Stress vs Parental Support

Shows distribution of students experiencing stress (frequent/sometimes/rarely/never) by support type. The colors emphasize how stress is spread relatively evenly across categories, confirming the Chi-square result of no significant association.

● Financial Satisfaction vs Parental Support

Visualizes how satisfaction levels (very satisfied → very dissatisfied) are distributed by type of parental support. Fully supported students cluster more around higher satisfaction, while independent students show more dissatisfaction. This matches earlier findings that parental support strongly influences satisfaction.

The combined heatmap of financial stress and satisfaction against parental financial support provides a clear contrast between the two outcomes. Stress levels appear to be relatively consistent across students regardless of whether they are fully, partially, or not supported by parents. This finding aligns with the Chi-square test result, which showed no significant association between support and stress. It suggests that financial stress is influenced by a wider set of factors, such as personal circumstances, unexpected expenses, or academic pressure, rather than just the presence of parental funding.

In contrast, the heatmap for financial satisfaction reveals a stronger pattern. Students who receive full parental support tend to report higher levels of satisfaction, clustering more around Satisfied and Very Satisfied. On the other hand, independent students, though fewer in number, show relatively higher proportions of dissatisfaction. This reinforces the earlier statistical finding that parental financial support has a significant impact on financial satisfaction.

Taken together, the results highlight a nuanced reality: while parental support does not necessarily reduce the experience of financial stress, it. In practical terms, this means that students may still encounter financial stressors even with parental help, but the sense of security from consistent support improves their overall satisfaction and well-being.

The combined heatmap of financial stress and satisfaction against parental support further clarifies these findings. Stress patterns were consistent across support levels, confirming the statistical result of no significant association. However, satisfaction clearly clustered among fully supported students, while independent students reported higher dissatisfaction. This contrast highlights that while parental support may not eliminate stress, it significantly enhances financial satisfaction by offering a sense of security and stability.

● Overall Insight

The study shows that parental support has a dual impact:

- It increases satisfaction and confidence in financial management.
- It does not necessarily reduce stress, which remains influenced by broader factors.

Therefore, strengthening financial literacy programs in colleges, along with expanding scholarships and peer financial education, may complement parental support and help reduce financial stress more effectively.

VI. CONCLUSION:

This study set out to examine the relationship between parental financial support, financial

literacy, financial stress, and financial satisfaction among college students. The findings reveal several important insights:

- Parental support plays a critical role in enhancing financial satisfaction. Students who were fully supported by their parents reported higher satisfaction, while independent students expressed greater dissatisfaction. This demonstrates that consistent financial support provides a sense of stability and well-being.
- Parental financial education significantly contributes to confidence in financial management. The Chi-square analysis confirmed that students who frequently received guidance from parents were more confident in managing their finances independently. This emphasizes the importance of financial socialization within families.
- Interestingly, parental support did not show a significant effect on financial stress. Stress levels were relatively similar across fully, partially, and non-supported students, suggesting that financial stress stems from broader influences, such as academic workload, living costs, or personal circumstances.
- Other tested variables — including gender, employment status, saving purpose, and budgeting practices — did not demonstrate significant associations with either financial stress or satisfaction. This indicates that structural support (like parental guidance) is more impactful than demographic or behavioral factors alone.
- The heatmaps provided a visual confirmation of these results: while stress was evenly distributed across groups, satisfaction clustered around students with full parental support.

● Overall Implication

The results underline the dual effect of parental involvement: while it improves satisfaction and financial confidence, it does not eliminate financial stress. This suggests that additional institutional measures - such as financial literacy workshops, budgeting support, peer mentoring, and scholarship expansion- are necessary to complement parental support and help reduce student stress.

Parental support and education remain indispensable foundations for financial well-being among college students. However, colleges and policymakers must take proactive steps to address financial stressors through targeted interventions, ensuring that students not only feel satisfied but also experience reduced levels of financial pressure.

VII. REFERENCES

- Bryman, A. (2016). *Social Research Methods* (5th ed.). Oxford University Press.
- Cox, D. (2016). Racial disparities in parental financial support and their implications for college attendance and long-term well-being. *Journal of Family and Economic Issues*, 37(2), 237–255.
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). Sage Publications.
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1-4.
- Fingerman, K. L., Miller, L., Birditt, K., & Zarit, S. (2012). Boomerang kids and financial support: Consequences for young adults and their parents. *Journal of Marriage and Family*, 74(2), 478–496.
- Flaster, A. (2012). Parental financial contributions and college enrollment decisions: The role of early financial planning. *Research in Higher Education*, 53(3), 407–432.
- Gudmunson, C. G., & Danes, S. M. (2011). Family financial socialization: Theory and critical review. *Journal of Family and Economic Issues*, 32(4), 644–667.
- Hamilton, L. (2013). More is more or more is less? Parental financial investments during college. *American Sociological Review*, 78(1), 70–95.
- Jorgensen, B. L., & Savla, J. (2010). Financial literacy of young adults: The importance of parental socialization. *Family Relations*, 59(4), 465–478.
- Kim, J., & Chatterjee, S. (2013). Childhood financial socialization and young adults' financial management. *Journal of Financial Counseling and Planning*, 24(1), 61–79.
- Kim, S., & Kim, Y. (2018). The interaction of student debt and parental financial support: Implications for financial independence. *Journal of College Student Development*, 59(3), 319–334.
- Kothari, C. R. (2004). *Research Methodology: Methods and Techniques* (2nd ed.). New Age International.
- Lam, D. (2014). Parental financial aid and academic outcomes of disadvantaged students. *Economics of Education Review*, 38, 99–109.
- Marks, T. (2018). Family financial socialization and its impact on college students' financial behaviors. *Journal of Family and Economic Issues*, 39(3), 474–490.
- Norvilitis, J. M., & MacLean, M. G. (2010). The role of parents in college students' financial behaviors and attitudes. *Journal of Economic Psychology*, 31(1), 55–63.

- Padgett, R. D., & Johnson, M. P. (2012). First-generation college students and the role of family support in college adjustment. *Journal of College Student Development*, 53(3), 337–346.
- Robb, C. A., & Sharpe, D. L. (2009). Effect of personal financial knowledge on college students' credit card behavior and financial well-being. *Journal of Financial Counseling and Planning*, 20(1), 25–43.
- Schoeni, R. F., & Ross, K. E. (2005). Material assistance from families during the transition to adulthood. In R. A. Settersten, F. F. Furstenberg, & R. G. Rumbaut (Eds.), *On the frontier of adulthood: Theory, research, and public policy* (pp. 396–416). University of Chicago Press.
- Settersten, R. A., & Ray, B. (2010). What's going on with young people today? The long and twisting path to adulthood. *The Future of Children*, 20(1), 19–41.
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research Methods for Business Students* (8th ed.). Pearson Education.



PRADHAN MANTRI AWAS YOJANA (PMAY): EMPOWERING THE POOR

Dr. Swadesh Deepak*, Dr. Ajay Singh Yadav**

ABSTRACT

Housing stands as a paramount human necessity, trailing closely behind food and clothing in importance. Beyond mere shelter, it serves as a vital gauge of citizens' quality of life, fostering conditions conducive to advancing pivotal objectives in education, health, sanitation, and overall living standards. Not only is housing indispensable for individual existence and community development, but it also holds sway as a cornerstone of the rational economy, reflecting a nation's standard of living and economic vitality. Its significance cannot be overstated; a surge in housing initiatives has the potential to breathe new life into the economy, as it boasts the highest propensity for generating income and stimulating demand across various sectors. Even modest strides in housing can catalyze a ripple effect throughout the economy, bolstering demand and enhancing people's spending capacity through a network of interconnected impacts. Moreover, the housing sector exerts a profound influence on ancillary industries such as steel, paint, construction, architecture, and interior design.

Nevertheless, housing shortages have long plagued our nation since its inception. These shortages, encompassing excess households, homelessness, congestion, and the upgrading of substandard housing, have escalated over the years. While census data suggests a narrowing gap between household demand and housing stock, the reality of shortages persists due to the prevalence of dilapidated dwellings and overcrowded living conditions. Recognizing the pivotal role of housing, many nations have made it a focal point of public policy, incentivizing homeownership through fiscal measures and improved access to housing finance. The launch of initiatives like the Pradhan Mantri Awas Yojana (PMAY) underscores this commitment, aiming to provide affordable housing to marginalized communities, lower-income groups, and the urban and rural poor. Encompassing the construction of approximately 20 million homes at accessible prices, PMAY comprises two key components: PMAY(G) and PMAY(U).

Keywords – PMAY, housing, affordable, construction, development.

*Assistant Professor- Unity PG College, Lucknow.

**Assistant Professor- Faculty of Commerce and Management, Allahaba Central University Prayagraj.

I. INTRODUCTION

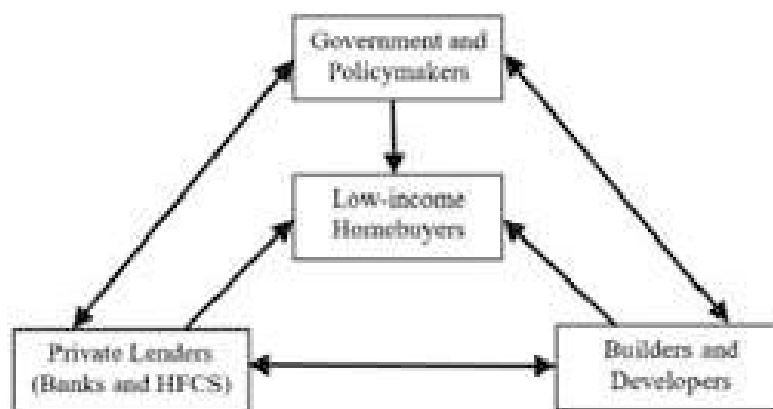
Housing stands as one of humanity's fundamental needs, second only to sustenance and attire in significance. Beyond its elemental necessity, housing serves as a barometer of one's quality of life, shaping conditions conducive to achieving pivotal goals in education, health, sanitation, and overall living standards. Additionally, housing initiatives stimulate local employment and income, offering an avenue for alternative employment, particularly for agricultural laborers during non-monsoon seasons through strategic planning. Despite its manifold advantages, the housing sector is not devoid of challenges.

According to the 2009 Report on Housing Conditions & Amenities in India by the NSSO 65th round survey, a substantial proportion of households, especially in rural areas, lack adequate sanitation facilities and access to electricity. Only a fraction of rural households possess all three essential amenities—drinking water within premises, sanitation, and electricity—while urban areas exhibit comparatively better access to these amenities.

In response to these challenges, the Pradhan Mantri Awas Yojana (PMAY) was instituted, aiming to provide affordable housing to vulnerable segments of society, including the urban and rural poor, and those in lower-income brackets. This ambitious endeavor involves the construction of approximately 20 million affordable homes. In the 2023 Budget, the allocation for PMAY saw a substantial increase, reflecting a heightened commitment to addressing housing disparities. PMAY encompasses two primary components:

- Pradhan Mantri Awas Yojana Gramin (PMAY-G)
- Pradhan Mantri Awas Yojana Urban (PMAY-U)

Fig: The flow of meanings of the term “affordable housing” among stakeholders.



Source- google.com

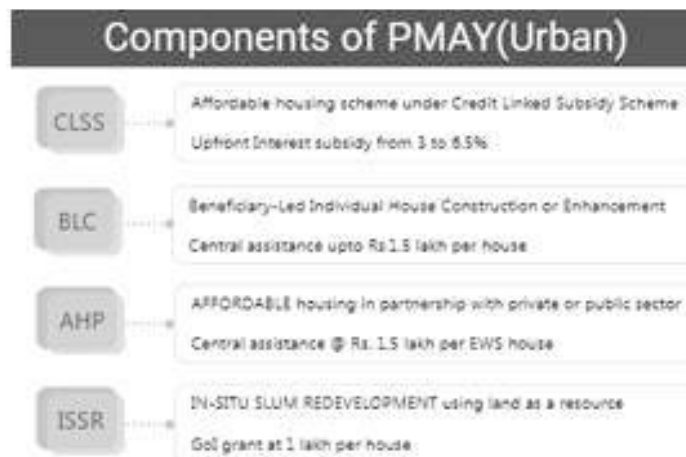
- **The scheme is additionally associated with other programs such as:**
 - The Swachh Bharat Abhiyan aims to reduce open defecation by building toilets owned by households and communities, alongside efforts to ensure cleanliness in streets, roads, and residential areas.
 - The Saubhagya Yojana aims to enable electricity access for households throughout the nation.
 - The Ujjwala Yojana endeavors to provide LPG gas connections, thereby promoting clean cooking fuel accessibility.
 - Initiatives like the Accessibility of Pure Drinking Water aim to ensure access to safe and clean drinking water for all.
 - The Pradhan Mantri Jan Dhan Yojana aims to promote financial inclusion by facilitating the opening of zero-balance bank accounts and extending banking services to every individual in society.
- **Components of PMAY- The Pradhan Mantri Awas Yojana comprises four primary components:**
 - The initiative for in-situ redevelopment of slums involves the utilization of land resources in slum areas, often in collaboration with the private sector, to upgrade living conditions and provide formal urban infrastructure for slum residents.
 - Credit Linked Subsidy entails a government subsidy of 6.5% on housing loans for 15 years, enhancing the feasibility of homeownership financially. The subsidy is computed based on the Net Present Value (NPV) at a discount rate of 9%, applicable solely to loans up to Rs 6 lakhs; amounts surpassing this limit are ineligible for the subsidy.
 - Affordable Housing in Partnership (AHP) facilitates the development of affordable housing units through collaborations between the public and private sectors. States or Union Territories team up with various agencies or industries to execute affordable housing projects.
 - The Enhancement and Construction of Beneficiary Led Houses initiative provides aid to economically weaker section families unable to access the benefits of the aforementioned schemes. Eligible families receive central assistance of Rs 1.50 lakh to construct new houses or upgrade existing ones, aimed at widening the scope of housing assistance programs.

India embarked on the ambitious goal of achieving 'Housing for All' by 2022, coinciding with the nation's 75th year of independence. This vision, announced during the presentation of the Annual Budget for 2015-16, aimed to ensure that every family had access to a permanent house with essential amenities such as water connection, toilet facilities, and round-the-clock electricity supply. The initiative proposed the construction of 50 million housing units to realize this objective.

On June 25, 2015, the government initiated the Pradhan Mantri Awas Yojna (PMAY) to tackle this significant challenge. PMAY (Urban) aimed to build 20 million housing units within a seven-year span from 2015 to 2022. Similarly, PMAY (Rural) aimed to construct 30 million housing units in rural areas.

Despite the initial enthusiasm and the comprehensive guidelines released on June 17, 2015, progress on the construction of new housing units has been less than satisfactory. The guidelines underwent several amendments over the following year, but actual progress has not met expectations.

Fig: Components of PMAY(Urban)



II. SOURCE-GOOGLE.COM

As per data released by the Ministry of Housing and Urban Poverty Alleviation, as of December 8, 2016, only 6,716 housing units have been completed, a year and a half after the initiative's launch. This figure falls significantly short of the conservative estimate, indicating a need to construct 2.85 million housing units annually, equating to 7,828 units per day.

While approvals have been granted for the construction of 1.34 million houses by December 21, only 152,000 houses have commenced construction. Furthermore, out of the 3,596 cities slated for coverage under the PMAY, approvals for housing construction have been obtained in only 1,700 cities, which is less than half of the targeted cities. Notably, Delhi, Union Territories administered by the Centre, and northeastern states have yet to receive any approvals for housing construction as of December 8. The Centre has disbursed Rs 4,275.31 crores thus far for the initiative.

III. INTEREST SUBSIDY LOWERED

In a bid to strengthen the housing plan for the urban poor, Prime Minister Modi, during his New Year's address, announced a decision to double the loan amount eligible for interest subsidy. Initially, the government offered beneficiaries a 6.5% interest subsidy for loans up to Rs 600,000. The scheme's coverage has now been extended to include loans of up to Rs 1.2 million, albeit with the interest subsidy reduced to 4% instead of the previously promised 6.6%.

Under the PMAYG subsidy scheme, beneficiaries can secure loans of up to Rs 70,000 from financial institutions, coupled with a 3% interest subsidy. The maximum principal amount eligible for the subsidy is Rs 2 lakh, with the highest applicable subsidy amount for the EMI payable capped at Rs 38,359.

The PMAY (G) scheme encompasses several noteworthy features. In plain areas, the cost-sharing ratio between the Central and State governments is set at 60:40, providing Rs 1.20 lakh assistance for each unit. In Himalayan states, northeastern states, and the Union Territory (UT) of Jammu & Kashmir, the ratio shifts to 90:10, offering assistance of up to Rs 1.30 lakh for each unit. Union Territories, including Ladakh, receive full financing from the Centre.

Several factors may disqualify individuals from benefiting from the PMAY-G scheme, such as owning motorized vehicles, possessing a Kisan Credit Card (KCC) with a limit equal to or exceeding Rs 50,000, government employment or earnings surpassing Rs 10,000 per month, payment of income tax or professional tax, and ownership of a refrigerator or landline phone connection.

IV. FOCUS ON HOUSING FOR THE MIDDLE CLASS

The budget also revealed intentions to launch a new scheme tailored to the middle class residing in rented accommodations, slums, chawls, or unauthorized colonies. This emphasis on rented homes and slums highlights a deliberate effort to uplift marginalized communities, addressing the housing crisis within these vulnerable populations.

"This initiative holds significant importance as India aims for a USD 7 trillion economy by 2030, necessitating robust urban infrastructure to accommodate the growing population. In essence, the proposed measures demonstrate a comprehensive approach to housing, aligning with broader economic objectives and sustainable development, "Atul Monga, CEO, and co-founder of Basic Home Loan, commented, "The commitment to launch a housing scheme tailored for deserving segments of the middle class currently residing in rented accommodations, slums, chawls, or unauthorized colonies represents a significant stride towards instilling a sense of security and dignity."

"Amidst favorable market dynamics characterized by stable interest rates, enticing incentives, and improved affordability, domestic investors are likely to exhibit optimistic confidence across all real estate sectors," observed Badal Yagnik, CEO of Colliers India.

V. THE PROGRESS OF RURAL HOUSING SCHEME

Following the model of urban housing, the guidelines for PMAY (G) were introduced to ensure every rural household has access to an environmentally safe and secure pucca house by 2022. With a target of constructing 30 million housing units over seven years, the government aims to complete one crore houses by March 2019 in its initial phase. During his address to the nation, the Prime Minister announced, "The number of houses being built for the poor under the PMAY in rural areas is being increased by 33%".

According to yearly data provided on the official website of the Ministry of Rural Development, the Centre set a target of building 3.26 million housing units in 2016-17, while states aimed for 2.41 million units, resulting in a 30% disparity between the Centre's and states' targets. Despite approximately 638,973 beneficiaries being registered under the scheme, only 32 housing units were constructed in the 2016-17 period, and that too in only one state.

To achieve the target of constructing 30 million rural housing units by 2022, 4.3 million units must be built annually. However, in 2015-16, slightly over 1.1 million housing units were constructed. Notably, a declining trend in rural housing construction progress has been observed since the repackaging of the Indira Awas Yojna (IAY) into PMAY (gramin). Under IAY, approximately 1.84 million housing units were constructed in 2013-14, followed by 1.64 million in 2014-15.

Table 1: The PMAYG Reports Showing The Number f Houses Completed in A FinancialYear, as of 29 Feb 2024

SrN	State Name	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
1.	Arunachal Pradesh	85	747	2,417	992	9,344	5,275
2.	Assam	163915	84,009	1,30,879	1,17,694	10,09,151	14,659
3.	Bihar	715565	3,76,216	9,42,615	5,08,362	11,47,076	30,190
4.	Chhattisgarh	341439	34,587	59,684	23,289	33,575	7,520
5.	Goa	28	3	87	19	12	37
6.	Gujarat	84437	35,589	50,742	77,263	65,562	16,457
7.	Haryana	7199	6,670	1,215	263	5,408	91
8.	Himachal Pradesh	3151	447	605	1,884	3,654	1,178
9.	J&K	14918	5,016	21,569	42,515	79,271	2,324
10.	Jharkhand	284474	1,56,974	2,35,011	2,95,036	3,63,313	24,200
11.	Kerala	15640	779	686	2,440	8,825	2,082
12.	Madhya Pradesh	705949	2,72,863	2,61,254	6,06,303	10,58,374	52,732
13.	Maharashtra	230196	92,276	1,81,700	1,79,021	3,43,476	24,755
14.	Manipur	7663	1,151	2,379	3,626	13,955	76
15.	Meghalaya	12347	4,995	5,016	7,009	6,913	2,081
16.	Mizoram	925	997	1,123	1,158	1,020	724
17.	Nagaland	17	3,687	535	0	3,210	423
18.	Odisha	409460	3,61,187	3,95,105	97,143	30,368	2,843
19.	Punjab	12794	410	3,908	5,473	11,381	128
20.	Rajasthan	335884	1,66,764	3,15,480	1,41,345	3,95,061	6,396
21.	Sikkim	863	34	13	5	41	60
22.	Tamil Nadu	122836	49,986	51,868	57,322	1,75,311	26,830
23.	Tripura	22752	6,155	15,462	1,639	1,80,495	4,840
24.	Uttar Pradesh	429844	1,74,166	37,710	10,94,654	6,62,368	34,840
25.	Uttarakhand	5970	192	19	3,844	12,493	4,484
26.	West Bengal	742391	286333	6,78,583	9,59,230	1,47,379	4,193
27.	Andaman & Nicobar	286	483	335	97	22	286
28.	Dadra & Nagar Haveli	221	972	641	1,487	185	221
29.	Daman and Diu	7	0	0	0	0	0

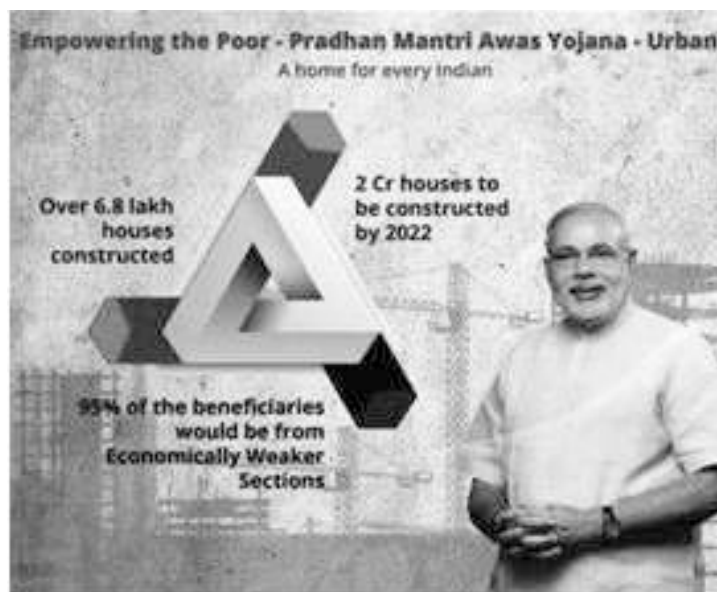
30.	Lakshadweep	0	9	28	7	0	0
31.	Puducherry	0	0	0	0	0	0
32.	Andhra Pradesh	18677	5	0	0	2,167	5,582
33.	Karnataka	7,085	2,405	11,239	2,641	17,916	7,085
34.	Telangana	0	0	0	0	0	0
35.	Ladakh	-	1,344	62	22	1	5

Source-<https://pib.gov.in/PressReleaselframePage.aspx?PRID=1944808>

- **Development of PMAY(U)**

The Pradhan Mantri Awas Yojana (Urban) program, initiated by the Ministry of Housing and Urban Poverty Alleviation (MoHUPA), operates in Mission mode with the vision of providing Housing for All by 2022, coinciding with the nation's 75th year of Independence

Fig- Empowering the Poor – Pradhan Mantri Awas Yojana-Urban



Source - <https://vikaspedia.in/social-welfare/urban-poverty-alleviation-1/schemes-urban-poverty-alleviation/pradhan-mantri-awas-yojana-housing-for-all-urban>

Table2 : The Tabulated Data for the Number of Houses Completed and Central Assistance Released Under PMAY-U, categorized by State/UT and Financial Years

Sl. No.	State/UT	Number of Houses Completed			Central Assistance Released(₹Cr.)		
		2019-20	2020-21	2021-22	2019-20	2020-21	2021-22
1	A&N Island (UT)	-	23	1	0.17	0.46	1.06
2	Andhra Pradesh	30,100	98,115	64,352	918.78	2,419.06	2,475.25
3	Arunachal Pradesh	385	1,222	556	21.31	8.57	27.7
4	Assam	3,953	10,245	15,663	494.46	125.57	180.48
5	Bihar	13,229	23,628	13,184	528.23	572.14	93.37
6	Chandigarh (UT)	363	406	144	8.24	9.18	3.45
7	Chhattisgarh	35,423	48,442	13,575	724.64	690.18	380.89
8	UT of DNH&DD	1,483	1,811	1,127	35.9	45.57	26.06
9	Delhi (NCR)	6,320	6,311	1,748	144.27	145.09	44.65
10	Goa	425	1,579	358	9.82	37	9.17
11	Gujarat	1,11,871	1,64,759	1,62,709	2,254.24	3,241.67	4,192.91
12	Haryana	10,644	19,008	7,074	247.72	290.17	172.77
13	Himachal Pradesh	1,268	1,877	1,681	29.96	32.81	46.49
14	J&K (UT)	1,877	3,643	3,758	99.78	131.54	43.67
15	Jharkhand	12,775	24,029	10,985	331.12	535.22	260.35
16	Karnataka	30,591	66,857	27,190	702.37	1,142.07	529.76
17	Kerala	24,314	22,863	8,398	265.94	173.63	371.92
18	Ladakh (UT)	28	41	132	-	0.43	4.46
19	Lakshadweep (UT)	0	0	0	0	0	0
20	Madhya Pradesh	50,505	1,09,151	61,757	1,044.94	2,411.97	1,977.88
21	Maharashtra	1,17,042	1,54,873	1,91,395	2,405.44	3,943.22	3,358.43
22	Manipur	647	1,580	430	65.09	99.94	0.13
23	Meghalaya	-	57	261	0.64	1.3	16.77
24	Mizoram	1,832	1,394	1,000	7.89	71.92	14.34
25	Nagaland	276	1,552	2,882	14.48	106.43	34.19
26	Odisha	15,413	25,939	10,199	320.96	386.57	328.49
27	Puducherry (UT)	919	2,193	1,041	51.08	37.11	16.67
28	Punjab	12,272	16,345	10,441	188.08	507.35	252.69
29	Rajasthan	28,425	43,074	32,104	600.89	789.3	995.61
30	Sikkim	18	97	33	0.38	1.57	1.35
31	TamilNadu	66,089	1,21,239	52,166	1,942.30	1,627.37	1,569.99
32	Telangana	39,144	88,615	23,474	384.76	777.17	297.9
33	Tripura	6,261	10,281	3,956	166.45	233.95	61.69
34	Uttar Pradesh	1,65,638	2,99,327	2,79,947	4,046.35	4,913.38	3,942.93
35	Uttarakhand	5,137	5,120	5,490	79.95	160.84	89.21
36	West Bengal	45,997	75,974	23,507	931.36	1,606.51	420.5
	Grand Total	8,40,664	14,51,67	10,32,718	19,067.99	27,276.26	22,243.18

Source- Ministry of Housing and Urban Affairs, Gol

VI. Beneficiaries

- The mission is aimed at catering to the housing needs of the urban poor, including slum dwellers. A slum is characterized as a densely populated area with at least 300 people or 60-70 households residing in poorly constructed, congested tenements in unhygienic environments, often lacking proper infrastructure and essential amenities such as sanitary and drinking water facilities.
- Beneficiaries of the scheme include economically weaker sections (EWS), low-income groups (LIGs), and middle-income groups (MIGs). The income thresholds are up to Rs 3 lakh for EWS, Rs 3-6 lakh for LIG, and Rs 6-18 lakhs for MIG. EWS beneficiaries are eligible for assistance across all four verticals of the mission, while LIG and MIG beneficiaries are eligible solely under the Credit Linked Subsidy Scheme (CLSS) component.
- To qualify as an EWS or LIG beneficiary, an individual loan applicant must provide a self-certificate or affidavit as proof of income.
- A beneficiary family includes the husband, wife, and unmarried sons and/or daughters.
- To be eligible for central assistance under the mission, the beneficiary family must not own a permanent house in their name or in the name of any family member anywhere in India.
- Ownership of houses is granted in the name of female members or jointly.
- Priority is accorded to differently abled persons, senior citizens, Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs), minorities, single women, transgender individuals, and other vulnerable sections of society.
- All eligible beneficiaries across all scheme components must possess an Aadhaar or Virtual ID, which should be linked with their beneficiary details.
- States or Union Territories may, at their discretion, establish a cut-off date by which beneficiaries must be residents of the urban area to qualify for scheme benefits.

Considering a slum decadal growth rate of 34%, it is projected that the number of slum households will reach 18 million. Furthermore, it is suggested to include 2 million non-slum urban poor households under the Mission. Hence, the total housing shortage targeted to be addressed through the new mission amounts to 20 million.

- **Scope**

- The Mission encompasses the entirety of urban areas, including Statutory Towns, Notified Planning Areas, Development Authorities, Special Area Development Authorities, Industrial Development Authorities, or any similar authority under State legislation tasked with urban planning and regulations.
- The "Housing for All" Mission for urban areas is set for implementation from 2015 to 2022. Central assistance will be provided to implementing agencies through States and Union Territories to ensure housing for all eligible families or beneficiaries by 2022.
- The Mission will be executed as a Centrally Sponsored Scheme (CSS), with the exception of the credit-linked subsidy component, which will operate as a Central Sector Scheme.
- All components of the Mission became effective on June 17, 2015, and are slated for implementation until March 31, 2022.

- **Coverage And Duration**

- All 4,041 statutory towns as per Census 2011, with a particular emphasis on 500 Class I cities, will be encompassed in three distinct phases as outlined below:
- Phase I (April 2015 - March 2017) aims to cover 100 cities selected from States and Union Territories based on their willingness to participate.
- Phase II (April 2017 - March 2019) will extend coverage to an additional 200 cities.
- Phase III (April 2019 - March 2022) will encompass all remaining cities that have not yet been included in the previous phases.

- **The Ministry, however, will retain flexibility regarding the inclusion of additional cities in earlier phases in the event of a resource-backed demand from States/UTs.**

- The mission will facilitate the construction of houses with a carpet area of up to 30 square meters, along with basic civic infrastructure. States and Union Territories will have the flexibility to determine house size and other amenities at the state level in consultation with the Ministry, without requiring additional financial assistance from the Centre. Slum redevelopment and Affordable Housing projects in partnership should incorporate basic civic infrastructure such as water, sanitation, sewerage, roads, and electricity.
- The minimum size of houses constructed under the mission in each component should adhere to the standards outlined in the National Building Code (NBC). If the available land area does not permit construction of houses meeting NBC standards and if beneficiaries consent to a reduced house size, the State or Union Territory can make a suitable decision on the area with approval from the State Level Sanctioning and Monitoring Committee (SLSMC). All houses built or expanded under the

Mission must include toilet facilities.

- Houses under the mission should be designed and constructed to meet structural safety requirements against earthquake, flood, cyclone, landslides, etc., in compliance with the National Building Code and other relevant Bureau of Indian Standards (BIS) codes.
- Houses constructed or acquired with central assistance under the mission should be registered in the name of the female head of the household or jointly in the name of the male head of the household and his wife. In cases where there is no adult female member in the family, the house can be registered in the name of the male household member.
- State or Union Territory governments and implementing agencies should encourage the formation of beneficiary associations under the scheme, such as Resident Welfare Associations, to oversee the maintenance of houses constructed under the mission.

● Implementation Strategy

The Scheme will be implemented through four verticals giving option to beneficiaries, ULBs and State Governments. These four verticals are as below.

Fig: Implementation Strategy



Source - <https://vikaspedia.in/social-welfare/urban-poverty-alleviation-1/schemes-urban-poverty-alleviation/pradhan-mantri-awas-yojana-housing-for-all-urban>

VII. IN SITU SLUM REDEVELOPMENT

This vertical will be implemented under the concept of "Land as a resource," with involvement from the private sector to provide housing to eligible slum dwellers. Slums, whether situated on Central Government land, State Government land, Urban Local Body (ULB) land, or Private Land, will be targeted for "in-situ" redevelopment to offer housing to all eligible slum residents. As a mandatory measure, redeveloped slums must be denotified. A slum rehabilitation grant of Rs. 1 lakh per house, on average, will be provided for all dwellings constructed for eligible slum dwellers in such projects.

VIII. AFFORDABLE HOUSING THROUGH CREDIT LINKED SUBSIDY

Credit Linked Subsidy Scheme for Economically Weaker Section (EWS) and Low Income Group (LIG): This scheme enables beneficiaries from the EWS and LIG segments to apply for housing loans from Banks, Housing Finance Companies, and similar institutions for new construction or improvement of existing dwellings as incremental housing. The credit linked subsidy is applicable only for loan amounts up to Rs. 6 lakhs, with an interest subsidy rate of 6.5% for a tenure of 20 years or the loan tenure, whichever is lower. Each beneficiary is eligible for a total interest subsidy of Rs. 2.30 lakh, with the Net Present Value (NPV) of the interest subsidy calculated at a discount rate of 9%. Additional loans beyond Rs. 6 lakhs will be provided at non-subsidized rates. The interest subsidy will be credited upfront to the loan account of beneficiaries through lending institutions, leading to reduced effective housing loans and Equated Monthly Installments (EMIs). Houses constructed under this scheme should have a carpet area of up to 30 sq.m. for the EWS category and up to 60 sq.m. for the LIG category. Beneficiaries from the EWS/LIG segments belonging to Manual Scavengers, Women (with overriding preference to widows), Scheduled Castes/Scheduled Tribes/Other Backward Classes, Minorities, Persons with disabilities, and Transgenders will be given preference under the scheme.

Credit Linked Subsidy Scheme for Middle Income Groups (CLSS MIG): This scheme aims to fulfill the aspiration of owning a pucca house for the tax-paying middle class population and became operational from January 1, 2017.

• Salient features

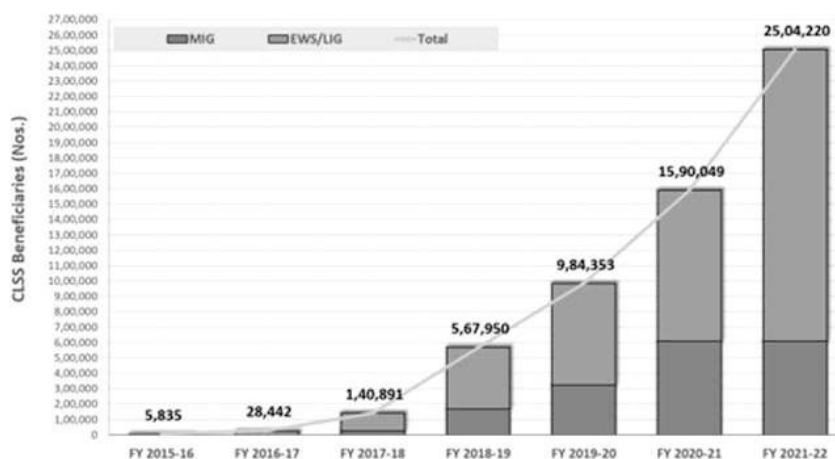
- Middle Income Groups (MIG) with annual incomes ranging from above Rs. 6.00 lakhs to Rs. 18.00 lakhs are eligible for interest subsidy on housing loans under the new CLSS (MIG). Those who have been sanctioned housing loans and whose applications have been under consideration since January 1, 2017, are also eligible for the interest subsidy.

- A beneficiary family comprises the wife, husband, unmarried daughters, and sons. Unmarried and earning young adults are also eligible for the interest subsidy under CLSS (MIG) for the acquisition/construction of a new house, including repurchase. Preference is given to women, with overriding preference to widows, single working women, persons belonging to Scheduled Castes and Scheduled Tribes, Backward Classes, Differently abled individuals, and Transgender people.
- Interest subsidy will be provided on loans for the construction/acquisition of houses with a carpet area of 160 sq.m for those earning Rs. 6 - 12.00 lakh per annum and 200 sq.m for those earning Rs. 13 - 18.00 lakh per year.
- Beneficiaries are eligible for an interest subsidy of 4% on housing loans of up to Rs. 9.00 lakhs for those with an income of Rs. 6 - 12.00 lakh per year and 3% on housing loans of up to Rs. 12.00 lakh for those earning Rs. 13 - 18.00 lakh per year.
- The total interest subsidy accruing on these loan amounts will be paid to the beneficiaries upfront, thereby reducing the burden of Equated Monthly Installment (EMI). The total interest subsidy for MIG individuals on a Rs. 9.00 lakh loan is Rs. 2.35 lakh, and on a loan of Rs. 12.00 lakh, it is Rs. 2.30 lakh per beneficiary.
- The loan tenure is stipulated to be 20 years or as preferred by the beneficiary, whichever is lower.
- CLSS for Middle Income Group (MIG) became operational from January 1, 2017, initially for one year and was extended up to March 31, 2021.
- Small Finance Banks and Non-Banking Finance Company-Micro Finance Institutions have also been recognized to operate as Primary Lending Institutions (PLIs) to broaden the implementation scope of CLSS (MIG), in addition to Scheduled Commercial Banks, Housing Finance Companies, Regional Rural Banks, State and Urban Cooperative Banks, for accepting applications directly from beneficiaries and advancing loans under the scheme.
- Beneficiaries eligible for interest subsidy under CLSS can directly apply to PLIs, and after due verification of applications, PLIs will sanction loans and then claim subsidies from Central Nodal Agencies (CNAs). No processing fee will be charged by PLIs from applicants under CLSS.

The National Housing Bank (NHB) and the Housing and Urban Development Corporation (HUDCO) have been designated as Central Nodal Agencies (CNAs) for the implementation of CLSS for both MIG and EWS/LIG. They will reimburse interest subsidies to Primary

Lending Institutions (PLIs) based on the loans advanced to beneficiaries by PLIs.

Fig: Year-on-Year Growth of CLSS



- **Source- Government of India**

- **Affordable Housing through Partnership (AHP):** Under AHP, the Government of India provides Central Assistance of Rs. 1.5 lakh per EWS house. An affordable housing project can include a mix of houses for different categories, but it is eligible for Central Assistance if at least 35% of the houses in the project are for the EWS category. States/UTs determine an upper ceiling on the sale price of EWS houses to make them affordable and accessible to the intended beneficiaries. States and cities may also offer other concessions such as their share, land at an affordable cost, stamp duty exemption, etc.
- **Subsidy for Beneficiary-led individual house construction:** This component provides assistance to individual eligible families belonging to EWS categories to construct new houses or improve existing ones independently, covering beneficiaries unable to benefit from any other aspect of the mission. Such families may receive central assistance of Rs. 1.5 lakh. To be eligible for Central assistance under the 'Beneficiary Led Construction' component of the housing mission, a minimum addition of 9.0 sq.mt of carpet area to the existing house is required.
- **Affordable Rental Housing Complexes (ARHCs):** The Ministry of Housing & Urban Affairs has launched Affordable Rental Housing Complexes (ARHCs), a sub-scheme under PMAY-U. This initiative aims to offer a dignified and cost-effective rental housing solution to urban migrants and individuals employed in the industrial sector and informal urban economy, particularly those situated near their workplaces, thereby enhancing the quality of urban living.

The ARHC scheme will be implemented through two models:

Utilizing existing Government-funded vacant houses for conversion into Affordable Rental Housing Complexes (ARHCs) through Public-Private Partnership (PPP) or by Public Agencies.

Construction, Operation, and Maintenance of ARHCs by Public/Private Entities on their available vacant land.

Fig: PMAY-U Progress



- **Source- <https://pmay-urban.gov.in/>**
- Global Housing Technology Challenge - India (GHTC-India): MoHUA has initiated the Global Housing Technology Challenge - India (GHTC-India) which aims to identify and mainstream a basket of innovative construction technologies from across the globe for housing construction sector that are sustainable, eco-friendly and disaster-resilient.



**GLOBAL
HOUSING
TECHNOLOGY
CHALLENGE INDIA**



Source - Ministry of Housing and Urban Affairs, Govt.

IX. LIGHT HOUSE PROJECTS - LUCKNOW, UTTAR PRADESH

- **Technology:** The PVC Stay In Place Formwork System, currently employed in Canada and Australia, utilizes rigid poly-vinyl chloride (PVC) based polymer components as a permanent stay-in-place finished formwork for concrete walls. These pre-finished walls require no plaster and can be constructed instantly.
- **Construction Process:** The construction process follows a sequential approach. Initially, prefabricated PVC wall panels and pre-engineered steel structural sections are transported to the site. Subsequently, these sections are erected on the prepared foundation using cranes and necessary connections.

- **Special Features:**

- With the formwork already integrated into the system, the construction of the building is expedited compared to conventional methods. Minimal support is needed for the formwork, primarily for alignment purposes.
- Utilizing concrete as the filling material reduces the curing requirement significantly, thereby conserving precious water resources.
- The formwork system eliminates the need for plastering, resulting in a very aesthetic appearance for the building.

Affordable Rental Housing Complexes (ARHCs): The Ministry of Housing & Urban Affairs has introduced Affordable Rental Housing Complexes (ARHCs), a sub-scheme under the Pradhan Mantri Awas Yojana - Urban. This initiative aims to enhance the quality of life for urban migrants and individuals in the Industrial Sector and the non-formal urban economy by providing them with access to dignified, affordable rental housing in close proximity to their workplaces.

CLSS Awas Portal (CLAP): The CLSS Awas Portal (CLAP) is a web-based monitoring system that serves as a unified platform where all stakeholders, including the Ministry of Housing & Urban Affairs, Central Nodal Agencies, Primary Lending Institutions, Beneficiaries, and Citizens, are integrated in a real-time environment. This portal facilitates the processing of applications and enables beneficiaries to track the status of subsidies. Additionally, the CLSS tracker has been incorporated into the PMAY(U) mobile app and UMANG platform for enhanced accessibility and convenience.

Fig: Target Beneficiaries (EWS/LIGcategories)

Source - Ministry of Housing and Urban Affairs, Gov.

X. CONCLUDING REMARKS

The Finance Minister's commitment to achieving 'Housing for All' by 2022 marked the inception of an ambitious plan to construct 50 million housing units. This vision became tangible with the launch of the Pradhan Mantri Awas Yojna (PMAY) on June 25, 2015, with the goal of building 20 million housing units in urban areas and 30 million in rural areas by 2022.

Despite initial enthusiasm, progress in constructing new housing units has been subpar. Acknowledging the importance of inclusive development and adequate living spaces, the government has consistently directed efforts towards addressing these challenges. The recent announcement of an additional 2 crore houses under PMAY (G) underscores the commitment to expanding affordable housing options for rural communities. This strategic decision not only fulfills the housing needs of rural populations but also drives growth in the housing sector across these regions.

This initiative holds significance as India aims to become a USD 7 trillion economy by 2030, necessitating robust urban infrastructure to accommodate a growing population. In essence, these proposed measures represent a holistic approach to housing, aligning with broader economic objectives and sustainable development goals.

XI. REFERENCE

- Chanley, S. A., & Alozie, N. O. (2001). Policy for the 'deserving,' but politically weak: The 1996 Welfare Reform Act and battered women. *Review of Policy Research*, 18(2), 1–25. <https://doi.org/10.1111/j.1541-1338.2001.tb00183.x>.
- Drew, R. B. (2013). Constructing homeownership policy: Social constructions and the design of the low-income homeownership policy objective. *Housing Studies*, 28(4), 616–631. <https://doi.org/10.1080/02673037.2013.760030>.
- Harish, S., & Raveendran, S. (2023). In situ redevelopment of slums in Indian cities: Closing a rent gap? *Housing Studies*, 1–25. <https://doi.org/10.1080/02673037.2023.2180494>.
- Hunter, C., & Nixon, J. (1999). The discourse of housing debt: The social construction of landlords, lenders, borrowers and tenants. *Housing, Theory and Society*, 16(4), 165–178. <https://doi.org/10.1080/14036099950149893>.
- Hynes, B. O. D., & Hayes, N. (2011). Who benefits from early childcare subsidy design in Ireland? *Journal of Poverty and Social Justice*, 19(3), 277–288. <https://doi.org/10.1332/175982711X597017>.
- IBEF. (2022) Indian real estate industry report. India Brand Equity Foundation. <https://www.ibef.org/industry/real-estate-india>.
- Ingram, H., & Schneider, A. L. (1991). The choice of target populations. *Administration & Society*, 23(3), 333–356. <https://doi.org/10.1177/009539979102300304>.
- <https://pmay-urban.gov.in/>
- <https://ghrc-india.gov.in/Content/LHP.html>
- Houses Completed in Pradhan Mantri Awas Yojana Gramin (PMAYG) from 2018 to 2022
- <https://vikaspedia.in/social-welfare/urban-poverty-alleviation-1/schemes-urban-poverty-alleviation/pradhan-mantri-awas-yojana-housing-for-all-urban>
- <https://vikaspedia.in/social-welfare/urban-poverty-alleviation-1/schemes-urban-poverty-alleviation/pradhan-mantri-awas-yojana-housing-for-all-urban>
- Ingram, H., Schneider, A. L., & DeLeon, P. (2007). Social construction and policy design. In P. A. Sabatier (Ed.), *Theories of the policy process* (pp. 93–126). Westview Press.

- Jacobs, K., & Manzi, T. (1996). Discourse and policy change: The significance of language for housing research. *Housing Studies*, 11(4), 543–560. <https://doi.org/10.1080/02673039608720874>.
- Khaire, M., & Jha, S. K. (2022a). Evaluating the uneven outcome of Pradhan Mantri Awas Yojana. *Shelter*, 23(2), 64–70.
- Khaire, M., & Jha, S. K. (2022b). Examining homeownership bias in Indian housing policy using frame analysis. *Environment and Urbanization ASIA*, 13(1), 113–125. <https://doi.org/10.1177/09754253221079527>.
- Kumar, A., & Shukla, S. K. (2022). Affordable housing and the urban poor in India. *Social Change*, 52(1), 58–75. <https://doi.org/10.1177/00490857211040249>.
- Kundu, D. (2014). Urban development programmes in India: A critique of JNNURM. *Social Change*, 44(4), 615–632. <https://doi.org/10.1177/0049085714548546>.
- Kundu, A., & Kumar, A. (2017). Housing for the urban poor? Changes in credit-linked subsidy. *Economic and Political Weekly*, 52(52), 105–110. <https://www.jstor.org/stable/26699169>.
- Lasswell, H. D. (2018). *Politics: Who gets what, when, how*. Pickle Partners Publishing.
- Lejano, R. P. (2021). Relationality: An alternative framework for analyzing policy. *Journal of Public Policy*, 41(2), 360–383. <https://doi.org/10.1017/S0143814X20000057>.
- Mitra, S. (2022). Policy-implementation dynamics of national housing programmes in India—Evidence from Madhya Pradesh. *International Journal of Housing Policy*, 22(4), 500–521. <https://doi.org/10.1080/19491247.2021.1934649>.



GAMIFICATION AS A TOOL FOR IMPLEMENTING NEP 2020 AND IMS LIBRARY ACTIVITIES

Dr. Swati Barnabas*

ABSTRACT

NEP 2020 emphasizes student-centered, interdisciplinary learning, and libraries are key in supporting this transformation. The paper explores gamification as an approach for implementing NEP 2020 (Ministry of Education, 2020) in the context of library activities at IMS. NEP 2020 highlights student-centered learning, interdisciplinary approaches, and integration of traditional knowledge systems. It explores how gamification can be applied in IMS Library activities to implement NEP 2020 and increase student engagement. Gamification, by integrating game-like features into learning programs, can boost users' involvement, motivation, and educational outcomes. A conceptual and descriptive approach was used, reviewing literature and analysing IMS Library initiatives to propose gamified strategies. The paper examines how various library initiatives, including orientations, webinars, competitions, and cultural events, can be gamified to promote participation and support NEP 2020 goals. It also discusses integration of Indian Knowledge Systems (IKS) through gamified activities to enrich students' learning experiences. Gamification enhances student involvement and learning, aligning library practices with NEP 2020 goals.

Keywords: *Gamification; NEP 2020; Library Services; Information Literacy; Educational Practices; IMS Library Activities; Library Best Practices*

I. INTRODUCTION

NEP 2020: NEP 2020 marks a major transformation in the way teaching and learning is delivered and experienced in India. Its core objective is to make learning experience more inclusive, adaptable and multidisciplinary in nature.. NEP 2020 seeks to foster an environment where learners are actively engaged and motivated, aligning the learning process with real-life challenges and knowledge. The policy emphasizes integrating Indian Knowledge Systems (IKS) with modern educational practices, making it relevant to students in today's globalized world. Education should be comprehensive, blending sciences, social sciences, arts, humanities, sports, and co-curricular pursuits. It should also nurture moral, civic, and national ethos constitutional values, life survival skills, as well as a deep appreciation for India's culture, traditions, and history (NEP 2020, pp. 5–6).

Libraries have long been integral to education. They build collections to support both formal and informal learning, and also gather materials on emerging scientific advancements to aid research. In addition, they collect works on culture, history, literature, and socio-political developments. Many libraries also preserve rare manuscripts and resources on local traditions and history, offering users a wealth of knowledge to satisfy curiosity and encourage learning. (Thapa, 2022). The libraries must retool activities like digital literacy and research skills, thus accelerating the education scenario with NEP's vision. (Jyaamma, 2023).

● **GAMIFICATION:**

Gamification, is adapting principles of game design in non-gameing settings which has gained prominence as a educational strategy in education. Thus incorporating challenges, rewards, and interactive learning, gamification aims to boost motivation, engagement, and retention of information. It holds the potential to make learning more enjoyable and foster deeper understanding by turning mundane tasks into exciting experiences. Based on research, Deterding defined "gamification" as the use of game design elements in non-game contexts (Deterding, 2011). Caponetto further added that to enhance processes and refine the overall experience in non-gaming scenarios, the use of game mechanics is incorporated. The essential game components include feedback, goals, badges, a point system, a leaderboard, and user levels (Caponetto et al., 2014). According to the ALA, gamification—or the integration of game elements and digital game design techniques into non-game settings—and game-based learning, or structured gameplay with clearly outlined learning objectives, are witnessing increased implementation and acknowledgment in both educational and professional contexts (ALA, 2015).

The simulation / game elements have sprouted the librarian's facilitation role with innovative instructional tool. (Sreejaya, 2019). Gamification, a digital humanities application, plays a significant role in outreach efforts to publicize and encourage the use of library services such as in outreach efforts to publicize and encourage the use of library services through activities such as like orientation programs, vendor talks, workshops, and tutorials to improve digital literacy and engage users with library resources. (Manu&Bhakti, 2023).

● **IMSCDR's LRC, AHMEDNAGAR:**

The BPHE Society's IMSCDR, is a NAAC re-accredited institute with a 30-year legacy of excellence in Management Education. Renowned for its innovative teaching, research, and industry collaboration, IMSCDR fosters holistic development and ethical values. Recognized by S.P. Pune University as the Best Institute, IMSCDR embodies the "Walk and Talk" management principle, creating a dynamic learning environment. Celebrating NEP

2020's vision, IMSCDR nurtures intellectual curiosity and shapes future leaders with distinction.

The award-winning IMS Learning Resource Centre (Library), rated "A" in audits, exemplifies academic excellence through its robust resources, modern infrastructure, and research contributions. The Library has garnered multiple accolades, including the B-School Library Award 2013 by Discovery Education Media, New Delhi, and the Best Non-Teaching Staff Award from S.P. Pune University. The Librarian has received the Outstanding Librarian Award by AIMS, the Women Icons of Ahmednagar by Lokmat Group, and the Best Librarian Award from S.P. Pune University. The library staffs comprise highly qualified professionals holding Master's and Doctoral degrees in Librarianship, ensuring top-tier support for the academic programs. The facility includes dedicated sections for research, extracurricular activities, differently-abled students, and two spacious reading halls. The library offers extensive resources, including books, journals, e-resources, maps, and digitized institutional repositories. It supports academic needs through corporate memberships and document-sharing services. Members benefit from Study Material facilities, inter-library loans, and access to digital resources. The library conducts many user education programmes under Best and innovative practices and key amenities to enrich user engagement. The student-centric focus that promotes academic excellence and holistic growth.

● **LIBRARY'S ROLE:**

Libraries play a pivotal role in supporting academic growth by providing access to resources, fostering collaboration, and facilitating research. As educational institutions evolve to meet the demands of NEP 2020, libraries must adapt to offer innovative learning experiences. Gamification can be applied within the library context to enhance student engagement, support NEP 2020's vision, and integrate innovative aspects. Nevertheless, libraries extend far beyond being mere storehouses of books or simple information providers; they have long functioned as vibrant centres for intellectual, social, cultural, and civic advancement. They regularly host lectures by eminent personalities, debates, collaborative study circles, author interactions, and concept-development forums on contemporary issues, creating an environment for knowledge exchange, idea generation, and solution-oriented discussions. Modern learning resource centres also conduct capacity-building sessions on interpersonal skills, digital literacy, stress resilience, and related competencies. Consequently, libraries are well-positioned to advance NEP's vision of providing high-standard education that fosters the comprehensive growth of learners..(Thapa ,2022).

● OBJECTIVE OF THE PAPER.

NEP 2020 emphasizes the importance of holistic learning, student-centered education, and interdisciplinary approaches. Libraries, as key facilitators of learning, are positioned to support these principles by offering resources, workshops, and activities that encourage self-directed learning. The integration of gamification in these activities can align the library's offerings with NEP 2020's objectives of creating an engaging and flexible learning environment.

While there is a growing body of research on gamification in educational settings, there is limited literature on its application in libraries, particularly in relation to IKS and NEP 2020. The study seeks to fill that gap by exploring how gamification can be used to support library activities and enhance student engagement with both modern and traditional knowledge systems.

The objectives of the paper are-

- ⇒ To investigate role of gamification as a strategy for implementing NEP 2020.
- ⇒ To highlight campus-based events those enrich library activities at IMS Ahmednagar.
- ⇒ To explore library initiatives aimed at increasing student participation and learning, thereby contributing to the broader goals of NEP 2020.

To present a detailed account of various information literacy programs, including their challenges and opportunities.

II. LITERATURE REVIEW:

The literature on gamification in education highlights its effectiveness in fostering engagement and improving learning outcomes. Studies have shown that gamified learning environments increase student participation, motivation, and satisfaction by providing well defined, timely reflection and a feeling of achievement (Deterding et al., 2011). In particular, gamification in libraries has gained attention as a means of encouraging students to explore and use library resources in more interactive and enjoyable ways.

Deterding, Sebastian. (2011). Consumer software influenced by video games has been examined within the fields of Human–Computer Interaction and Game Studies. This work analyses the concept of 'gamification,' tracing its historical roots, examining its connection to earlier ideas and comparable constructs, and presenting a definition of gamification as the incorporation of game-design elements into non-game contexts.

In their 2014 study Caponetto, Ilaria, Earp, Jeffrey, and Ott, Michela (2014) explored the rise of gamification, which applies game mechanics in non-gaming settings to enhance engagement. Their review of 120 papers from 2011 to 2014, covering various educational levels, highlights the growing use of gamification in education. Initially, gamification was often confused with Game-Based Learning (GBL), focusing on using game elements for specific subjects. However, the review suggests the concept of gamification is now perceived in a wider scope educational strategy, treating learning as a game or competition rather than just using game tools for subject-based learning.

Felker, Kyle, & Phetteplace, Eric. (2014). Gamification is undeniably a major trend. It was discussed at both previous ALA annual conferences, has an interest group within LITA, and has been cited in the last three NMC Horizon reports on higher education at Grand Valley State University Library. This article examines how libraries can effectively utilize games and the theories behind them..

Walsh, Andrew. (2014). This paper explores the possible advantages of applying gamification methods to boost student interaction with library materials. It highlights the connection between student engagement with library resources and academic success, and proposes that gamification could raise resource usage, potentially improving academic outcomes. Preliminary results from the LemonTree gamification project are also shared, showing heightened student interaction with library resources and favourable integration of gamification in teaching and learning.

Seeing the current academic learning style Sreejaya, P. (2019) presented that, one comes across terms such as engaging environments, involvement, scientific, and practical teaching and understanding. Due to the explosive and increasing pace in ICT, current ways like digital teaching and learning surroundings have sprouted. The academics created a hype in best practices and innovative instructional tools. A similar method is role-play, presently used increasingly and accepted in the learning of managerial sciences by discovering matter-of-fact episodes and re-formulating the part of the learner to enhance competence and contentment. The benefit is emphasized by the article mentioned and the real-life experiences of the IIM Kozhikode Learning Resource Centre in making available the Harvard Business School Publishing modules for its educational activity and courses.

The work by Jayamma, K. V., & Mahesh, G. T. (2020). It is designed to study the approach towards accessing resources by senior pupils of the Government Science College Library, Bangalore. Its aim is to find out the user approach through a survey form to gather information from 100 plus respondents. The outcome highlighted the requirements and frequency of visits, which was once in seven days. The main objective of the users was to

refer to academic evaluation-related papers and related data for their academic excellence.

Reed, Karen Nourse, & Miller, A. (2020). Library orientations, which provide an overview of services and building layouts, help newcomers make effective use of library resources. However, the significant staffing required for in-person tours can limit their feasibility. To address this, one academic library employed the integration of user experience research with gamification to develop a tailored digital orientation program designed for four distinct user groups: undergraduate pupils, graduate pupils, teaching fraternity, and members' of the community. A survey of a total of 167 individuals revealed that undergraduate students showed a stronger preference for the gamified orientation format compared to other groups, suggesting its effectiveness in enhancing engagement and future library use.

In the research carried out in 2021 by Adedokun, Folashade Oyinlola, Ahmad, Norasni Binti, & Miskon, Suraya Binti. (2021). Due to incorporation of gamification in e-library services has significantly enhanced e-service delivery, increasing user engagement and motivation during the learning process in libraries. This study examines gamified e-library services in two phases: first, by analyzing existing gamification practices and second, by highlighting the benefits of their implementation. The study also emphasizes the need for future research to explore the difficulties in applying gamification to e-library services and potential remedies. Key sections include related works, gamification adoption, gamified services, and benefits, concluding with recommendations for further research.

Adeyemi, Ismail, Esan, Adedoyin Oluwatosin, & Abdulmalik, Aleem. (2021). The study explores Nigerian academic library professionals' awareness, perception, and readiness to apply gamification to library services. Using semi-structured interviews with 15 out of 20 selected participants, the study found that most librarians were unaware of gamification, with only a few learning about it through personal reading. The research revealed a link between awareness and positive perception, though many librarians did not view gamification favorably. Key factors for readiness include management support, technical skills, and IT compliance. These findings offer a review of the present condition of gamification in the context in Nigerian library services and may inform other developing African nations.

Thapa, Neelam. (2022). NEP 2020 seeks for quality learning and holistic youth development. Although it does not explicitly define libraries' roles, they are essential in supporting online and continuous learning and social participation of the community. Resource centres must evolve digitally empowered next-gen libraries, with information professionals acquiring new skills and collaborating with educators to enhance the learning experience. National and local policies should define libraries' roles in the new education system.

According to Jayamma, Mahesh, & Kotur. (2023). Learning centres are important in running NEP 2020 in the education field. They assist with different learning materials, enhance research, and inculcate critical thinking, thus accelerating the education scenario with NEP's vision. They propose digital online awareness and education, accelerate best practices, and provide equal opportunity to content. Learning centres give e-books, databases, and virtual study materials while helping users in efficient usage and improving skills. Further, subject periodicals, articles, and published manuscripts aid in literature search and keep scholars up-to-date with multidisciplinary improvement through knowledge sharing and interdisciplinary work. This study highlights learning centres' involvement, with responses from over a hundred participants from the higher education sector across four bodies.

In the study Jug, Tjaša. (2023) explored that in learning resource centres, games and gamification can enhance services and activities, though some remain cautious or unaware. In Slovenia, such initiatives are rarely presented on public platforms, and it is unclear whether library professionals benefit from traditional learning. To explore this further, personal interactions were conducted with ten compulsory course holders at the Department of Library and Information Science, University of Ljubljana. The results show that games and gamification are seldom included in classroom teaching or applied for knowledge sharing and advancement, though educators recognize the scope to design activities that strengthen the departmental library, encourage student research, and support excellence in learning.

Moid, Abdul, Raza, M. Masoom, & Javed, Mohammad. (2023). Libraries have begun incorporating gamification by adding game-like elements and facilities to their services. Gamification, a popular idea in learning and promotion, involves integrating game interactive components to attract attention, engage users, and influence behavior. This study analyzes ten years of data (2013-2023) from WoS using R Software package Biblioshiny to visualize pointers such as pertinent references, researchers, citations, institutional ties, and national output. The findings highlight the significance of gamification in libraries, emphasizing its role in motivating users and enhancing engagement.

.....T R, Manu, & Gala, Bhakti. (2023). In the digital era, libraries are integrating gamification platforms to enhance learning and increase motivation. This study evaluated free web-based games to enhance ICT proficiency cum literacy and promoting library services, ranking them based on features and simulations. It revealed that GAP and referencing skills games are particularly preferred.

The work done by Arunkumar & Begum (2024). It analytically examines the usage and effect of public resource centre facilities, with emphasis on mobile resource centre activities in

Karnataka State. A well-structured and studied survey form was given, gathered, and analysed from eight hundred plus respondents, showing a success rate of almost 90%. The goals are to study the reasons and inspirations behind visitation, knowledge about the library, and measure perceptions. The outcome highlights the prominent impact of city-based respondents. Further statistics and mathematical calculations show no difference in the use of learning resource centres across different population groups. The results underline the importance of public resource centres in providing and making information available to all users irrespective of sectors. The work also indicates that spreading awareness through orientation and induction with involvement as a *modus operandi* is paramount.

According to Naik, Gopi Alias GopalAnand, &Naik, RamashantiAnand. (2024) they highlighted the importance of the library landscape which is undergoing a shift propelled by the demand to connect with tech savvy user community. Gamification, which involves incorporating game elements into non-game settings, is becoming an essential approach to boost user interaction and improve learning results. This article explores the theoretical basis, practical implementation, advantage and obstacles of applying gamification in library settings, offering insights into how it can modernize services and promote learning.

As per Adeyemi.(2025) there is increasing curiosity about gamification in information resource centers, which highlights the need for deliberate critical thinking and ethical considerations in integrating gamified platforms. The present study reviewed secondary sources in both online and offline modes. Findings revealed concerns such as cloud data security, integrity, hacking, and mental well-being, including issues like excessive gameplay, system malfunctions, advantages for digitally literate users, and caution regarding autonomy and privacy. Future research directions on these aspects were also discussed.

In the project carried out by Suresh &Rajyavardhanan. (2025). The NEP 2020, UGC, and NAAC emphasize inclusive education for differently-abled learners without hindrance. Addressing this, the Government Law College Learning Resource Centre in Tiruchirappalli voluntarily launched a pilot project to convert ten higher education law books into audiobooks under the Indian Copyright Act. These were stored in the DSpace repository and shared with the library user community. The objective was to ensure fair access for print-disabled students. Findings revealed that audiobooks enhanced their self-assurance, drive, and active involvement in courses.

III. METHODOLOGY:

This research adopts a conceptual and descriptive approach. The methodology involves reviewing existing literature on gamification in educational contexts and its relevance to NEP 2020, combined with an analysis of IMS Library's current practices and potential for integration of gamified strategies. No statistical data was collected; instead, the study relies on qualitative interpretation and synthesis of best practices to propose a practical framework for implementation.

IV. GAMIFICATION IN EDUCATION:

Concepts of Gamification: Gamification in learning comprises applying game design features like points, badges, leader boards, challenges, and levels into learning environments that are non-games.. It transforms traditional learning into a more dynamic experience by making tasks more engaging and rewarding. By framing learning as a series of achievements and challenges, gamification fosters a sense of progression and accomplishment in students.

● BENEFITS OF GAMIFICATION:

Gamification brings numerous benefits to educational settings, including:

- ⇒ **Increased Motivation:** Game-like elements make learning more exciting, increasing students' intrinsic motivation and involving Student in Library Committee to develop leadership qualities and management skills.
- ⇒ **Enhanced Engagement:** Gamified activities make lessons more interactive and engaging, helping students retain information better.
- ⇒ **Improved Learning Outcomes:** The use of instant feedback, rewards, and recognition motivates learners to actively manage their learning process and foster a sense of personal accountability.
- ⇒ **Fostering Collaboration:** Many gamified activities are designed to be collaborative, promoting teamwork and peer learning.
- ⇒ **Examples of Gamification Tools:** In educational settings, study tools, competition or game based interaction and Classcraft are commonly used for gamified learning. These tools provide interactive quizzes, challenges, and reward systems that make learning enjoyable and competitive.
- ⇒ **Badges, points, and leader boards** are gamification elements are designed to engage users and boost their involvement

V. ROLE OF LIBRARIES IN IMPLEMENTING NEP 2020:

Quality education and research cannot be achieved without the support of learning resource centres. Library professionals must understand that they have a crucial role to play in the execution of NEP 2020. They will need to cultivate the necessary skills and adopt a growth mind-set to prepare for this. These centres must transform to fulfil the objectives, and librarians must take an active role in this transformation process. The effective execution of NEP 2020 depends on the joint efforts of all involved parties, including administrators, librarians, teachers, students, and the local community (Thapa, 2022).. (Thapa 2022)

- **STUDENT-CENTERED LEARNING:** One of the core philosophies of NEP 2020 is a focus on student-centred learning where the learner's needs, preferences, and pace are prioritized. Libraries, with their vast resources and information, can support this shift by creating personalized learning experiences. Gamification can further enhance this by offering students the opportunity to engage with resources in a fun, goal-oriented way. The Student Library Committee facilitates student-centric activities, fostering leadership qualities, enhancing management skills, and promoting experiential learning.

- **E-RESOURCES AND RESEARCH:** NEP 2020 also stresses the importance of leveraging digital resources for research and learning. Libraries are well-placed to support this by offering access to electronic / digital books, online scholarly periodic publications, and other virtual materials. Gamifying access to these resources—such as offering rewards for using specific databases or completing research challenges—can encourage students to engage more deeply with these tools.

- **COLLABORATIVE LEARNING:** NEP 2020 envisions an education system that fosters collaboration among students. Libraries play a crucial role in this by organizing workshops, group discussions, and study sessions. Gamification can be used to increase participation in these collaborative activities, such as by awarding points for contributing to discussions or completing team-based tasks.

VI. APPLYING GAMIFICATION TO IMS LIBRARY ACTIVITIES:

The appeal of games is irresistible. They capture our focus, encourage us to reach objectives, and offer a feeling of achievement while being inherently fun. Gamification harnesses these strong motivational factors and applies them to non-game contexts, like learning or task completion. Within libraries, gamification can change how users engage with resources and participate in the library fraternity (Naik, 2024). (Naik 2024). Gamification can be applied to library activities to enhance student involvement and contribution. By introducing elements such as points, badges, leader boards, also rewards, libraries may

make activities like reading, attending events, and completing educational challenges more interactive and enjoyable. For instance, students can earn points for checking out books, attending library workshops, or completing quizzes based on library resources. These points can be accumulated to unlock rewards or certifications, motivating students to actively participate in library initiatives and fostering a culture of continuous learning.

● **COMPETITIONS (NASA HACKATHON, MEME, ESSAY, and BOOK-MARK MAKING):**

Competitions are gamified by rewarding the best performers. For example, essay competitions can include points for creativity, relevance, and engagement with the library's resources. Meme competitions foster creativity and humor in action, while book-mark making competitions encourage originality and artistic expression. Additionally, the NASA International Space Apps Challenge provided a platform for innovators, students, and professionals to tackle real-world challenges using NASA's open-source data, fostering global connections and enabling participants to network with like-minded individuals worldwide.

● **CULTURAL AND SOCIAL EVENTS:** Events such as Librarian's Day, Teacher's Day, Gandhi Jayanti, Author Speaks: Book Talk Show, Tribute to Legendary Personalities, and VachanPrerna Din can be enriched with gamified elements. These include offering refreshments for attending live programs, immediate feedback opportunities, or participation in discussions. Outstanding students are observed and shortlisted for Librarian's Best Practices awards, such as the Best User Award. Participants can also earn badges or certificates for actively engaging in these events.

● **LIBRARY ORIENTATION AND NDLI CLUB:** Library orientations are designed to engage new students by familiarizing them with the library's materials, facilities, information services, along with providing an in-person visit. The IMS Library is a member of the National Digital Library of India (NDLI) Club. By registering, creating a personalized webpage on the platform, and participating in successive IMS Library online or offline campus-based events, users earn points that accumulate, eventually qualifying them for e-certificates.

● **WEBINARS:** Library-hosted webinars on topics such as ORCID, IRINS, and NEP 2020 can be enhanced through gamification by offering rewards for attending, asking questions, or completing follow-up quizzes. Participants benefit from e-certificates and interactive online Q&A sessions. These strategies increase student involvement and make the webinars more engaging.

● **STAFF MOTIVATION AND PRODUCTIVITY:** Incorporating gamification into library staff activities—such as participation in audits, proposing innovative suggestions during audits,

authoring research papers, pursuing professional qualifications for organizational growth, and engaging in subject deliberations—is both innovative and practical. These initiatives can be tailored to align with institutional policies to foster quality work.

The Student Library Committee plays a pivotal role in organizing and managing Library Orientation and NDLI Club activities, ensuring new students are seamlessly introduced to library resources and digital platforms. They actively contribute to planning and conducting webinars, cultural and social events, and competitions, fostering an engaging and inclusive learning environment. By taking ownership of these initiatives, committee members enhance their productivity, develop leadership skills, and inspire peers to participate actively in library programs.

- **GAMIFICATION AND INDIAN KNOWLEDGE SYSTEMS (IKS):**

Gamification provides a unique opportunity to introduce students to Indian cultural and educational traditions. For instance, gamified challenges related to Indian history, literature, and philosophy can be integrated into events such as Marathi BhashaGauravDiwas, Matrubhasha Din, or VachanPrerna Din. These initiatives not only enhance students' understanding of the Indian Knowledge System (IKS) but also familiarize them with the library's specialized collection of Marathi and Hindi language books, non-curricular and motivational/inspirational resources, as well as digital tools like Calibre Digital Library and institutional repositories on Google Drive.

- **IMPLEMENTATION OF GAMIFICATION IN IMS LIBRARY:**

The IMS Library's gamification is supported by (Jayamma& Mahesh, 2020) and (Arunkumar& Begum, 2024) that orientations, information literacy programs, competitions, best user awards, and evaluation to concrete the awareness and engagement in library services that are designed with aims to boost involvement for academic excellence .Current Activities: The IMS Library introducedgamification into its current activities, such as:

- **LIBRARY ORIENTATION:**Postgraduate freshers of the Management Programme explore the library and gain familiarity with its resources, services, facilities, and user education programs through an A-V clip, PowerPoint presentations, online e-resources training, and a virtual or offline library tour.

- **WEBINARS:**Webinar participation is incentivized with bonus points for engagement, such as asking questions or active participation, and attendees receive e-certificates. The library staff and committee members observe and shortlist students for the Best User Award, with engagement serving as one of the many evaluation criteria.

- **COMPETITIONS:** Competitions are gamified using leader boards and badges for activities such as essay writing, meme creation, bookmark making, and classroom quizzes. These quizzes often draw on content from Business Standard; a newspaper subscribed to by the library, with multiple copies available outside the entrance for free pickup. Other library-sponsored events also encourage participation.

- **TECHNOLOGY BASED LEARNING:** The NPTEL video streaming library can be integrated into gamified learning environments to enhance student engagement through interactive question papers and progress tracking linked to video content. This approach motivates learners to delve deeper into topics while earning recognition for their achievements.

- **METRICS FOR ASSESSING STAFF CONTRIBUTIONS:** Metrics include the type of conferences or journals (national/international) attended, presentations delivered, and contributions to developing teaching-related resources. Incentives such as monetary bonuses, flexible working hours, and professional development opportunities are provided. Tools for implementing this strategy include feedback sheets, certificates of participation/presentation, and library audit remarks.

- **PLANNING AND EXECUTION:** To implement gamification, the library utilizes simple tools such as Google Forms and paper-based leaderboards to track participation and progress. Collaborations with faculty, staff, and student bodies ensure the smooth integration of gamified elements. Friendly competition among library users fosters motivation, while team-based challenges promote collaboration. Achievements are recognized and celebrated through institutional and library newsletters, reinforcing a culture of excellence and acknowledgment.

- **CHALLENGES AND OPPORTUNITIES:** While gamification presents an exciting opportunity, challenges include finding an appropriate slot within students' busy academic schedules, accommodating departmental activities, semester-wise internal assessments, and university exams, as well as securing faculty support. Furthermore, evaluating student readiness for this approach is essential. Nevertheless, the benefits of increased engagement and participation outweigh these challenges, and careful planning can effectively mitigate potential obstacles.

VII. CONCLUSION: Gamification (game-based learning) has undeniably gained recognition during the pandemic, while its significance in education remains substantial. The recent adoption of gamification tools, such as interactive quizzes, digital badges, and web-based escape rooms, has introduced innovative methods to engage users and promote information resources. Developing nations still need to explore gamification's potential to

enhance educational materials, including learning resource centres, for optimal utilization. (Moid et al., 2023).

Competitions and awards have always been integral to library activities, but the concept of “gamification” has brought greater attention to their significance by emphasizing reward points and recognition. Gamification offers a powerful tool to support the implementation of NEP 2020 in libraries. By transforming traditional library activities into interactive and engaging experiences, it enhances student motivation, participation, and learning. While conventional gamification in libraries primarily focuses on user engagement, such as encouraging book borrowing or event attendance, its scope can extend naturally to include staff activities. Gamification is not limited to patrons; it can also be an effective tool for staff management and motivation. Moreover, it enables libraries to integrate modern educational practices while fostering connections with cultural and traditional knowledge.

In conclusion, all objectives have been successfully fulfilled. The research explored the capability of gamification as an instrument for implementing NEP 2020, emphasizing its role in enhancing learning. Campus-based events contributing to IMS library activities were highlighted, showcasing how they enrich student engagement. Furthermore, various library initiatives aimed at boosting student participation were discussed, contributing to the broader goals of NEP 2020. Finally, a comprehensive account of information literacy programs, along with their challenges and opportunities, was presented, offering valuable insights for future development. The IMS Library, through the incorporation of gamified elements, can significantly contribute to creating a learning environment that corresponds with the broader aims of NEP 2020.

● **ACKNOWLEDGEMENT:** I sincerely thank the IMS institute, particularly the Learning Resource Centre (Library) staff, for their wholehearted support in the success of the Information Literacy program. Their dedication has been crucial in aligning the program with the goals of NEP 2020, enhancing academic excellence and information accessibility. I greatly appreciate their invaluable contributions to this research paper.

VIII. REFERENCES:

- Adedokun, F. O., Ahmad, N. B., & Miskon, S. B. (2021). Gamification in e-library services. *Library Philosophy and Practice (e-journal)*, 1-11. Accessed and Retrieved on 14.12.24 from <https://digitalcommons.unl.edu/libphilprac/4521>
- Adeyemi, I., Esan, A. O., & Abdulmalik, A. (2021). Application of gamification to library services: Awareness, perception, and readiness of academic librarians in Nigeria. *The Electronic Library*, 39(5), 809-824. <https://doi.org/10.1108/EL-05-2021-0096>
https://www.researchgate.net/publication/355308048_Application_of_gamification_to_libra

ry_services_awareness_perception_and_readiness_of_academic_librarians_in_Nigeria
(Accessed December 14, 2024).

- Adeyemi, I. O. (2025). Ethical issues in the adoption and use of gamified library services: A narrative review and future research directions. *Business Information Review*, 42(2), 98-105. <https://doi.org/10.1177/02663821251328821>
- American Library Association. Gamification (2015, January 28). Retrieved from <https://www.ala.org/future/trends/gamification> (Accessed December 14, 2024). Document ID: f4b6631a-0029-4234-99e7-96ec879fac59
- Arunkumar, H. S., & Begum, K. J. (2024). Exploring the Impact of Mobile Library Services in Karnataka: A User Perspective. *Asian Journal of Information Science and Technology*, 14(2), 57–64. <https://doi.org/10.70112/ajist-2024.14.2.4295>
- Caponetto, Ilaria, Earp, Jeffrey, & Ott, Michela. (2014). Gamification and education: A literature review. In *European Conference on Games Based Learning* (p. 50). Retrieved December 23, 2024.
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining "gamification." *Proceedings of the 2011 Annual Conference on Human Factors in Computing Systems*. Retrieved from https://www.researchgate.net/publication/230854710_From_Game_Design_Elements_to_Gamefulness_Defining_Gamification (Accessed December 14, 2024)
- Felker, K., & Phetteplace, E. (2014). Gamification in libraries: The state of the art. *Reference & User Services Quarterly*, 54(2), 19-23. <https://www.jstor.org/stable/10.2307/refuserq.54.2.19>
- Jayamma, K. V., & Mahesh, G. T. (2020). Information seeking behaviour of post-graduate students of Government College, Bangalore: A study. *Asian Journal of Information Science and Technology*, 10(1), 1-5.
DOI: <https://doi.org/10.51983/ajist-2020.10.1.303>
- Jayamma, K. V., Mahesh, G. T., & Kotur, M. (2023). Role of Libraries in Implementing the New Education Policy 2020 in Higher Education in India. *Asian Journal of Information Science and Technology*, 13(2), 66–71. <https://doi.org/10.51983/ajist-2023.13.2.3748>
- Jug, Tjaša. (2023). Exploring the role of games and gamification in academic libraries from the perspective of LIS educators. *Education for Information*. 39. 1-17. 10.3233/EFI-230038. DOI:10.3233/EFI-230038
- **Ministry of Education. (2020). National Education Policy 2020. Government of India. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf**
- **Moid, A., Raza, M. M., Javed, M., & Jahan, K. (2023). Role of digital humanities in libraries:**
- Mapping gamification gimmicks. *DESIDOC Journal of Library & Information Technology*, 43(4), 249-257. <https://doi.org/10.14429/djlit.43.4.19233>
- Naik, Gopal. A. & Naik, Ramashanti. A. (2024). From bookshelves to screens: The role of gamification in modern library learning. *Library Progress International*, 44(3), 1660-1665. Retrieved from <https://bpasjournals.com/libraryscience/index.php/journal/article/download/615/376/885>

- Nourse Reed, K., & Miller, A. (2020). Applying gamification to the library orientation: A study of interactive user experience and engagement preferences. *Information Technology and Libraries*, 39(3), 1-26. <https://doi.org/10.6017/ital.v39i3.12209>
- Sreejaya, P. (2019). Business Simulations in Management Pedagogy: Role of Libraries in Enhancing Access to Business Simulations: A Case Study. *Asian Journal of Information Science and Technology*, 9(S1), 51–57. <https://doi.org/10.51983/ajist-2019.9.S1.222>
- Suresh, N., Thirunavukkarasu, T. C., & Rajyavardhanan, R. (2025). Empowering Accessibility : Converting Books for Print Disabled Students in Government Law College Tiruchirappalli within the Framework of the Indian Copyright Act . *DESIDOC Journal of Library & Information Technology*, 45(1), 22–27. <https://doi.org/10.14429/djlit.19848>
- Thapa, Neelam. (2021). NEP 2020: Pivotal role of libraries in achieving the goals. *The Electronic Library*, 43(4), 249-257. <https://doi.org/10.1108/EL-05-2021-0096>. Accessed and retrieved on <https://www.ijrls.in/wp-content/uploads/2022/12/ijrls-1587.pdf>
- TR, Manu., & Gala, Bhakti. (2023). Gamification for digital humanities in libraries: A survey of the web-based games on digital literacy. *DESIDOC Journal of Library & Information Technology*, 43(4), 241-248. <https://doi.org/10.14429/djlit.43.4.19259>
- Walsh, Andrew. (2014). The potential for using gamification in academic libraries in order to increase student engagement and achievement. *Nordic Journal of Information Literacy in Higher Education*, 6(1), 39-51. <https://noril.uib.no>. Accessed and retrieved on 14.12.24. https://www.researchgate.net/publication/280621663_The_Potential_for_Using_Gamification_in_Academic_Libraries_in_Order_to_Increase_Student_Engagement_and_Achievement

ABBREVIATIONS:

1. ALA=American Library Association
2. GAP =Gaming against Plagiarism
3. ICT = Information and Communication Technology
4. IMSCDR = B.P.H.E.Societys Institute of Management Studies (CD&R) Ahmednagar
5. LRC = Learning Resource Centre
6. NAAC = National Assessment and Accreditation Council
7. NEP = National Education Policy
8. UGC = University Grants Commission
9. WoS= Web of Science



A SURVEY ON BLOCKCHAIN AS A-SERVICE

Supriya Sapa*, Shubhankar Sapa**

I. ABSTRACT

Blockchain-as-a-service, or BaaS, entails the installation and maintenance of blockchain networks for a company's technology by a third party. A business may utilize BaaS to develop and deploy its own blockchain apps and services. Blockchain as a service assists enterprises in developing and hosting blockchain apps and smart contracts in cloud-based blockchain ecosystems. To put it another way, BaaS makes blockchain capabilities more manageable and practical in the commercial world. Blockchain as a service is generating a buzz in a number of businesses

Key Word : Blockchain-as-a-service (BaaS), Cloud-based Blockchain, Smart Contracts, Blockchain Applications.

II. INTRODUCTION

Blockchain as a service (BaaS) has acquired a substantial interest in the commercial sector. Early adopters include the software, financial, and logistics industries. Some of the world's major IT corporations, including IBM, Microsoft, and Oracle, all have sections dedicated to the integration and promotion of BaaS. Here are several BaaS providers that incorporate these revolutionary ledgers into daily technology.

- **IBM:** The IBM Blockchain Platform, one of the most mature blockchain systems on the market, is based on the Linux Foundation's open-source community-based Hyperledger Fabric. And it has already had a lot of success with blockchains. Its Food Trust blockchain is increasing transparency in the food supply chain, and it is assisting in the transformation of trade finance for a consortium of 15 European banks working together on the web trade blockchain network.
- **PayStand:** PayStand's BaaS deploys networks that notarize certificates (like diplomas, deeds, and receipts). It also has an admin platform that enables users with an in-depth and real-time view of their data. Furthermore, the PayStand network automates portions of the end-to-end financial process.
- **Alibaba Cloud:** Alibaba Cloud BaaS offers all the needed features and functions, with a bonus. It can run on Hyperledger Fabric, Ant Blockchain, or Quorum with so many countries buying just about everything from China.

* Assistant Professor, Institute of Management Studies (CD&R), Ahilyanagar

- **Blockstream:** Blockstream's BaaS provides scalable financial solutions for the Bitcoin ecosystem and protocol. The company's Bitcoin processing software contributes to a bigger peer-to-peer financial system. Up to 10 solutions are available to deal with blockchain mining, energy scalability, API administration, and other crypto infrastructure requirements.
- **Symbiont:** Banks and financial organizations use the technology to authenticate the provenance of information and to openly record payments on a ledger. Symbiont may be used by private equity companies and crowdfunding platforms to safeguard confidential papers and prove ownership of shares in real time.
- **Amazon Web Services (AWS):** Amazon Web Services (AWS) is a market leader in various areas when it comes to BaaS. The company connects blockchain-based networks and business processes for some of the world's top corporations. It uses the Ethereum and Hyperledger Fabric frameworks, making the blockchain adaptable to nearly any setting.
- **Clovyr:** Clovyr is an application ecosystem that enables teams to swiftly and safely experiment, iterate, and release products by using the power of the public chain. Clovyr provides improved immutability and authentication requirements by utilizing a combination of permissions and public networks.
- **Blockchain-as-a-Service (BaaS) Solutions:** A service provides the platform that enables clients to build decentralized applications and digital services in a systematic and organized manner on a distributed network.

Infrastructure is provided by BaaS providers, whilst the vendor offers significant functionality and building tools. Businesses can quickly get apps up and running, enabling speedier technology adoption [21].

The following are some of the most popular functionalities given by Blockchain-as-a-Service platforms:

- Management and administration of platform architecture
- flexible, preconfigured systems and structures
- Simple workflow layouts
- Middleware for observing & building for application development
- Panel to visualize and evaluate rule base
- Traceable transaction log
- Built-in access to essential services

- Professional advice

"One of the challenges for enterprise blockchain adoption is the ecosystem readiness to make it 'easy to build' and 'easy to buy' blockchain technologies," said Ronak Doshi, a vice president at Everest Group [15].

III. BAAS IN BUSINESS AND PRODUCT MANAGEMENT

Gautav, Li, Wattana Viriyasitvat et al. wrote a paper where [27] An SLR was proposed to evaluate recent attempts on leveraging BCT to manage business processes, specifically using blockchain as a service (BCaaS) as an enabling technology, framework, or architecture to allow dynamic and collaborative business processes through the Internet. BCT has been changing the BPM paradigm as it was used not just for trustworthy storage to encourage transparency, but also to enable preservation of business operations in cooperation to eliminate conflicts, which are typically costly and time-consuming in traditional BPM. Furthermore, smart contracts were used as a trusted infrastructure to ensure that business operations across organizations were carried out. The suggested SLR reached the following conclusions: (i) there was no comprehensive study on the impact of utilizing BCaaS to BPM in addition to new requirements and technical implementation issues, and (ii) the difficulties of executing BPC on the basis of technical, organizational, legal, and environmental standards, laws, and guidelines.

The material offered fills a knowledge gap for readers to understand the current state of the art of incorporating BCT with BPM, specifically contemporary BPC techniques.

Despite the rapid expansion of employing BCT to handle business operations, the tested systems remained mostly basic and limited to showing technical viability and completing typical BPM objectives. The paper given covers all the bases in readers' understanding of the state of the art of combining Block chain technology in BPM, notably contemporary methodologies for BPC. In order for BCaaS for BPM to be functional, future technological advances are required to address concerns with interoperability standards (CH1), trust guarantees (CH2), confirmation length (CH3), reversibility (CH4), and other issues linked to the deployment of Block chain technology for BPCs business processes (CH5). [27]

A paper written by Zhengong Cai, Guozheng Yang, Shaoyong Xu, and other team member demonstrates the use of blockchain services on Cloud-Edge Platform [5]. BaaS over Cloud-Edge applications reduces the complexity and difficulties associated with the development and administration of blockchain systems. Most present BaaS systems are housed in the environment of cloud vendors, resulting in vendor lock-in and reducing the technology's trustworthiness. The suggested system is able to extend BaaS to the non-premises edge or

private cloud with the help of redundant blockchain node candidates, leader election, and edge network self-healing components [5].

The study presented a cloud-edge collaborative, highly accessible, and privacy-preserving BaaS paradigm that used cloud computing, edge computing, and blockchain techniques to localize blockchain data and equip BaaS with edge autonomous capacity. The following are the paper's key contributions.

- The article offered a BaaS architecture paradigm with cloud-edge coordination capabilities and high availability, which acted as a stepping stone toward additional research and the eventual implementation of blockchain and edge computing in a hybrid cloud.
- The research also covered the deployment technique and mechanism of the proposed highly available BaaS architecture.
- Through experiments, the report showed a performance comparison between a simplified suggested BaaS system and a typical blockchain system implemented on-premises.

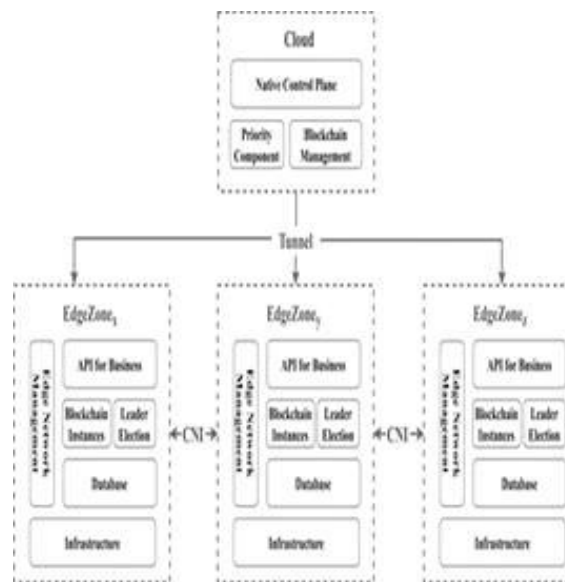


Figure 1: RBaaS framework [5]

As seen in Figure 1, developing a cloud-edge collaboration platform is a critical step in making RBaaS operate. Before proceeding with the fundamental stages of constructing a consortium blockchain utilizing BaaS, the on-premises edge nodes should first connect to the cloud using Openyurt tools. Following that, a network tunnel is built between the cloud and edge sides, allowing the cloud control plane to govern the edge nodes and allocate Kubernetes resources to the edge sides. The pods on the edge can connect with one another via given pod IP addresses with the help of a suitable CNI plugin.

The study proposed a cloud-edge collaborative BaaS paradigm (RBaaS) for a cloud-edge collaborative environment, extending blockchain deployment to the on-premises edge or private cloud while managing it from the public cloud. The RBaaS platform can perform in an edge autonomy scenario with cross-data-center high availability and management simplicity by combining Kubernetes with Openyurt, redundant blockchain nodes, leader election, and edge network self-healing implementation. RBaaS can promote privacy and trustworthiness by localizing blockchain storage. The findings show that the proposed RBaaS has an adequate throughput at modest transaction-sending rates.

Blockchain can also serve in managing logistics and supply chain as proposed by Moritz Petersen, Niels Hackius, and Wolfgang Kersten [11]. The significance of trust in global economies is heightened by the increasing complexity of international trade, which is facilitated by the internet and globalization.

Third-party agencies are embracing the position of trade mediator between various parties in an effort to reduce uncertainty and build confidence between buyers and sellers. These entities serve as a middleman, handling the business and transaction logic for all forms of trade. This involves the identification and authentication of business partners as well as the recording of their information, both of which call for a certain degree of confidence in the controlling intermediary. Banks or freight forwarders are common examples of middlemen in supply networks [11].

Despite the fact that these organizations benefit both buyers and sellers, the "middleman setup" is not without flaws. It first has a core foundation, which breeds reliance. Second, it introduces a single point of failure in the transaction processing. These organizations also take a long time to complete transactions. The exchange of fiat money between parties, which has previously been noted by earlier academics, is an example of a transaction that takes a long time to conduct through an intermediary and takes up to four working days. The intermediary also charges costs for the services, which reduces margins. For instance, higher interchange fees for credit and debit cards or bill of lading fees for ocean freight operations. Additionally, the privacy of all participants is compromised by the management of one of the future's most important assets, the whole transaction data by central bodies.

Technology adoption is significantly influenced by timing. A given technology can be referred to as a "disruptive technology," in accordance with Bower and Christenson's definition [12], if it is integral to a disruptive innovation that transforms the competitive landscape. Despite the fact that BCT is referred to as a "disruptive technology" in the literature, we think it may be premature to draw conclusions because digital supply chains still lack some essential building blocks, such as standardized data quality and availability [2] and the adoption of real-world use cases, such as Blockchain Technology (BCT). The growing use of IoT devices in supply chains may help close the infrastructure gap related to data quality. The data quality gap that most supply chains still experience may be closed through the use of radio-frequency identification (RFID), GPS, cell phones, and other IoT applications. As a result, the development of IoT in conjunction with BCT technology as a supporting technology offers an intriguing field of study for the future.

By utilizing smart contracts or product provenance to automate operations, the usage of BCT in Logistics and Supply Chain Management might potentially eliminate the need for centralized organizations by fostering decentralized consensus among supply chain players. Consumer-facing benefits of BCT include a decrease in labor and administrative expenditures as well as the closure of traceability gaps that still exist in current supply chains (such as the specific history of a product). Due to the increased visibility and traceability that BCT ideas offer, cargo owners may potentially profit from compliance issues and improved visibility. Yaoliang Chen et al. [8] presents a new ledger architecture, which is called Full-Spectrum Blockchain as a Service (FSBaaS). It is built on a high-performance centralized private blockchain runtime and a Hyperledger Fabric blockchain runtime to support the network. The free trial tenants can only use the bc-lite node and paid tenants can use bc-lite nodes, bc-fabric nodes, and hybrid bc nodes that run both bc-lite and bc-fabric. They use MongoDB as the world state database for both bc-lite and bc-fabric. bc-lite uses a sharding strategy and bc-fabric adds a complete blockchain node into the network. Both bc-lite and bc-fabric are managed by RESTful APIs.

Blockchain can provide solutions for Vendor Managed Inventory also suggested by Fran Casino, Thomas K. Dasaklis, and Constantinos Patsakis in one of their research [6].

Vendor-managed inventory (VMI) is a popular supply-chain (SC) management strategy for enhancing performance across several firms while developing a mutually advantageous connection between a vendor and a retailer.

The primary tenet of this approach is that since the vendor has been given permission to manage the retailer's product inventory, he or she is in charge of keeping track of, monitoring, and restocking the agreed-upon inventory. VMI is a simplified method of inventory management and order fulfillment that allows both the vendor and the retailer to precisely

and smoothly regulate the movement of items throughout the SC. Since its first introduction as a key component of the cooperation between Procter & Gamble and Walmart, VMI has been broadly embraced by other sectors [6].

All of the stakeholders in the network may profit significantly by the adoption of VMI techniques. Vendors can earn from VMI by acquiring the visibility they need for more precise inventory management and improved demand forecasts. VMI offers merchants a framework for order processing that is more effective while lowering operational and administrative costs. VMI may boost sales from a sales standpoint by making sure that items are constantly in stock and may also provide a higher inventory turnover rate. There may be substantial advantages for upstream business members from VMI as well. For instance, producers are able to purchase and deliver products more precisely because they can forecast how much to make with more accuracy. In general, VMI delivers less inventory overstocks, greater end-customer experience, and stronger merchant connections.

Jatinder Singh and Johan David Michels mentioned in an article[25] that BaaS involves a service provider offering and maintaining multiple DLT infrastructure parts. In other words, the service provider leverages economies of scale to deliver managed compute, network, security, storage and other services to customers as needed. Platforms for BaaS IBM's BaaS is built on Hyperledger Consortium products, an open-source effort initiated by the Linux Foundation to develop a business-oriented blockchain founded on a bespoke codebase administered by the Hyperledger Consortium. A user of a BaaS B may participate in a DL application. Therefore, identification and confidentiality concerns are essential elements of BaaS offerings, such as when providers offer digital signatures and identity management services are utilized to limit the visibility of certain transactions. The major cloud service providers provide both, with a significant overlap between their BaaS components and their more public cloud service offerings. Identity management systems, for example, support both BaaS and more traditional apps.[25]

However, trust is a crucial factor to consider in a BaaS context since trust issues are a significant source of interest in DLT. In addition, as mentioned, there are other factors to consider when it comes to BaaS that are related to the provider's business arrangements, i.e., the organization with which the provider has a contract. In the sense that all facets of the DL are offered and managed by a single provider, who also controls all nodes (i.e., holds all copies of the ledger), executes the consensus procedures and smart contracts, as well as manages the identification elements of the parties involved (perhaps holding the keys), trust becomes a bigger issue when there is a reliance on the provider to "run the entire world.". This is especially true for SaaS-type services where the provider has complete control over the applications and user interfaces, except a few user-specific application configuration

choices.

Weilin, Zibin Zheng et al. wrote a study[30], Where a the fast development of blockchain technology, a new economy has begun to emerge in a number of sectors. Most developers don't have easy access to efficient methods for deploying, maintaining, and monitoring their apps. The advantages of cloud service infrastructure's deployment and management can be taken advantage of by a BaaS platform. Developers don't need to worry about the intricacy of the underlying architecture because they can easily launch a blockchain network to support their application. Many businesses, like Microsoft and IBM, have successfully launched their BaaS platforms. For developers, NutBaaS strives to offer a more practical and secure environment.

The NutBaaS architecture is divided into four levels, so you can deploy various peer kinds (such as orderer peers and endorsement peers) in various clouds, which can lessen the danger and impact of system collapse when some of the clouds you select have issues (e.g., Network jitter, system outage). We use Kubernetes [26], an open-source system for automating deployment, scaling, and management of containerized applications, to organize and manage our containers in an effort to increase the portability and scalability of the system.

The Underlying System, which supports many types of blockchains, is the lowest sublayer of the existing blockchain architecture. The main goal is to examine new business scenarios suitable for the application of blockchain technology on the upper layer of the architecture, the Business Layer, and then create a solution for individuals to study.[17]

In order to address the inadequacies of the current BaaS platform, particularly in terms of dependability and security, the paper suggests a more comprehensive platform. It aims to improve the transparency of blockchain deployment and operation through the new service paradigm, as well as to reduce harm to the system's decentralization.

IV. BAAS IN IOT AND 5G

A paper written by Mayra, Uurtsaikh, and Ralph [22] analyzed the possibility of blockchain being used as a service for IoT. They use blockchain as a decentralized ledger to store the data and code of IoT systems. The advantage is that can be a tamperproof ledger because of the blockchain's characteristics. The authors compared Fog hosting versus Cloud hosting.

Fog hosting means using the fog computing method to host the servers. It means there is a local network layer between the cloud and the physical devices, which is a decentralized infrastructure. The fog layer can decide what information will be sent to the cloud and what

should be processed locally. The authors test the Intel Edison Arduino boards as IoT devices. In fog settings, they test 0, 50, 100, 150, 200, 250, and 300 milliseconds delay. The 10 clients writing to the multichain have spikes if there is 0 milliseconds delay. The spikes decline if the delay time increases. And the main reason for the spikes is the network card and traffic of the boards. Next, the authors analyze the cloud latency's impact. The results show the delay does not necessarily improve the response time, there are still a lot of spikes even though there is a 300 million seconds delay. The conclusion is that Fog computing has better performance since network latency can cause service failures and dropped messages if using cloud hosting.

Nisita Weerasinghe et al. [28] talk about how blockchain technology is used on Local 5G operator (L5GO) networks. Instead of public blockchain implementation, they choose consortium blockchain implementation. In this architecture, each stakeholder participates in maintaining the blockchain. In order to build an L5GO system, they implement the following functions: Subscription management function (SMF), Marketplace Function (MF), Reputation Management Function (RMF), Selection Function (SF), Fraud Prevention Function (FPF), Data Management Function (DMF), and Agreement establishment and Payment settlement Function (APF).

- SMF: Each stakeholder will be signed a hash value, a unique ID, and a wallet. The system will verify the hash value in order to allow access.
- MF: They use the smart contract architecture to let the user choose and buy the products. Sellers need to input relative information and there will be a seller rating factor to calculate the rating. The user can directly buy the product or attend an open action.
- RMF: The system will calculate the reputation score for all sellers and network providers.
- SF: The selection function is designed to select the best network provider for the user before each offload event. The roaming score is based on the signal strength, reputation score, and cost score.
- FPF: The system will check the users' credit and only provide the service that the cost is not above the credit.
- DMF: The system will verify the device ID and owner's address. And the data will be stored in a secure storage platform or in the distributed ledger. The hash of the data will be stored in the blockchain. The device owner will check if the third-party user can access the data or not. A valid user can get the hash value to access the original data.

- **APF:** A smart contract will be built if the network provider of a seller wants to provide the service. The APF system will check if the buyer has enough credit to pay for the service.

With the corporation of different functions, the L5GO can provide different services, which include roaming service, offload service, spectrum sharing service, VNF management service, IoT data sharing service, identify management service, and IoT data management service. Nisita Weerasinghe et al. [28] use Matlab to do simulations and use 100 devices, 10 L5GOs, and 10 VNF providers to run the system. The results show that compared to the traditional system, the BaaS system's roaming cost is lower for longer sessions. And the service quality is better than the traditional system since it considers the cost and reputation of the service provider. And the system has a lower error rate due to the algorithm including the reputation score.

Public and private blockchains are two popular blockchains. I. R. Fedorov et al. [10] compare those two different types to show the private blockchain is capable of running mobile 5G networks. A public blockchain is decentralized, Bitcoin and Ethereum (ETH) are two good examples of public blockchains. However, private blockchains need authentication and Hyperledger (HLF) is an example of a private blockchain. They use Blockbench to throughput and latency of HLF and Geth (known as Ethereum without connecting to the main network). The results show the maximum transaction per second is 52 for HLF and 29 for Geth. Also, the Geth uses 100% of the CPY and the HLF uses 80% of the CPU. So, in conclusion, the private blockchain has a better performance.

V. BAAS IN DATA STORAGE

A study by Rajit Nair, Syed Nasrullah Zafrullah, Vinayasree, Fardin Ahmadi, and others, reveals the application of Baas as a decentralized cloud solution for data transfer [19]. In recent years, cloud computing has grown significantly in popularity. Many firms utilize cloud computing to store a substantial amount of data elsewhere rather than on their own equipment. AWS, Azure, and GCP are three distinct cloud computing systems. On demand, the network provides access to storage, networking, compute, and security.

Data transfer across cloud providers is challenging and cloud computing has problems with vendor lock-in. To securely store data without the aid of a third party, decentralized storage technology has recently been created. One of its uses is the DFS, which stores data chunks across many network neighbors.

Peer-to-peer file systems like IPFS have enormous data storage capacities. It functions by breaking up the data into fixed-size pieces and distributing them over the whole network. Customers that utilize the cloud now have the option to locally store data, giving them more

control. For sensitive and confidential data, security is a major concern. Decision making becomes complex when choosing between which people or groups have access to which resources using authorization or access control policies, which are based on certain attributes or responsibilities. An Identity and Access Management (IAM) service is offered by Amazon, for instance, and it allows for the creation of per-mission regulations. Before transferring the permission policies related to the data on the cloud to the DFS, it will not be practical to migrate private or sensitive data from the cloud to the latter. Data cannot be transferred from the cloud because DFS implementations now in use, such as IPFS and Sia, lack ways for permission policy setting.

Another decentralized storage system that stores data in a series of blocks connected by cryptographic hashing of earlier blocks is the blockchain [19].

Until recently, there hasn't been a way to move information and permission rules from the cloud to DFS. The study serves its findings for transferring data from AWS S3 to IPFS, which are as follows:

- **Content Migration:** In this process, data items are sent from Amazon S3 to the alien file system. Various types of data are stored in the cloud, sent to IPFS, and distributed throughout the whole IPFS network.
- **Custom Blockchain:** The permission regulations related to the data being transferred are stored on a bespoke blockchain that the authors of the study have built.
- **Authorization Policies on the Chain:** To store permission policies related to the data being transported, the study offered a solution to create a unique blockchain. The proposed solution changes the access control settings related to S3 buckets.

Data is stored as objects within buckets using the Amazon S3 object storage service. To access blockchain system, it is required to first pick an AWS region and create a bucket. These access rules are kept in an immutable ledger as blocks.

- **Proposed Solution:** The challenge of the study revolves around moving data, and associated permission policies, from the cloud to the DFS. Moving the data files from the cloud to the distributed file system is the main goal of the research. In DFS, no node is granted the permission, and content-addressing is required for all data storage. Additionally, all files saved in the DFS must be secured against unauthorized access, and only objects that meet the necessary requirements may access any data. Installing user or role-based access control on the data can serve to do the job.

The study maps the components of the proposed approach to the present DFS and cloud

provider, utilizing AWS as the cloud provider and the interplanetary file system (IPFS) as the DFS, as shown in Figure 2. As a result, the data files are migrated from Amazon S3 buckets to IPFS, and the authorization policies associated with the S3 buckets, the resource-based IAM rules, are used to establish access control on the IPFS files. Other cloud providers and DFS may utilize the suggested method as well. Athina-Styliani et al. [13] discussed the blockchain-Based notarization services for biomedical knowledge retrieval. The authors believe it is important to make sure that the biomedical database cannot be manipulated retrospectively by people. So blockchain architecture also has a large potential in the biomedical area. Pamela Soares et al. [26] introduced a customizable document registration service that builds based on blockchain. They believe this new architecture can increase transparency, integrity, availability, and more. This architecture includes three layers: the application layer, the service layer, and the persistence layer. The application layer allows users to create documents. The service layer will manage the client information, template of the document, smart contract, and document. The persistence layer will be the database. This system follows an Ethereum-based framework. And the authors tested on the Ethereum Virtual Machine. Ruksudaporn Wutthikarn and Yan Guang Hui [29] proposed a dental clinic service application that is using blockchain to store and manage the records. All assets (policies, claims), participants, and transactions will be recorded in the blockchain. According to the principle of the blockchain, all changes will leave records. This will prevent unauthorized changes.

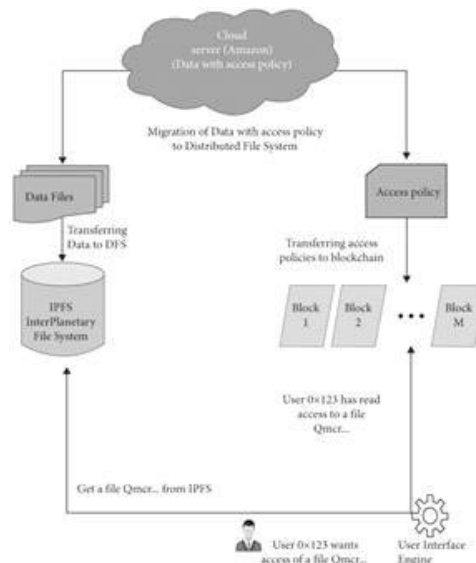


Figure 2: Different components of the suggested technique. [2]

VI. BAAS IN MARKETING

Markus Klems et al. [14] proposed a new decentralized and trustless service marketplace prototype that uses blockchain architecture. In order to implement the service, supporting actors need to sign multiple smart contracts: a service registry contract, a service contract with payment, refund, and escrow logic, a service contract with a list of consumers and payments, and a monitoring contract.

- Service registry: Service providers can publish and update service descriptions, and there will be a phase-out process if the provider wants to remove the service. Providers need to deposit on registration, they can only collect the refund of the deposit if they announce service removal with a lead time.
- Transaction settlement: the contract should specify the payment model.
- Service delivery: There are two ways to achieve service delivery proxy service and signature library. Since the authors want to build a decentralized and trustless service market, so they prefer the signature library. In this method, the customers sign the payload of service requests and the provider verify it with a public key.
- Trustless distributed data storage: the data reference is computed from the data itself. So if the data is changed, the data reference will be changed, and make the reference invalid.

VII. BAAS IN OTHER AREA

Blockchain can serve by sharing economy as well. This is an idea supported by Shuchih Ernest Chang, Erik Chiaway Chang, and Yijou Chen embedding ridesharing service through Smart Contract [7]. Innovative business applications like Uber and Airbnb have been made possible by the principles of the sharing economy. Ridesharing services are one example of an application of the sharing economy that makes use of unused resources to generate revenue. Ridesharing systems' unpredictable design, however, might worsen urban traffic

congestion and lead to additional problems with technological organization and the environment. Using the blockchain's advantages of transaction traceability, process transparency, system automation, and disintermediation, this study aims to investigate how to apply blockchain and smart contract technology to improve ridesharing services [7].

To provide participants ease and fair access to participation, ridesharing services should make use of information and cyber technologies.

Rethinking the layout of corporate processes may be aided by emerging blockchain technology's distributed and decentralized features. By implementing its intended characteristics of transparency, traceability, immutability, and process automation, it can aid in improving the execution of business processes. Three specific service elements were devised and implemented in this research's proposed blockchain-based ridesharing service to set it apart from other ridesharing services and to take use of the advantages offered by blockchain and smart contracts. The unique service characteristics include: (1) security improvement through identity identification and trust assessment; (2) fair prediction of ridesharing fee and time; and (3) guarantee of departure/destination locations.

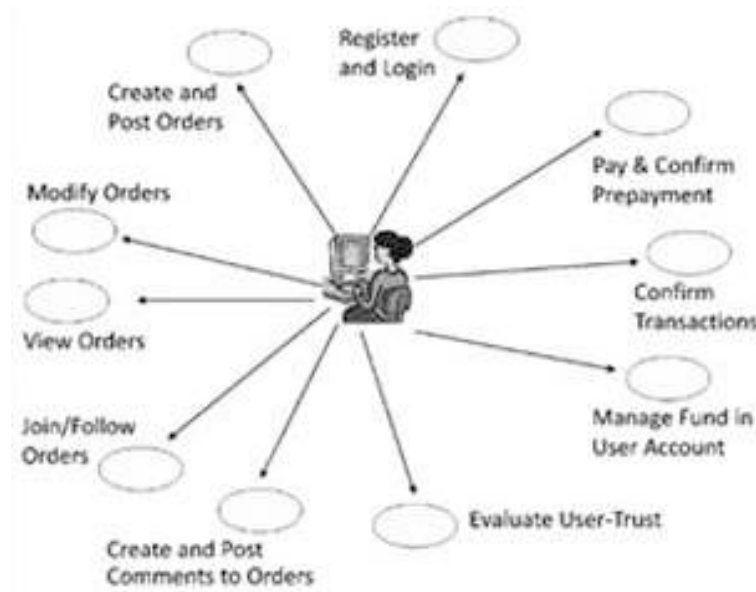


Figure 3: The desired system functions for supporting the group/crowd ridesharing service [7]

The proposed ridesharing system's intended business functions and necessary business processes may be broken down into smaller use cases as shown in Figure 3, which can assist define responsibilities and deliverables during the system's design and implementation. In

order to integrate blockchain technology and smart contracts into the proposed joint riding service system, this research created a four-layer service architecture. The transaction layer (TL), service layer (SL), interface layer (IL), and application layer (AL). Three different types of smart contracts are used in Transaction Layer to support the tasks of identity verification,

order administration, and financial management. These contracts are written down in coherency. This layered architecture may accomplish security, distributed data storage, information immutability, service process traceability/transparency, and smart contract-enabled process automation by utilizing blockchain and smart contract technology.

Emanuele Bellini et al. [4] state that the blockchain can also be used in the e-vote service. They build a new e-vote service that is more transparent, safer and lowers the cost.

The service components include a plan configurator, smart contract composer, blockchain configurator, and cloud deployer orchestrator.

- Plan configurator: The customers can customize all the properties of the voting session. And all the changes are constrained by the Service Level Agreement (SLA).
- Smart Contract Composer: The customers can modify the pre-defined smart contract. There are three parts to the smart contract. The Atomic part includes voter authentication, PoolCreation, and TokenGeneration. The composite part includes VoteCollection. And the cluster service can generate a final report when customers provide voting session information.

Blockchain Configurator: This service will translate user parameters to infrastructure characteristics.

- Cloud Deployer Orchestrator: This service will match and find the optimal service hoster.

This approach still faces the challenge of system configuration and optimization.

Chaehyeon, Jongsoo Woo et al. wrote a paper[16] where it shows that the use of virtual assets for illegal purposes has increased, so Financial Action Task Force proposed guidelines to prevent money laundering and financing of terrorism. The travel rule guidance is provided in Recommendation 16 and is intended to restrict terrorists and criminals from moving funds freely by virtual asset transfers. FATF updated the travel rule guidelines in October 2021. In response to FATF's guidelines, each country is preparing laws on virtual assets and VASP to comply with FATF regulations. [16]

The blockchain-based approach for tracking travel rule compliance offers several benefits. First, third-party interference is not necessary because of the blockchain's underlying premise. In some of the current solutions, a third party, such as the central server of the solution provider, mediates the exchange of trip rule data between the VASPs. In this scenario, the deal may unnecessarily expose the customer's personal information, and each transaction assumes the risk of doing so. Blockchain enables P2P data transmission

between transaction participants, preventing unwanted exposure from unrelated third parties.

To comply with the FATF's recommendations, researchers have described the architecture of a blockchain-based travel rule compliance system in this paper. This enables P2P travel rule data transmission for each transaction between VASPs. Personal data that has been shared can be controlled and preserved safely without unnecessary exposure. We want to use the Corda enterprise distributed ledger system to construct this system in subsequent work. They also intend to connect our system to the already-existing systems for travel rule compliance. The virtual asset market has a wide variety of them, making it impossible to apply the travel rule using just one protocol. This makes it crucial to expand our system by incorporating it with other travel rule systems.

Abdullah, Feng et al. published a paper[18] which talked about maintaining data accuracy in HPC systems while reducing the rising expenses of data transfer and I/Os is essential. This study suggests using decentralized protocols similar to a blockchain to achieve distributed resilience. The main obstacle to such an adoption is the incompatibility between the target systems for blockchain (such as shared-nothing, loosely-coupled, and TCP/IP stack) and HPC's distinctive architecture for storage subsystems, resource allocation, and programming models. BAASH, Blockchain-As-A-Service for HPC, is presented as a plug-and-play solution. BAASH uses two crucial elements to bridge the blockchain-HPC gap: For the shared-storage architecture of the HPC, (i) lightweight consensus protocols; and

(ii) a novel fault-tolerant technique to make up for MPI to ensure distributed resilience. A prototype system was put into use, and it was assessed using more than two million transactions.

All the mainstream blockchain systems and frameworks assume the underlying systems are shared; nothing clusters with the TCP/IP network stack. Specifically, although blockchain exhibits many research and application opportunities, one of the most impelling challenges for employing blockchains into HPC systems lies in the consensus protocols for the unique I/O subsystem. This study indicates two essential methods to provide a blockchain service in HPC systems. First, a lightweight collection of scalable consensus protocols is created to consider both remote shared storage and diskless computation nodes in HPC. Second, many layers of subsystems, ranging from background daemon services to callable routines to applications, ensure the dependability in front of MPI—a necessary quality of blockchain in an HPC environment—throughout the multiple tiers.

A blockchain service for HPC systems is made possible by the MPI-compatible

dependability and HPC-aware consensus protocols that make up the BAASH framework. With more than two million transactions on up to 500 cores, a system prototype using the suggested methodologies is developed and assessed, demonstrating excellent performance and high reliability compared to cutting-edge systems.

For cross-blockchain or heterogeneous data sources, the future study would add a parallel data integration mechanism and allow eventual consistency for readers to see data from remote authors in the exascale system. BAASH will be the foundation for new system research on decentralized services designed for HPC systems.

A paper was written by Hari, Ashwin et al.[1] where Bass is used for Government projects, tendering, Quality assurance and typically work by releasing tenders and choosing the firm that offers the lowest price while considering their track record. The bidding process may occasionally be corrupted; government officials demand bribes, bribes are paid to reveal the bids of rival contractors, and threats are made against other bidders, among other problems in the system. As a result, this paper suggests a blockchain-based architecture that uses smart contracts to ensure that the contract is awarded to the deserving contractor and that the bidding is conducted in a completely confidential manner. This platform provides that every contract's data is made public and that people can vote on various problems, allowing for the monitoring of government operations. [1]

This portal makes it simple for contractors to submit a bid for a specific government project. They can sign and submit their proposal for a particular task using their private key. The identification and bid verification may be completed using the contractor's public key.

This ensures that no one may reveal the details of the bid that the contractor submitted until the results of the blind bidding on the blockchain are completed. This ensures that the contractor's reputation will be considered the following time there is a bid process. Each contractor's reputation and the total money paid by the government for the entire contract will be recorded in a public ledger. This ensures that the general public is informed about the project from beginning to end.

In many nations, the fundamental problem with government projects is that even when the work is finished, the contractors do not get paid on schedule. The blockchain-based smart contract in the proposed platform ensures that the various project milestones are checked. Upon completion and the organization issuing the tender giving its permission, the monies are immediately transferred to the contractor's account. Compared to PaaS or SaaS-based Solutions, BaaS stores the data in a decentralized manner that ensures that even if a physical device fails, it may be retrieved.

Automatic Payments - Smart contracts can be used to establish and apply (i) Accountability - We offer a safe, trustless technology that records all procurement and tendering actions on the blockchain, creating a single source of truth. Additionally, accountability is ensured because all actions and choices made by the tender owners are documented. (ii) Traceability - Storing all tendering, procurement, and supply chain data on a single ledger has the benefits of tracing any shipment and pinpointing failure points within the system/process.

Justin J. Ochoa et al. [20] discussed how blockchain-as-a-Service can be used in battery energy storage systems (BESSs). The applications of BaaS with BESS are BESS operational security service, supply chain service, online battery health monitoring and data sharing service, and energy transaction service. Among those applications, BaaS is more transparent and efficient than traditional supply chains. The blockchain architecture can ensure that the data won't be modified during the process. The online battery health monitoring and data sharing service monitor the cell state of health (SOH), cell state of charge (SOC), and state of power (SOP) of the lithium-ion battery. The local database will generate the battery health state report and send the digest to the blockchain network. And the energy transaction service allows consumers to produce energy by using solar panels or wind turbines, and then they can trade the energy back to the network without a third-party to involve.

A paper published by Jialin Shi [24] gives insights about BaaS and its applications in China. Even with high volatility of the prices of cryptocurrencies, the blockchain technology has been attracting a lot of people. One such innovation is BaaS [Blockchain as a Service].

BaaS can provide a high-performance blockchain environment and convenient support for developers by integrating the blockchain into cloud computing systems and utilizing the original cloud service infrastructure. This enables other businesses to benefit from the unique features brought by blockchain without having to pay close attention to the petty technical details. China being one of the prominent markets because of its advanced policies for this innovation.

China has been implementing blockchain technology in various fields. For instance, in the internet-of-things (IoT) and the industries of banking, entertainment, supply chain, law, energy, welfare. Due to decentralized organization, it has scope for a wider future expedition in these above fields. Although applying blockchain to the energy sector can have numerous advantages, issues with security, smart meters, and legislation still need to be carefully considered. The use of blockchain still faces several difficulties. The infrastructure of blockchain is still in need of improvement, the promise of blockchain has not yet been completely realized, and the size of the application is still rather modest. Despite the high

number of blockchain-related Chinese patents, their quality is still subpar. With BaaS, businesses can simply take advantage of the advantages that blockchain technology has to offer by setting up and using their own blockchain systems based on cloud computing. The service provider manages platform maintenance. There are four components of BaaS, The widespread use of blockchain as a service is hampered by several issues. [23] First off, despite recent considerable increases in the number of blockchain-related rules in China and other nations, there are still a lot of unfilled regulatory gaps. Even though the service is offered by a centralized entity, it is still difficult for the government to monitor blockchain because of its nature. Second, because blockchain application realizations are still in their early stages, there isn't a lot of demand for BaaS now. To choose the right Baas we should consider the following points: rapid provisioning, backend services, data security, process control.

BaaS 58 is an innovation developed in China. The BaaS offered by 58 places more of an emphasis on the everyday environment, which is more relevant to typical users. This is the only platform in China at the moment that specializes in this field. Based on its distinctive characteristics, blockchain has demonstrated that it may help civilizations develop.

According to academic study, blockchain can be used in China in a variety of industries, including supply chain, banking, IoT, energy, governance, and healthcare. As more businesses come to realize the potential of blockchain, they create their BaaS systems to assist others that want to innovate through the use of blockchain but are unable to set up their own blockchain system. The advantage of BaaS is that it makes it simple and affordable for customers to embrace blockchain technology.

Gagangeet, Maninderpal, Arnab et al. wrote a paper[3] about the development of smart cities has generated a vast amount of data that needs to be efficiently gathered, processed, and analyzed in order to provide services continuously and without interruption. In a smart city setting, data-intensive apps have become a source of massive data generation.

SDN offers cost-effectively expanded capacity and coverage as well as global network visibility. An attacker simply needs to gain access to the controller or become one themselves to take over the entire network. The communication channel across SDN planes opens up a new field of security concerns. To avoid traffic route manipulation by attackers using malware, the integrity and authenticity of traffic entries must be maintained. There have been two separate occurrences of malware insertion at the data and control planes mentioned. [3]

To prevent such attacks, blockchain-based mitigation techniques have been designed in this article like BlockSDN: Blockchain as a Service for SDN Attack Management: Each block

goes through a process known as mining, which is carried out by blockchain nodes known as miner nodes. In order to conduct mining in proof of share, the miner needs to establish its stakeholding. Blockchain as a service for Mitigation of Malware Compromised Switch Attack at the Data Plane: The most frequent assault at the data plane involves the introduction of malware through a vulnerable switch. To solve this, permissioned blockchain is utilized to secure the flow tables and packets. Only the controller may do activities such as adding new blocks to a blockchain. Blockchain as a Service for Mitigation of DDoS Attack at the Control Plane: In this method, the flow rules stored in the blockchain will be accessible to each switch. A dummy controller is also used to deceive the attacker into believing that the transaction has reached the true controller. The BlockSDN framework is able to prevent different types of attacks on SDN planes, but there are still a lot of unresolved problems and difficulties that must be successfully overcome in the near future to make this framework more durable and dependable.

Arnab Bose, Neeraj et al. wrote a paper [cited 8890267](#) on Software Defined Networks like Denial of Service. One of the most well-liked technologies, software defined networking (SDN), delivers a flexible, adaptable network. Using a variety of simple ways, an attacker can easily capture any forwarding device and limit the controller's availability.

SDN frameworks connect the controller and switches using the OpenFlow (OF) protocol to provide global visibility. The BlockSDSec model was developed to provide security as a separate service for the SDN architecture as a result, and a framework for blockchain as a service has been introduced.

The SDN architecture must deal with a number of flaws and shortcomings that might result in numerous attacks at various layers. When the attack emanates from multiple sources, it is referred to as a DDoS attack. In this case, the attacker floods the network's channels in order to obstruct traffic and create room for itself to hook onto the OF tables of various network devices. Blockchain enables decentralized control, allowing network members to collaborate on OF table entries by updating the entries collectively rather than individually. It keeps records of all transactions and permanently retains the data from earlier created blocks so that it is possible to validate the integrity and validity of newer transactions by comparing them to the old records.

In the suggested method, a virtual controller is employed to manage SDN controller responsibilities in order to shorten the time between data transmissions. Every tier of the SDN architecture generates transactions, which are then joined to the chain using cryptographic hashes as part of the block data. Using SDN architecture, blockchain offers a safe solution to defend the switches from an attacker. The virtual controller checks the

switches as they are sending packets to ensure they are authentic without requesting updates to flow entries. Each blockchain block is updated and added to the main blockchain.

VIII. CONCLUSION AND FUTURE WORKS

Addressing millennial and Gen Z consumers using BaaS is the first step. Since the BaaS client assumes the duty of developing a brand and engaging customers, baaS is advantageous for all parties. The system must specify for all parties involved, including the technology employed in the end-to-end processes, what occurs at each stage in order for it to succeed in the BaaS market. Clients using BaaS have a right to expect their peers to describe every step of the process in detail so they can engage in each step.

Fintech firms are one among BaaS clients; the others are major organizations with strong consumer ties. For example, Apple's BaaS partnership with Goldman Sachs allows it to provide credit cards to its consumers. Big shops such as Walmart and Costco are likely to follow the suit.

IX. REFERENCES

- Hari Pranav A et al. "BlockchainAs a Service (BaaS) Framework for Government Funded Projects e-Tendering Process Administration and Quality Assurance using Smart Contracts". In: 2021 International Conference on Computer Communication and Informatics (ICCCI). 2021, pp. 1–4. DOI: 10.1109/ICCCI50826.2021.9402348.
- Naif Alzahrani and Nirupama Bulusu. "Block-supply chain: A new anti-counterfeiting supply chain using NFC and blockchain". In: Proceedings of the 1st Workshop on Cryptocurrencies and Blockchains for Distributed Systems. 2018, pp. 30–35.
- Gagangeet Singh Aujla et al. "BlockSDN: Blockchain-as-a-Service for Software Defined Networking in Smart City Applications". In: IEEE Network 34.2 (2020), pp. 83–91. DOI: 10.1109/MNET.001.1900151.
- Emanuele Bellini, Paolo Ceravolo, and Ernesto Damiani. "Blockchain-Based E-Vote-as-a-Service". In: 2019 IEEE 12th International Conference on Cloud Computing (CLOUD). 2019, pp. 484–486. DOI: 10.1109/CLOUD.2019.00085.
- Zhengong Cai et al. "RBaaS: A Robust Blockchain as a Service Paradigm in Cloud-Edge Collaborative Environment". In: IEEE Access 10 (2022), pp. 35437–35444.
- Fran Casino, Thomas K. Dasaklis, and Constantinos Patsakis. "Enhanced Vendor-managed Inventory through Blockchain". In: 2019 4th South-East Europe Design Automation, Computer Engineering, Computer Networks and Social Media Conference

(SEEDA-CECNSM). 2019, pp. 1–8. DOI:10.1109/SEEDA-CECNSM.2019.8908481.

- Shuchih Ernest Chang, Erik Chiaway Chang, and Yijou Chen. "Blockchain Meets Sharing Economy: A Case of Smart Contract Enabled Ridesharing Service". In: *Sustainability* 14.21 (2022), p. 13732.
- Yaoliang Chen et al. "A Full-Spectrum Blockchain-as-a-Service for Business Collaboration". In: *2019 IEEE International Conference on Web Services (ICWS)*. 2019, pp. 219–223. DOI: 10.1109/ICWS.2019.00045.
- Sam Daley. 18 Blockchain-as-a-Service Providers Innovating Business. URL: <https://builtin.com/blockchain/blockchain-as-a-service-companies>. (accessed: 10.20.2022).
- I. R. Fedorov et al. "Blockchain in 5G Networks: Performance Evaluation of Private Blockchain". In: *2021 Wave Electronics and its Application in Information and Telecommunication Systems (WECONF)*. 2021, pp. 1–4. DOI: 10.1109/WECONF51603.2021.9470519.
- Niels Hackius and Moritz Petersen. "Blockchain in logistics and supply chain: trick or treat?" In: *Digitalization in Supply Chain Management and Logistics: Smart and Digital Solutions for an Industry 4.0 Environment. Proceedings of the Hamburg International Conference of Logistics (HICL)*, Vol. 23. Berlin: epubli GmbH. 2017, pp. 3–18.
- Benjamin T Hazen et al. "Data quality for data science, predictive analytics, and big data in supply chain management: An introduction to the problem and suggestions for research and applications".
In: *International Journal of Production Economics* 154 (2014), pp. 72–80.
- Athina-Styliani Kleinaki et al. "A Blockchain-Based Notarization Service for Biomedical Knowledge Retrieval". In: *Computational and Structural Biotechnology Journal* 16 (2018), pp. 288–297. ISSN: 2001-0370. DOI: <https://doi.org/10.1016/j.csbj.2018.08.002>.
URL: <https://www.sciencedirect.com/science/article/pii/S2001037018300400>.
- Markus Klems et al. "Trustless Intermediation in Blockchain-Based Decentralized Service Marketplaces". In: *Service-Oriented Computing*. Ed. by Michael Maximilien et al. Cham: Springer International Publishing, 2017, pp. 731–739. ISBN: 978-3-319-69035-3.
- Tony Kontzer. 8 blockchain-as-a-service providers to have on your radar. URL: <https://www.techtarget.com/searchcio/feature/8-blockchain-as-a-service-providers-to-have-on-your-radar>. (accessed: 10.24.2022).
- Chaehyeon Lee et al. "Design of Blockchain-based Travel Rule Compliance System". In: *2022 IEEE International Conference on Blockchain and Cryptocurrency (ICBC)*. 2022, pp. 1–3. DOI: 10.1109/ICBC54727.2022.9805552.
- Sidra Malik et al. "TrustChain: Trust Management in Blockchain and IoT Supported Supply

- Chains". In: 2019 IEEE International Conference on Blockchain (Blockchain). 2019, pp. 184–193. DOI:10.1109/Blockchain.2019.00032.
- Abdullah Al Mamun, Feng Yan, and Dongfang Zhao. "BAASH: Lightweight, Efficient, and Reliable Blockchain-as-a-Service for HPC Systems". In: Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis. SC '21. St. Louis, Missouri: Association for Computing Machinery, 2021. ISBN: 9781450384421. DOI: 10.1145/3458817.3476155. URL: <https://doi.org/10.1145/3458817.3476155>.
 - Rajit Nair et al. "Blockchain-Based Decentralized Cloud Solutions for Data Transfer". In: Computational Intelligence and Neuroscience 2022 (2022).
 - Justin J. Ochoa et al. "Blockchain-as-a-Service (BaaS) for Battery Energy Storage Systems". In: 2020 IEEE Texas Power and Energy Conference (TPEC). 2020, pp. 1–6. DOI: 10.1109/TPEC48276.2020.9042496.
 - TrustRadius. Blockchain-as-a-Service (BaaS) Solutions. URL: <https://www.trustradius.com/blockchain-as-a-service-baas>. (accessed: 10.14.2022).
 - Mayra Samaniego, Uurtsaikh Jamsrandorj, and Ralph Deters. "Blockchain as a Service for IoT". In: 2016 IEEE International Conference on Internet of Things (iThings) and IEEE Green Computing and Communications (GreenCom) and IEEE Cyber, Physical and Social Computing (CPSCoM) and IEEE Smart Data (SmartData). 2016, pp. 433–436. DOI: 10.1109/iThings-GreenCom-CPSCoM-SmartData.2016.102.
 - Pengxu Shen et al. "A Survey on Safety Regulation Technology of Blockchain Application and Blockchain Ecology". In: 2022 IEEE International Conference on Blockchain (Blockchain). 2022, pp. 494–499. DOI:10.1109/Blockchain55522.2022.00076.
 - Jialin Shi. "The Application of Blockchain-as-a-Service (BaaS) and its providers in China". In: Jan. 2019. DOI: 10.2991/feb-19.2019.28.
 - Jatinder Singh and Johan David Michels. "Blockchain as a Service (BaaS): Providers and Trust". In: 2018 IEEE European Symposium on Security and Privacy Workshops (EuroSPW). 2018, pp. 67–74. DOI:10.1109/EuroSPW.2018.00015.
 - Pamela Soares et al. "A Blockchain-based Customizable Document Registration Service for Third Parties". In: 2022 IEEE International Conference on Blockchain and Cryptocurrency (ICBC). 2022, pp. 1–2.

DOI: 10.1109/ICBC54727.2022.9805500.

- Wattana Viriyasitavat et al. "Blockchain-as-a-Service for Business Process Management: Survey and Challenges". In: IEEE Transactions on Services Computing PP (Jan. 2022), pp. 1–14. DOI:10.1109/TSC.2022.3199232.
- Nisita Weerasinghe et al. "A Novel Blockchain-as-a-Service (BaaS) Platform for Local 5G Operators". In: IEEE Open Journal of the Communications Society 2 (2021), pp. 575–601. DOI: 10.1109/OJCOMS.2021.3066284.
- Ruksudaporn Wutthikarn and Yan Guang Hui. "Prototype of Blockchain in Dental care service application based on Hyperledger Composer in Hyperledger Fabric framework". In: 2018 22nd International Computer Science and Engineering Conference (ICSEC). 2018, pp. 1–4. DOI: 10.1109/ICSEC.2018.8712639.
- Weilin Zheng et al. "NutBaaS: A Blockchain-as-a-Service Platform". In: IEEE Access 7 (2019), pp. 134422–134433. DOI:10.1109/ACCESS.2019.2941905.
pp. 67–74. DOI:10.1109/EuroSPW.2018.00015.
- Pamela Soares et al. "A Blockchain-based Customizable Document Registration Service for Third Parties". In: 2022 IEEE International Conference on Blockchain and Cryptocurrency (ICBC). 2022, pp. 1–2. DOI: 10.1109/ICBC54727.2022.9805500.
- Wattana Viriyasitavat et al. "Blockchain-as-a-Service for Business Process Management: Survey and Challenges". In: IEEE Transactions on Services Computing PP (Jan. 2022), pp. 1–14. DOI:10.1109/TSC.2022.3199232.
- Nisita Weerasinghe et al. "A Novel Blockchain-as-a-Service (BaaS) Platform for Local 5G Operators". In: IEEE Open Journal of the Communications Society 2 (2021), pp. 575–601. DOI: 10.1109/OJCOMS.2021.3066284.
- Ruksudaporn Wutthikarn and Yan Guang Hui. "Prototype of Blockchain in Dental care service application based on Hyperledger Composer in Hyperledger Fabric framework". In: 2018 22nd International Computer Science and Engineering Conference (ICSEC). 2018, pp. 1–4. DOI: 10.1109/ICSEC.2018.8712639.
- Weilin Zheng et al. "NutBaaS: A Blockchain-as-a-Service Platform". In: IEEE Access 7 (2019), pp. 134422–134433. DOI:10.1109/ACCESS.2019.2941905.



SILK IN THE AGE OF AI: TRANSFORMING TRADITION WITH TECHNOLOGY

Punita Bharti *, Dr. Manju Kumari **

ABSTRACT

This study examines how integrating artificial intelligence, machine learning, and the Internet of Things transforms (IOT) India's sericulture into a data-driven, end-to-end ecosystem. Minute-by-minute sensor networks in rearing houses monitor temperature, humidity, and air quality, triggering real-time alerts that prevent disease outbreaks, reduce batch losses, and cut labour costs. AI and ML algorithms analyse historical harvest and environmental data to forecast pest surges, automate cocoon grading, and recommend optimized feeding and ventilation schedules. Complementary innovations—drone-guided spraying, disease-alert smartphone apps, climate-controlled barns, and digital traceability—enhance resource efficiency and supply-chain transparency. The result is a more sustainable, climate-resilient, and globally competitive silk sector that moves from experience-based guesswork to precision-driven practice.

Keywords: Artificial Intelligence (AI), Machine Learning (ML) Internet of Things (IoT), Silk Production Industry

I. INTRODUCTION

Silk has been an important part of India's culture for over two thousand years. From Mysore's saris to Varanasi's handlooms, silk is woven into stories of both royal courts and village festivals. This tradition has supported millions of rural families, passing down skills and providing livelihoods in states like Karnataka, Tamil Nadu, West Bengal, Jharkhand, and Assam. India is now one of the world's top silk producers, but much of the work still relies on traditional, labour-intensive methods. Farmers keep handwritten records of weather, leaves, and cocoons. Weavers use years of experience to spin and dye yarn. While this craftsmanship is valuable, it also makes the industry vulnerable to new risks and rising costs.

Unpredictable monsoons can flood mulberry fields one season and parch them the next. Sudden pest and disease outbreaks in rearing houses spread faster than farmers can react. Soil fertility wanes under continuous cropping, pushing growers toward costly fertilizers. Seasonal labour shortages further complicate delicate tasks like silkworm feeding and cocoon collection, while volatile market prices expose both farmers and weavers to crippling

*Research Scholar, Department of Home Science Ranchi University, Ranchi

**Associate Professor, Department of Home Science Ranchi University, Ranchi

income swings. These compounding pressures not only threaten silk yields but undermine the economic security of entire communities.

Emerging smart-sericulture solutions promise to change that equation. Tiny Internet of Things (IoT) sensors installed in mulberry groves and silkworm sheds stream real-time data on temperature, humidity, and air quality to cloud-based machine-learning platforms. AI models quickly flag early signs of disease stress,

recommend precise feeding and ventilation schedules, and even automate cocoon grading for consistent quality.[1] Drone-mounted sprayers apply nutrients or biopesticides only where needed, reducing waste and labour demands, while mobile apps relay instant alerts on worm health and market trends—empowering farmers and weavers to move from instinct-driven guesswork to data-backed decisions.[2]

Some Indian states are already using these new technologies in silk production. In Mysuru, Karnataka, smart rearing houses connected to AI dashboards have increased cocoon yields by more than 20 percent [3]. In Erode, Tamil Nadu, drones help spray mulberry fields, cutting chemical use by 30 percent [4]. Pilot projects in Murshidabad, West Bengal,[5] and Ranchi, Jharkhand, use IoT sensors and decision-support apps to improve silk quality and reduce silkworm deaths [6]. By combining tradition with new technology, these early efforts show how India's silk industry can become stronger, more sustainable, and ready to compete globally.

Objective of the study: -

To study how adopting new sericulture technologies improves farmer's-economic conditions.

II. DIGITAL INNOVATION IN SERICULTURE: A Smart Approach Sericulture today struggles with erratic weather, pest outbreaks and labour gaps. AI, IoT sensors, drones and mobile apps now deliver real-time monitoring and timely alerts. These digital tools optimize mulberry growth, silkworm rearing and cocoon grading to raise yields and cut losses. This paper uses secondary data to show how such innovations boost productivity and rural livelihoods.[7]

● **Digital Advisory services**

Sericulture farmers often work in remote areas without easy access to experts or extension services (Central Silk Board 2021) [8]. Mobile apps bridge that gap by sending best-practice tips, weather updates, and pest- and-disease advice straight to their phones (Garai 2025)[7]. For example, SeriApp and SilkNet provide real-time guidance on mulberry cultivation,

silkworm rearing schedules, and current market prices (CSB 2021; Garai 2025). These apps are built to be simple to use, support multiple languages, and work even for farmers with limited tech experience (Ghosh et al. 2020) [9].

- **Specialist Guidance & Support**

Apps like mSeri, SeriApp and e-Tasar turn smartphones into on-farm experts. Farmers snap a pic of sick larvae or get a live sensor alert, and within minutes the app suggests a clear, step-by-step fix—whether it's adjusting feed, treating disease or timing the harvest (Ghosh et al., 2020; CSB, 2021; Kumar, 2022). This on-demand advice replaces slow, in-person visits and helps growers make the right call exactly when they need it.

- **Market Linkages & Financial Support**

Digital platforms help sericulture farmers sell their silk directly to buyers, view live market prices, and receive payments via digital wallets¹. They also provide details on government schemes and subsidies, making it easier for farmers to tap into financial support [11].

III. SILK-FARMING APPS & CASE EXAMPLES

- **SeriApp (Central Silk Board)**



SeriApp, developed by the Central Silk Board, offers end-to-end support for silk farmers. Before cocoons form, it delivers practical tips on mulberry cultivation, silkworm feeding schedules and pest/disease control. Once cocoons mature, it guides farmers through grading standards, helps estimate yields from their own input data, and links them directly to buyers. By letting users enter farm-specific details to forecast potential silk output, SeriApp empowers smarter planning—all via a simple, multilingual mobile interface (Central Silk Board, 2021).

The Central Silk Board publishes full SeriApp usage stats in its SILKS MIS portal. For example, the June 2025 report

shows:

82 000+ registered farmers

~42 000 monthly active users

~130 000 advisory hits per month

- **Silk Net**



SilkNet is a mobile application that streamlines market linkages for sericulture farmers. It delivers real-time price feeds for cocoons and raw silk, offers detailed market-trend analyses to pinpoint the best times to sell, and enables

direct connections between farmers and buyers—eliminating middlemen. The app also incorporates digital payment options and maintains a transaction history for full transparency and efficiency (Reddy et al., 2020).[14]

- **mSeri**

mseri is a diagnostic mobile app that turns farmers' phones into on-farm labs. Users snap photos of diseased mulberry leaves or silkworms, which experts analyse and then return tailored treatment protocols and management steps within minutes. The app also offers tutorials and how-to videos on best practices, giving real-time support to prevent crop losses and boost productivity [7]

- **silksamruddhi**



Silksamruddhi is a CSB mobile app within the SILKS platform that gives farmers single-window access to all sericulture data and advisories. It offers GIS maps showing potential cultivation zones, local climate parameters, and soil details. Interactive modules guide mulberry planting, silkworm rearing, pest forecasting, facility locations and post-cocoon processing. A built-in dashboard tracks weather alerts, best-practice checklists and market links—helping growers plan smarter and act faster

(Central Silk Board, 2023).

IV. GOVERNMENT INITIATIVES:

The Government of India supports silk production through the Central Silk Board's comprehensive CSB schemes—which cover everything from mulberry cultivation and silkworm rearing to reeling, weaving, marketing, technology adoption, training, market access, and entrepreneurship—and the Silk Samagra programme (2021–26, ₹4 679.85 crore), which funds R&D, technology transfer, seed organisations, market development, and quality certification (₹1 075.58 crore disbursed to over 78 000 beneficiaries). Complementary initiatives include the Raw Material Supply Scheme (340lakh kg of subsidized yarn supplied in 2023–24), the National Handloom Development Programme (providing raw materials, design support, technology upgrades, and marketing infrastructure for handloom and silk weavers), and the SAMARTH scheme (₹495 crore through 2025–26 to train 300 000

Table1: Key Function of Digital Tool in Sericulture

individuals in apparel, handloom, handicraft, silk, and jute).

App Name	Functionally	Key Features
Function	Description	Examples
Seri App	Comprehensive sericulture	Mulberry cultivation.
Information Dissemination	provides access to best information and decision practices and real time support. updates.	SeriApp, SilkNet, silkworm rearing, Yield calculations
Silk Net	Market access and Real	Direct selling, digital
Expert Guidance	Offers personalized advice time price Updates on pest and disease	mSeri payments, market trends
mSeri	Diagnostic tool and expert Guidance	Disease identification, treatment recommendations
Market Access	Connects farmers to buyers	Digital silk market platform
SilkSamuruddhi	Access to government and provides market schemes and farm information management tools	Subsidies, loans training programs, activity remainders.
Financial Services	Provides access to financial support and digital payments	Apps linked to Government

Table2: Popular Mobile Apps in Sericulture

V. CASE STUDIES / PILOT PROJECTCASE STUDY 1: DIGITAL SERICULTURE PILOTSBY CSB [SERIAPP]PROJECT UNDER THE SILK SAMAGRA

In Andhra Pradesh and Tamil Nadu, the Central Silk Board ran pilot projects that added simple digital tools to traditional sericulture. IoT sensors in silkworm houses tracked temperature and humidity around the clock, while a mobile app and traceability tags let farmers check cocoon health and quality in real time. Farmers who used these tools saw

cocoon yields rise by 20–30% and experienced far fewer disease outbreaks (Central Silk Board, 2022). This pilot demonstrates how combining age-old know-how with easy-to-use digital tech can significantly boost silk production and cut risks.[6]

- **Research Methodology:**

Research Design: -Quasi-experimental field pilot

Sample size: -75 Farmers Sericulture farmers 45 **rearing houses** in Andhra Pradesh and Tamil Nadu

Sample selection: - Purposive and stratified sampling approach

Type: Applied research

Data Collection: Observational data on yield, disease, and farmer feedback

Primary data collection: **a)** Structured and **b)** semi-structured questionnaires

c) Farmer interviews and feedback forms

d) App usage logs and alert response tracking

Approach: Field-based pilot with observational data

Tools: IoT sensors, mobile app, traceability tags

Support: Training via Research Extension Centres (RECs)

- **Respondent Profile**

Primary respondents: Farmers using the tools

Secondary respondents: Field officers, CSB officials, tech developers

Demographics (if available): Age, experience, farm size, literacy level

- **Data analysis:**

A) Quantitative (Comparison of pre- and post-intervention cocoon yields.

a) Percentage reduction in disease-related losses.

b) Descriptive statistics (mean, percentage change)

B) Qualitative Analysis:

a) Farmer feedback on usability and trust in advisories.

b) Observations on behavioural changes in disease management.

This pilot demonstrates how **applied research and digital innovation** can enhance traditional farming practices, improve livelihoods, and build resilience in rural communities.

Result and Discussion: - Cocoon yield increased by **30%** Disease mortality dropped from **18% to 6%**

Cocoon Yield (kg) per Tray: Before: 2.3 

After: 3.0



Mortality Rate (%):

Before: 18 

After: 6 

Key:  = 1 unit (0.1 kg for yield; 1% for mortality)

Case Study 2: Silkworm Disease Alerts in Karnataka

In Karnataka's disease-alert pilot, growers relied on a custom “**Silkworm Disease Alert App**” developed by the state Department of Sericulture in partnership with regional agricultural institutes; it fused field reports and weather feeds to push early bacterial and viral outbreak warnings (Dept. of Sericulture, Gov't of Karnataka, 2023) [15].

● Research methodology:

Research Design: Quasi-experimental

Sample size: - 120 farmers, 300 rearing houses.

Sample selection: - Cluster-based and stratified sampling across 4 districts.

Type: Applied research

Data Collection:

Primary data collection: Observational data on yield, disease, and farmer feedback

Primary data collection: a) Structured Questionnaire

Focused on **performance metrics:**

- a) Cocoon loss percentages before and after app usage
- b) Cocoon yield per house
- c) Number of alerts received and acted upon

- **Semi-Structured Questionnaire**

Captured **user experience and behavioural change**:

- a) How farmers responded to disease alerts
- b) Trust in app advisories vs. traditional methods
- c) Feedback on app interface and language accessibility.

Respondent profile: -Male and Female, Age: 30–55 years

- **Experience Level**

Sericulture Experience: Majority had **5+ years** of experience in silkworm rearing

Training Background: Many had prior exposure to government-led training programs or local extension services.

- **Technology Access**

Smartphone Ownership: All respondents had access to smartphones (a prerequisite for app usage).

Digital Literacy: Basic to moderate; farmers were trained to use the app during onboarding.

Farm Size: Small to medium-scale operations, typically family-run.

Participation Criteria

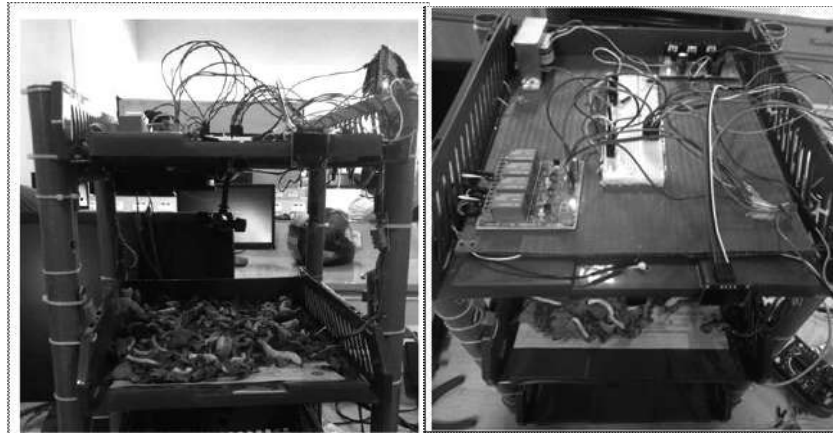
- a) Willingness to adopt digital tools
- b) Located in pilot-targeted clusters
- c) Active engagement with local sericulture departments.

IOT Base Automated System

- **Data analysis:**

Data Analysis Components:Data Used: Temperature, humidity, rainfall, and light intensity.

Purpose: To identify thresholds or patterns that correlate with outbreaks of diseases like pebrine, flacherie, grasserie, and muscardine.



Final Prototype -Front View[1]

The proposed system combines simple hardware and software to keep silkworm houses at the right temperature, humidity, and light levels. First, each sensor is tested and its raw output is cleaned up (signal conditioning). The sensors then send their readings over the Internet of Things (IoT) to a NodeMCU microcontroller. The controller checks these values against preset thresholds and, based on the results, turns on or off devices like heaters, fans, or lights to restore ideal conditions for silkworm growth.

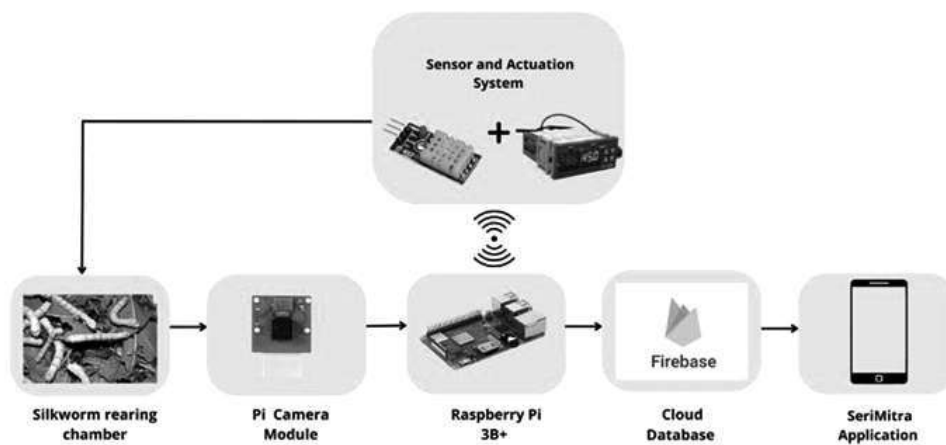


Fig2:-Overall Methodology Adopted process Flow Chart[16]

VI. CONCLUSION AND FUTURE SCOPE

Smart sericulture systems built on AI and IoT enable precision resource management—real-time monitoring and adaptive controls boost silk yield and quality while slashing losses from pests, diseases, and weather shocks.

By shifting from experience-based guesswork to data-driven operations, these technologies pave the way for a sustainable, climate-resilient and globally competitive Indian silk industry

VII. REFERENCE: -

- Srinivs B, Khushi Kumari, Govardhan Reddy H, Niranjan N, Hariprasad S A, Sunil M P (July 2019) IoT Based Automated Sericulture System. IJRTE, Volume-8 Issue-2, ISSN: 2277-3878. <https://www.researchgate.net/publication/335135733>
- Harishkumar J, Ravi Kumara R, N R Kiran (April 2024) Drone Technology in Tasar Sericulture: A Future Prospect, multidisciplinary e-Newsletter.Vol.4, Issue-8, ISSN:2582-8223 pp:83-88 www.justagriculture.in
- Hariprasad S. A. & Sunil M. P. (2020) "Development of an AI-Integrated Smart Sericulture System for Climate-resilient Silk Production in India." American Journal of Engineering and Environment, 16(2), 45–53. <https://journalajee.com/index.php/AJEE/article/>
- Government of Tamil Nadu, Sericulture Department (2022) Annual Report on Smart Sericulture Initiatives https://www.sericulture.tn.gov.in/annual_reports.
- Mallikarjuna N. & Reddy H. G. (2018). "Automated Smart Sericulture Using IoT and Image Processing." *IEEE Access*, 6, 78456–78463 <https://ieeexplore.ieee.org/document/8486374>
- Dhanapriya M(07/06/2025) "Development of an AI-Integrated Smart Sericulture System for Climate-resilient Silk Production in India"Asian Journal of Environment & EcologyVolume 24, Issue 6, Page 141-158, 2025; Article no. AJEE.137635ISSN: 2456-690X <https://doi.org/10.9734/ajee/2025/v24i6732>
- Koushik Garai (15. 03.2025) "Digital Tools and Mobile Apps for Sericulture: Bridging the Knowledge Gap for Farmers" Curr. Agri. Tren:e- Newsletter, (2025) 4(3), ISSN (E): 2583 – 1933 PP:17-20 <http://currentagriculturetrends.vitalbiotech.org/>
- Central Silk Board (CSB). 2021. Annual Report on Sericulture and Digital Innovation. Ministry of Textiles, Government of India.
- Ghosh, S., et al. 2020. "mSeri: A Mobile App for Diagnostic Support in Sericulture." *Journal of Agricultural Technology*, 56(2):98–112.
- Kumar G. (2022). "Emerging Technologies and Its Adoption: A Booster for the Tasar Silk Industry of Jharkhand." *International Journal for Research in Applied Science & Engineering Technology*, 10(3), 1920–1930.

- NABARD. 2021. Annual Report on Digital and Financial Services in Agriculture. National Bank for Agriculture and Rural Development. <https://silks.csb.gov.in/>
- Ghosh, S., Roy, P., Sen, A., et al. 2020. "mSeri: A Mobile App for Diagnostic Support in Sericulture." *Journal of Agricultural Technology*, 56(2), pp. 98–112.
- Reddy, P., Sharma, A., & Singh, R. (2020). SilkNet: A Mobile Application for Direct Market Linkage in Sericulture. *Journal of Agricultural Informatics*, 11(4), 78–85.
- Department of Sericulture, Government of Karnataka. (2023). Pilot Report on Mobile Disease Alert System.
- CG Raghavendra, Dharini Raghavan, Ajey K, Supreet B, Bhavani V.S (06/04/2023) "An AI Driven End-to-End Sericulture Management System" https://Kscst.org.in/spp/46_series/46



A STUDY ON THEORETICAL ASPECTS OF THE FACELESS ASSESSMENT SCHEME OF TAXATION

CA Sumitkumarsinh Siddhanath Rajput *, Prof (Dr) Yagnesh M Dalvadi**

ABSTRACT

Technology has become an integral part of every sector, including taxation. Over the years, the Income Tax Department has increasingly adopted technology, particularly Artificial Intelligence (AI), to enhance efficiency. This paper aims to explore the theoretical scope of the Faceless Assessment Scheme in Income Tax its impact on taxpayers and tax officers. The research is based on secondary data sources. The study highlights that the Faceless Assessment Scheme reduces human intervention, minimizes harassment of taxpayers, and enhances transparency and efficiency in tax administration. It allows taxpayers to respond to tax notices remotely, eliminating the need for physical visits to tax offices. However, the study also identifies certain challenges. The Faceless Assessment Scheme represents a transformative shift in tax administration, making it more taxpayer-friendly and efficient. The paper suggests measures to address the challenges associated with the scheme, ensuring its wider acceptance and effectiveness.

Key Words – Faceless Assessment, Taxpayers, Taxation, Assessment Proceeding

I. INTRODUCTION

On 19 October 2015, the Central Board of Direct Taxes (CBDT) started a pilot project for non-corporate taxpayers only in certain metro areas (Central Board of Direct Taxes Order 225/267, 2015). This pilot project was for faceless assessment proceedings. CBDT started this pilot project as an experiment. This project was started voluntarily with the permission of taxpayers. The project was rolled out in many other cities later on (Central Board of Direct Taxes Order, 2016). To support this, CBDT also formed a high-level team to implement faceless income tax proceedings systematically. Our Finance Minister, Smt. Nirmala Sitaramanji proposed the Faceless Assessment Scheme during the budget speech of 2019 (Central Board of Direct Taxes Notification No. 61, 2019). On 13 August 2020, the Government took an important step in this direction after naming the Faceless Assessment Scheme as the Transparent Taxation - Honoring the Honest. For its legal viability Government passed the Taxation and Other Laws (Relaxation and Amendment of Certain

*Research Scholar - Post Graduate Department of Business Studies, Sardar Patel University,
Vallabh Vidyanagar, Anand-388120. (Gujrat) Email id- cassrajput@gmail.com

**Head, Dean, & Professor - Post Graduate Department of Business Studies, Sardar Patel University,
Vallabh Vidyanagar Anand - 388120. (Gujrat) Email id - yagneshroyal@yahoo.co.in

Provisions) Act, 2020 (Central Board of Direct Taxes - 187/3/2000-ITA-I, 2020). For the incorporation of the Faceless Assessment Scheme in the Income Tax Act, 1961, the Government introduced a new section, i.e. section 144B (Ministry of Finance, 2020).

1.1 Concept of Faceless Assessment Scheme

The Income Tax has been reformed at regular intervals by the Government of India over the last several years, and the Government of India has been making continuous efforts to maximize the use of technology in many compliances and procedures such as the Government of India has taken a major step by introducing online Income Tax Return Filing. Similarly, the Government of India has now taken an important step towards making the assessment proceedings completely online (Times of India Business Desk, 2024). In this new Assessment Scheme of taxation, taxpayers can give a response to his/her notice without the need to visit the Income Tax office physically. In earlier schemes of taxation, taxpayers were required to visit the Income Tax Office to submit answers to their notice. Now, taxpayers are not required to go to a Chartered Accountant to represent themselves before the Income Tax Officer (Shri Rakesh Mishra IRS, 2021). The goal of this scheme is to make maximum utilization of time and resources. It eliminates the possibility of bribery to some extent (Students Economic Forum by South Indian Bank, 2020). In the earlier Assessment Scheme, the case was handled by the Income Tax Officer of the same jurisdiction. Suppose, a taxpayer is living in Delhi and gets a notice from the Income Tax Department, then the Income Tax Officer of Delhi would handle the case. However, the Faceless Assessment Scheme is based on dynamic jurisdiction. It means in the new Assessment Scheme, the case of a taxpayer from Delhi may be handled by the Income Tax Officer of Chennai or Bangalore. It eliminates the possibility of bribery to a larger extent (Tanmay Dhakras, 2025).

1.2 Meaning of Faceless Assessment Scheme

The Faceless Assessment Scheme is a scheme in which taxpayers are not required to visit the Income Tax office physically. Taxpayers don't need to come face-to-face with Income tax officials (Agrawal & Bhalla, 2020). This scheme came into force in India with effect from 1st April 2021 (Shri Mishra IRS, 2021). The two main objectives of this scheme are: 1) No physical interference between taxpayers and tax officers, and 2) Reduction of bad incidents in the income tax office, like bribery, dishonesty, etc (Tyagi & Monga, 2022).

III. LITERATURE REVIEW

The Faceless Assessment Scheme is a significant reform in the Indian taxation system, aimed at enhancing transparency, reducing human intervention, and improving efficiency in tax administration (Deloitte, 2020). With the increasing adoption of technology, especially

Artificial Intelligence, the scheme seeks to streamline tax assessments by enabling remote interactions between taxpayers and tax authorities (PWC, 2020). This initiative is expected to minimize bureaucratic delays, curb malpractices, and make the tax filing and assessment process more convenient for taxpayers (Report of Committee constituted by CBDT, 2016). Researchers concentrated on the main objective and reviewed many studies on this topic. Among the few most relevant literature reviewed, those literatures are discussed in the following.

Thakan and Ratnaparkhi (2022) have shed some light on the concept of the Faceless Assessment Scheme as a transformative change. Their primary objective was to study the faceless Assessment framework and its effects on taxpayers. Their study was based on secondary data. They collected the data from various sources like academic papers, various circulars, press releases, and notifications issued by the CBDT, periodicals, magazines, newspaper articles, etc. In this paper, they also demonstrated the evolution of the faceless assessment scheme from the beginning to the date of publication of their article. They have specifically highlighted the issue of adequate IT (Information Technology) infrastructure with the taxpayers from rural parts of our country. They have also expressed their concern regarding the security of data that the income tax department receives from taxpayers of different parts of the country. They have also come up with some solutions to the challenges that the government should follow. According to them, the Income Tax Department should come forward with the concept of e-centers near income tax offices which can help taxpayers who do not have the facility of adequate IT infrastructure in submitting responses to notices they have received from the Income Tax Department.

Tyagi and Monga (2022) have covered the importance, challenges, and solutions in the implementation of the Faceless Assessment Scheme. This paper covers the history of the faceless assessment scheme and information about various authorities under the faceless assessment scheme. This paper provides data regarding the number of different units under the faceless assessment scheme. For example, 1) there are 30 RFAC (Regional faceless Assessment Centers). 2) There are 95 Assessment units for conducting the scrutiny work. 3) 35 verification units are entrusted with the work of verifying various documents and verification of balances from third parties. 4) There are 4 Technical units which are ready to provide the technical help necessary for conducting the assessment work for various units working under the faceless assessment scheme. This paper also covers the importance of the faceless assessment scheme. They are in favor of the scheme as the scheme fixes the responsibility on the Tax Officials' side. At last, they concluded that the faceless assessment scheme is undoubtedly a great scheme for the benefit of taxpayers, but the actual potential of

the faceless assessment scheme would be visible when taxpayers gain more awareness about it.

Chuhan (2022) has examined the scheme from the perspective of the Principles of Natural Justice. This paper discusses various information technology-driven programs introduced by the Income Tax Department. The process of online income tax return filing began in 2006. By 2012-13, the number of e-filed returns had reached 2.15 crore, which increased to 6.68 crore by 2018-19. The significance of this digital transformation was evident on July 31, 2022, when 72.42 lakh returns were filed in a single day. The author not only emphasizes the importance of information technology in taxation but also discusses the role of natural justice in tax administration. Natural justice is based on two fundamental principles: 1. No one can be a judge in their case. 2. No decision should be made against a person without allowing them to be heard. The Constitution of India, under Articles 14 to 21, upholds the principles of natural justice. Any violation of these principles is considered a breach of Article 14, which guarantees the right to equality. This paper emphasizes that, on the one hand, technology is also important, but on the other hand, the protection of taxpayers' rights is also important. The author has given more weight to the principles of natural justice than to the technology-driven, faceless assessment scheme. According to him, the most important thing is justice and freedom to avail that justice in any way. The author is in favor of personal hearing opportunities for taxpayers so that they can defend themselves properly.

Malpani and Hake (2022) have evaluated the scheme from the perspective of the articles of the Constitution of India. In this research paper, the authors first explain the history of the Faceless Assessment Scheme, detailing how it was introduced and how it evolved. While the scheme highlights the importance of technology in tax administration, the paper also emphasizes that embracing technology should not come at the cost of ignoring the principles of natural justice. The research argues that procedural consistency is crucial in any scheme to ensure fairness and justice in tax assessments. They emphasize that restructuring of the Faceless Assessment Scheme is required because there is no provision for personal hearing in it, which is a violation of Article 21 of the Constitution of India as well as sub-section 2 of section 250 of the Income Tax Act, 1961. Article 21 of the Constitution of India talks about the right to life and personal liberty while sub-section 2 of section 250 of the Income Tax Act, 1961 gives the appellant an opportunity of being heard in person. In this research paper, the authors have provided several valuable suggestions to improve the Faceless Assessment

Scheme: Penalty for Incorrect Assessments, Personal Hearing in Appeal Process, Abolishing the Advance Tax Mechanism.

Mashabela and Kekwaletswe (2020) have explored the acceptance of online filing of Income Tax returns in South Africa. They have used Structural Equation Modelling (SEM) for data analysis. They have studied the factors affecting the taxpayers' adoption of online filing of income tax returns. In this research paper, the authors discuss how taxpayers adopted the e-filing version of income tax returns over time. The United States of America was the first country to introduce online income tax return filing. Seeing the benefits of e-filing, many other countries gradually adopted this system. They have described some of the benefits of the online return filing and some of the concerns associated with it, which are as follows: Benefits of Online Income Tax Return Filing: Saves Time & Effort, Reduces Errors and Efficient Processing. Concerns Related to Online Filing: Data Security Risks, Technical Challenges and System Errors & Glitches. The research paper highlights that while e-filing brings convenience, the government must also focus on stronger cybersecurity measures to ensure data protection.

2.1 Research Gap

Despite being a relatively new concept introduced in 2021, this scheme has garnered significant attention from researchers and policymakers alike. However, the majority of studies conducted thus far have primarily focused on evaluating its validity within the constraints of existing economic, legal, and operational frameworks. While these analyses provide essential insights, they often fall short of exploring the scheme's broader implications, practical implementation challenges, and long-term sustainability.

This research paper aims to bridge this gap by offering a holistic examination of the scheme. It delves into the rationale behind its introduction, the objectives it seeks to achieve, and its overall significance in the current landscape. Additionally, this study critically evaluates the key challenges associated with its execution - ranging from policy limitations and financial feasibility to public acceptance and administrative hurdles.

Furthermore, while existing research has primarily centered on theoretical assessments, there is a lack of comprehensive analysis regarding the scheme's real-world applicability, effectiveness, and potential improvements. This study seeks to fill this void by identifying practical measures to enhance its implementation, mitigate associated risks, and optimize its impact. By addressing these aspects, this research not only contributes to the academic discourse but also provides valuable insights for policymakers, stakeholders, and future studies in the field.

IV. Research Methodology

Objectives of the Study

The objectives of this study are to examine the theoretical aspects of the Faceless Assessment Scheme, analyze its impact on taxpayers, and explore the functioning of the scheme in detail.

Research Design

Descriptive Research Design. A descriptive research design has been used to understand the theoretical aspects of the Faceless Assessment Scheme and to interpret the findings of the literature review.

Sampling Method

Purposive Sampling Method. In this paper, the purposive sampling method has been used to analyze relevant literature, circulars, notifications, and orders related to the Faceless Assessment Scheme, which provide important information about the scheme.

Types of Data used

Secondary data. A large number of reports, literature reviews, articles written on the Faceless Assessment Scheme, books, orders issued by the Government of India, CBDT circulars, the Finance Bill, the Income Tax Act 1961, and press releases have been used as sources of secondary data in this research paper.

Data Analysis Method

Qualitative Data Analysis Method. In this research paper, comparative analysis, content analysis, and case studies have been used to study all aspects of this scheme.

V. Findings

After reviewing various literature, reports, circulars, Income Tax Department orders, faceless scheme-related notifications, and office memorandums, the researcher has compiled all the important findings. These key findings are listed below.

5.1 Reasons behind the Introduction of the Faceless Assessment Scheme

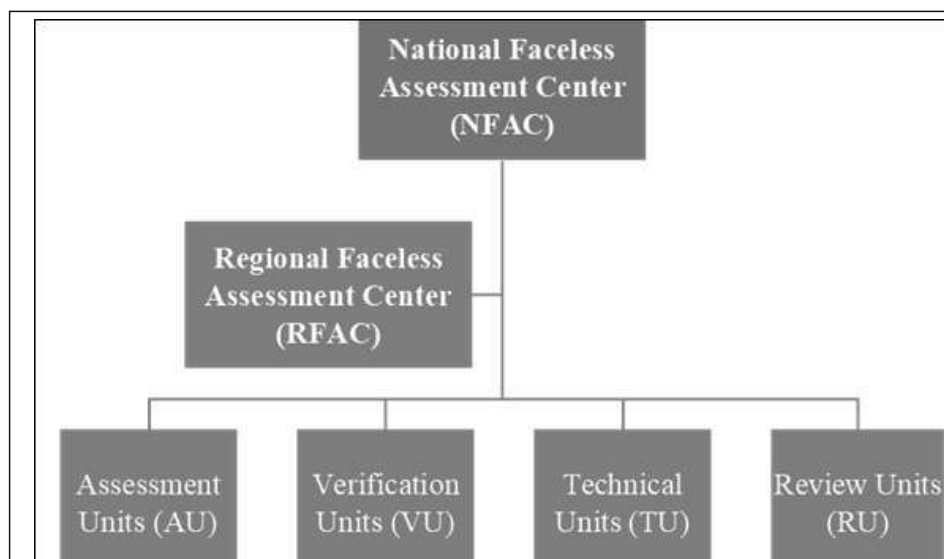
- i) To improve transparency: The scheme is introduced with the object of increasing transparency and honesty in assessment proceedings.

- ii) To minimize corruption: The scheme is introduced to minimize the opportunities for corruption and dishonesty.
- iii) To enhance efficiency: The Faceless Assessment Scheme is aimed at making the whole assessment process faster and smoother so that unnecessary delays can be avoided and assessment work gets completed as per the automation process.
- iv) To minimize compliance baggage: Another important reason for introducing this scheme is to standardize and simplify the entire assessment process to reduce the burden on small and micro enterprises (SMEs) and small taxpayers and provide them with a more user-friendly platform.
- v) To promote the confidence of taxpayers: The objective of this scheme is to make the assessment process so transparent that every taxpayer voluntarily complies with laws and builds confidence in their assessment proceedings. (Deloitte, 2020)
- vi) To maximize the usage of technology: This scheme is full of technology, including artificial intelligence and data analytics. This scheme is a completely online platform through which connections can be established between taxpayers and Income tax authorities, thereby it will increase the overall efficiency and effectiveness of Income tax administration.
- vii) To link with Digital India Initiatives: This scheme can also be seen as a part of the Government of India's campaign to promote digital governance because the entire faceless assessment scheme is digitalized (PWC, 2020).

5.2 Features of the Faceless Assessment Scheme

- i) No physical interference between taxpayers and tax officials
- ii) User-friendly platform
- iii) Standardized and uniform process of assessment proceeding
- iv) Speedy disposal of income tax cases
- v) More transparency and clarity in assessment proceedings
- vi) Easy to comply with for taxpayers (Tyagi & Monga, 2022).

5.3 Authorities Responsible for Conducting Faceless Assessment

*(Figure-1)**(Source – Taxman – The laws of India)*

5.4 Functioning of the Faceless Assessment Scheme

- In the Faceless Assessment Scheme of taxation, if any taxpayer's case is selected for notice, a notice shall be issued to him/her by NFAC (National Faceless Assessment Centre)
- Fifteen days will be given to taxpayers to submit their response to NFAC (National Faceless Assessment Centre)
- After getting the response from the taxpayer, NFAC (National Faceless Assessment Centre) will allot the case to any AU (Assessment Unit) through the Automated Allocation System (randomly)
- If any kind of technical assistance is required, the Assessment Unit can request it from NFAC (National Faceless Assessment Centre), which will then inform the Technical Unit through the Automated Allocation System. The Technical Unit will provide its report to the Assessment Unit through NFAC (National Faceless Assessment Centre).
- If there is a need for third-party balance confirmation or inquiry, the Assessment Unit will request NFAC, which will inform the Verification Unit through the Automated Allocation System. The Verification Unit will then submit its report to the Assessment Unit through NFAC (National Faceless Assessment Centre).

- When the Assessment Unit prepares the draft order, it will submit it to NFAC (National Faceless Assessment Centre). If NFAC is satisfied, it will instruct the Assessment Unit to prepare the final order. However, if NFAC finds that proper provisions were not followed in the income tax scrutiny, it will assign the case to the Review Unit through the Automated Allocation System.
- The Review Unit will make any necessary modifications or corrections and send them back to the Assessment Unit through NFAC, which will then prepare the final order and submit it to NFAC. And lastly, NFAC will send the final order to taxpayers. (Shri Mishra IRS, 2021).

This is how the entire system works. Currently, in India, there are 30 Regional Faceless Assessment centres are there and in each RFAC, there are 4 units: 1) Assessment Unit, 2) Verification Units, 3) Technical Units, and 4) Review Unit.

5.5 Advantages of the Faceless Assessment Scheme

i) Transparent, Effective and Efficient Scheme

If the faceless assessment scheme is compared with the old assessment system, it is much more transparent because there is no physical interference between income tax officers and taxpayers. Initially, this scheme was introduced voluntarily, yet the majority of people preferred it for the assessment proceedings, which indicates how effective and efficient this scheme is.

ii) Reduction in the Cost of Delivering Notice

In the old assessment proceeding, the Income Tax Department used to send physical notices to those taxpayers whose cases were selected for scrutiny. But in the faceless assessment scheme, taxpayers get notification about the selection of their case for scrutiny proceeding through SMS (Short message service) and E-mail (Electronic mail) on their respective registered mobile number and registered e-mail ID (Registered mobile number and e-mail ID is the mobile number or e-mail id which as per the records of the Income Tax Department) (Central Board of Direct Taxes Notification No. 89, 2015).

iii) Optimum Utilization of Time and Resources

The biggest advantage of the Faceless Assessment Scheme is that it saves time, energy, and resources. In the old assessment process, taxpayers had to physically carry all their documents and visit the income tax department. Often, if the income tax officer was unavailable, they had to return empty-handed. Sometimes, the

officer was busy with other hearings, requiring taxpayers to wait for hours just to submit their documents, resulting in significant time wastage.

On the other hand, when taxpayers submitted their documents, income tax officers had to physically verify them and then scan and upload them into the system, which was a time-consuming process. Limited file sizes for uploads often caused difficulties, and the more documents there were, the longer the scanning and uploading process took. In many tax offices, slow internet speeds further delayed the upload process.

However, with this new assessment scheme, taxpayers no longer need to physically visit the department with their documents. They can simply scan and upload them from home, and income tax officers can verify them online at their convenience. This results in significant savings of time, effort, and resources for both taxpayers and tax officers (AbuAkel & Ibrahim, 2023).

iv) *No Physical Interference between the Taxpayer and Tax Officers*

As we discussed earlier, under this scheme, there is no physical interaction between income tax officers and taxpayers. In the old system, this was a major issue as it allowed room for corruption and biased decisions. However, in this new scheme, such problems simply do not arise, making it one of its key advantages (Thakan & Ratnaparkhi, 2022).

v) *Standard Operating Procedure for Online Assessment*

The faceless assessment scheme is completely based on standard operating procedures. And income tax officers are bound to do that. In this scheme, no income tax officers can act on their own because the entire process is online, and every step or movement of the scheme is digitally recorded. So, it reduces the chances of taxpayers making complaints regarding the arbitrary behavior of the income tax officers (Deepti & Dr. Gohel, 2022).

vi) *Reduction of Bad Incidents like Bribery and Dishonesty Cases*

One of the primary objectives behind the introduction of this faceless assessment scheme is to curb corruption and bribery. Everyone knows that when government officers and common human beings meet, there are greater chances of bribery and corruption. But in this faceless assessment scheme, such opportunities are not available (Tyagi & Monga, 2022).

vii) Better Tax Compliance from the Side of the Taxpayer

In earlier tax assessment proceedings, taxpayers used to complain to the Government regarding the bad experiences they have felt in the Income Tax department, for example, sometimes they had to wait a long time for the submission of documents before income tax officers, sometimes they have to face the anger the income tax officers if they are not in a good mood. Sometimes, they have to return empty-handed due to the unavailability of income tax officers at the income tax office. Sometimes have been asked to pay bribes to close the scrutiny work. It is said that the easier the process, the more compliance we can expect from taxpayers. Studies show that taxpayers are more compliant if the process is streamlined (PWC, 2020).

5.6 Limitations of the Faceless Assessment Scheme

i) Infrastructural Issues

Small and medium taxpayers, specifically from rural areas, may not find themselves comfortable with such a type of technology because the entire work is done on the internet. Tax offices in small cities are also facing issues with IT infrastructure because many small cities of our country have old-generation desktop systems that are not compatible with such type of technological work. In our country, the internet has still not reached rural areas, which is a major concern. The success of this scheme is entirely dependent on the Internet. Some areas do have internet, but high-speed internet is not available there, resulting in significant time wastage (Thakan & Ratnaparkhi, 2022).

ii) Lack of Personal Touch

This scheme is based on a completely online mode. That's why it leads to impersonality (CA Bhuta, 2022).

iii) Chances of Misinterpretations

The entire communication between the taxpayer and the tax office is online, so there is no chances of misinterpretations. **(Gujarat Samachar Correspondent, 2024)**

iv) Language Barrier

Our country is a land of languages. Broadly speaking, each state has its distinct language, and in some states, the language changes every 2-4 districts. Only Hindi

and English are the primary official languages that can be used in assessment proceedings under the faceless assessment scheme, so those taxpayers who are not familiar with Hindi and English may find themselves in trouble. It is said that if you are not communicating in your language, it becomes very difficult to make others understand things properly. So, if you are not dealing in your mother tongue, it may generate issues of misinterpretation or miscommunication (Sahana, 2020).

v) *No Discretionary power*

It is said that you should make decisions based on the situation because if the situation changes, the decision might also change. However, this is not the case in the faceless assessment scheme. Assessing officers have to follow pre-determined rules and standard operating procedures, so they can't make decisions at their discretion according to the situation. Sometimes, if assessing officers want to make better decisions, they fail to do so because of the pre-determined rules and standard

VI. DISCUSSION

Comparing the Faceless Assessment Scheme with the traditional assessment procedure, the differences are quite significant. In the conventional system, taxpayers were required to visit the income tax department in person to submit their responses and interact directly with assessing officers. This physical interaction created opportunities for corruption and bribery, as personal dealings could influence the assessment outcomes (Agrawal & Bhalla, 2020). However, with the introduction of the Faceless Assessment Scheme, such unethical practices have been effectively minimized.

From the perspective of transparency and fairness, this scheme serves as a powerful tool in preventing unethical conduct. One of the primary objectives behind its implementation was to eliminate malpractices that were prevalent in the previous system (Tyagi & Monga, 2022).

Like any reform, the Faceless Assessment Scheme has both strengths and limitations. In certain aspects, it has performed exceptionally well. For instance, the absence of direct interaction ensures that bias and favoritism do not influence tax assessments. Additionally, with all communication taking place through digital platforms, the risk of bribery and corruption is significantly reduced.

However, when viewed from the perspective of taxpayer awareness and accessibility, its success remains to be seen. A considerable portion of taxpayers, particularly those less familiar with digital systems, may face challenges in adapting to this new approach. Ultimately, the effectiveness of the Faceless Assessment Scheme will depend on how well

taxpayers adapt to it and how effectively the government addresses awareness and implementation challenges. Only time will reveal its true impact on India's taxation system.

VII. CONCLUSION

From a theoretical perspective, the Faceless Assessment Scheme is a commendable initiative by the Government of India aimed at reducing corruption and streamlining assessment proceedings. Most researchers, as reflected in the literature review, acknowledge it as a significant milestone in combating corruption. It is a positive step aligned with the Digital India mission. However, when it comes to implementation, certain challenges need to be addressed. The Central Board of Direct Taxes (CBDT) must take proactive measures to increase awareness among taxpayers regarding this scheme. Only if these steps are taken by the Government can the scheme achieve its full potential and effectiveness.

VIII. LIMITATIONS AND SCOPE FOR FUTURE RESEARCH

In this study, only theoretical aspects of the faceless assessment scheme are considered. Other researchers can research the faceless assessment scheme from a practical angle. Secondly, this study is heavily based on secondary data only; in the future other researchers can also collect primary data regarding the advantages and limitations of the faceless assessment scheme from various stakeholders like Income tax officers, taxpayers, and chartered accountants.

IX. REFERENCES

- AbuAkel, S. A., & Ibrahim, M. (2023). The Effect of Relative Advantage, Top Management Support and IT Infrastructure on E-filing Adoption. *Journal of Risk and Financial Management*, 16(295).
- Agrawal, A., & Bhalla, S. (2020). Faceless assessments: A paradigm shift in interacting with Indian revenue authorities. *International Tax Review*.
- CA Bhuta, K. (2022). Issues in Faceless Assessment & appeals. All India Federation of Tax Practitioners.
- Central Board of Direct Taxes - 187/3/2000-ITA-I. (2020). Implementation of Faceless Assessment Scheme through Administrative Order. *Electronic Gazette of India*.
- Central Board of Direct Taxes Notification No. 61. (2019). Launch of E-assessment Scheme. *Electronic Gazette of India*.
- Central Board of Direct Taxes Notification No. 89. (2015). Initiation of Email based communication between Taxpayers and Income Tax Officers. *Electronic Gazette of India*.

- Central Board of Direct Taxes Order. (2016). Extension of Email Based Proceedings to two more Metro Cities. Electronic Gazette of India.
- Central Board of Direct Taxes Order 225/267. (2015). Launch of Email Based Assessment Proceeding. Electronic Gazette of India.
- Chuhan, M. (2022). The Faceless Regime in the Income Tax Department and its impact on Principles of Natural Justice. *International Journal of law, Management & Humanities*, 5(6), 618-631. doi:<https://doi.org/10.10000/IJLMH.113818>
- Circulars regarding Faceless Assessment Scheme. (n.d.). Retrieved 12 1, 2024, from Income Tax Department: www.incometaxindia.gov.in
- Deepti, & Dr. Gohel, M. (2022). Income Tax reforms –Transforming Tax administration through Faceless Assessment. *Specialusis Ugdyas*, 2(43).
- Deloitte. (2020). Expansion of Coverage of Faceless Proceedings under the Income Tax Law. Deloitte Publication.
- Gujarat Samachar Correspondent. (2024). Due to Technical Flaw in the Faceless Assessment Scheme's arrangement, the court cases got increased. (Gujarat Samachar, Ed.) *Gujarat Samachar*, 4. Retrieved 09 1, 2024
- Malpani, P., & Hake, D. M. (2022). Evaluating the Constitutional Validity of E-Assessment, Faceless Hearing and Appeal Scheme Under the Indian Income Tax Act, 1961 in the Light of Application of the Principles of Natural Justice. *Journal of Positive School Psychology*, 6(4).
- Mashabela, M. F., & Kekwaletswe, P. M. (2020). A Model for adopting and using E-filing. *International Journal of Innovative Science and Research Technology*, 5(8).
- Ministry of Finance. (2020). The Taxation and other Laws (Relaxation and Amedment of Certain Provisions) Act, 2020 . Electronic Gazette of India.
- Pages- faceless-scheme. (n.d.). Retrieved 12 11, 2024, from <https://incometaxindia.gov.in:https://incometaxindia.gov.in/Pages/faceless-scheme.aspx>
- PWC. (2020). Faceless Interface - A Paradigm Shift in Administration of Income Tax Law. PWC Publication.
- Rao, G., & Tank, N. (2021). Faceless Assessement - Practical Challenges and the way forward. Fax Mandal & Advocates.
- Report of Committee constituted by CBDT. (2016). Comprehensive Roadmap to Minimize Litigation and Strengthen Litigation Management. Income Tax Department Publications.
- Sahana, S. (2020). Types of Assessment - Critical Analysis of Faceless Assessment Scheme, 2020. *Supremo Amicus*, 23.
- Shri Mishra IRS, R. (2021). Faceless Assessment Scheme. *Tax Bulletin - The Institute of Cost Accountants of India*, 3.

- Students Economic Forum by South Indian Bank. (2020). Faceless Assessment - A New Era of Assessment. South Indian Bank Publication, 347(29).
- Tanmay Dhakras. (2025). Faceless Tax Assessment : Jurisdictional Assessing Officer vs Faceless Assessing Officer. Taxguru - Complete Tax Solution.
- Thakan, J., & Ratnaparkhi, P. (2022). Faceless Assessment : A Paradigm Shift in Income Tax Law. Inspira-Journal of Commerce, Economics & Computer Science (JCECS), 08(03), 20-24.
- Times of India Business Desk. (2024). "Relief for taxpayers soon? 'Faceless' Income Tax Assessment Mechanism to made friendlier. Times of India Article.
- Tyagi, A., & Monga, D. (2022). Faceless Assessment : A Revolutionary Change. Journal of Emerging Technologies and Innovative Research, 9(4).



GUIDELINES FOR AUTHORS

The Indian Journal of Current Trends in Management Sciences is a blind fold peer reviewed interdisciplinary journal mainly comprises the original contributions related to managerial development. It is an academic organ of the Research Centre of the B.P.H.E. Society's Institute of Management Studies Career Development and Research, Ahmednagar. Mainly the journal expects authors to contribute original papers in Management, Commerce, Economics and Information Technology and other areas of managerial development. Authors are expected to follow the instructions while structuring their papers as under;

1. **Subjects :** Indian Journal of Current Trends In Management Sciences welcomes articles / research contributions in the disciplines allied to Management, Commerce, Economics and Information Technology.
2. **Size :** Articles / Contributions are expected to be of about 3500 to 6000 words including figures & tables. A Hard copy along with a Soft copy of the manuscript be submitted. This should be typed in 'Times New Roman' font size 12 with 1.0 inch margin on all four sides.
3. **Cover Page to include,**
 - a) Title of the paper / article.
 - b) Details of the author(s) i.e. name(s), designation address(es), phone and fax number, e-mail address(es) of the author(s).
 - c) Acknowledgements, if any.
4. **Photograph :** Please enclose a passport size colour photo.
5. **Abstract :** Abstract of about 150 words should follow the coverpage
6. **References :** The position of the reference should be indicated in the text within brackets by the author's last name and the year of publication; e.g. '(Sharma 1998)' or given as a sentence, e.g. 'as pointed out by Sharma (1998)'. At the end of the text, references should be listed in the alphabetical order in the following manner.
 - a) If it is an article in a Journal,
Sharma A. B. (1998), The Marketing Strategies of 21st Century, Indian Journal of Marketing, 98 (3) : 126-129
 - b) If it is a book,
Sharma, A.B. (1998) Marketing World, U.K : McGraw Hill, Page 26.
 - c) If it is an electronic documents,
<http://www.economicstimes.com/et/daily/2000.html> Accessed on September 26, 2006.
7. **Certification :**

The authors should certify on the cover page that the article / contribution manuscript is not published, copyrighted, accepted or under review elsewhere. Authors should ensure that the article / contribution manuscript submitted to Indian Journal of Current Trends In Management Sciences, is not simultaneously submitted to any other journal, nor should it be submitted anywhere else during the pendency of the review process which will take about three months.
8. **Unaccepted Article/ Manuscript :**

This will not be returned. However, after the completion of the review process and if the article / manuscript is not selected, the author(s) is /are free to submit it elsewhere.



B.P.H.E. Society's
INSTITUTE OF MANAGEMENT STUDIES
(CAREER DEVELOPMENT & RESEARCH)
NAAC Accredited Grade 'A+' Institute
'Best Institute Award' by University of Pune



The Bhaskar Pandurang Hivale Education Society (BPHE) has three institutions under its umbrella: Ahmednagar College, Institute of Social Work and Research (ISW&R), and Institute of Management Studies, Career Development and Research (IMS). Ahmednagar College, a pioneering institution of its own kind was established in 1947 by late Rev. Dr. B.P. Hivale. Ahmednagar College was further nurtured by Prof. Thomas Barnabas who took the College to magnificent heights. Prof. Thomas Barnabas was followed by Rev. Prof. J. Barnabas. Prof. J. Barnabas was dedicated educationist, who played a key role in the field of education in Ahmednagar. He was conferred with 'Jeevan Sadhana Gaurav Puraskar' by the University of Pune. Later on, as a Secretary of B.P.H.E. Society, he was instrumental in setting-up IMS in the year 1990. Currently Dr. Sanjeevan Arud, Chairman, Mr. Vishal Barnabas, the Secretary of the Society, is furthering this momentum of growth.

IMS is a premier 33 years old educational Institute conducting various Quality Programmes in Management and Information Technology. IMS is affiliated to the S. P. Pune University & is recognized by AICTE. IMS has reputation for novel courses innovative teaching methodology, quality delivery, state of art infrastructure, strong industry interface, meticulous research, meaningful consultancy and professional training. IMS has won the coveted 'Best Institute Award' from both S. P. Pune University and Confederation of Indian Universities & Educational Standards & Testing Council of India, New Delhi. The Institute has also received the prestigious 'National Award for Leadership in IT Education' from Canon India Pvt. Ltd., Star Group & Fun and Joy at Work. The Institute has added another feather in the cap by receiving the coveted 'Most Upcoming B-School Award' from ASSOCHAM. IMS believes research as a complement for good teaching and publishes the 'Indian Journal of Current Trends In Management Sciences' & 'Prayas: A Students' Research Publication' every year to promote research culture. The Institute is a recognized Research Centre under the faculty of Management of S. P. Pune University.

B.P.H.E. SOCIETY'S MOTTO :

"Not things but men, I dare you".

VISION :

"To create world class Management Institute".

MISSION :

"To provide equal opportunity for quality education for students from diverse backgrounds, which will help to enrich themselves and make them responsible citizens of India and the world".

QUALITY POLICY :

"We are committed to impart to our students leading knowledge and experience for developing appropriate attitude, skills and competency to meet the corporate and organisational requirements".

COURSES :

Management Courses : MBA

Computer Courses : MCA

Bachelor in Vocation (B.Voc) : Travel & Tourism (T&T)

Banking Finance & Insurance (BFSI)

Address : IMS Campus, Station Road, Ahmednagar - 414 001. M.S. (India)

Phone : (0241) 2346532, 2324830, Fax : 0241-2346529

E-mail : imscdr.ac@gmail.com Website : www.imscdr.ac.in

ISSN 0976 - 1845