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VIKSIT BHARAT 2047

Policy, Innovation and Sustainable Pathways to a Developed India

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Dr. Gajanan D. Chaudhari
Dr. Balu S. Bhalerao
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INDEX

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Viksit Bharat 2047: A Roadmap to Becoming the Third-Largest Economy in the World

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Abstract:

This chapter focuses on the vision of Viksit Bharat 2047, outlining the roadmap for India's aspiration to become the world's third-largest economy. It highlights key challenges across sectors such as infrastructure, education, employment generation, research and development, manufacturing, and logistics. Issues like low per capita income and fluctuations in GDP continue to impact the stability and growth of the Indian economy. India has 20% young population of the world's total availability but skilled labor remains limited, government initiatives like Skill India and Make in India are crucial steps toward building a stronger, more self-reliant future for the nation. In the last decade FDI is doubled but it is required to be increased. NITI Aayog prepared a detailed roadmap and targeted GDP $29.02 trillion by 2047. These all figures predict about the future of India's becoming third largest economy the world.

Keywords: Indian Economy, GDP, NITI Aayog, Employment, FDI, Tax Revenue, Budget, Education, Infrastructure, Manufacturing, Exports

Introduction:

Over a period of 75 years India has a transformative journey, transcending its traditional identity to emerge as a vibrant and modern economy. This remarkable evolution is like landmark achievements, food security, economic reforms of 1991, and nuclear capabilities, launching satellite and evolving into a global software hub. These milestones reflect India's resilience and adaptability in the face of evolving, economic, technological, and geopolitical landscapes. From the beginning the growth rate of 2.9% in 1951-52, the nation has remarkable growth rate of 7.6% by 2023-24. For sustainable economic growth India needs keep per capita GDP at 7% during the decade of 2020s, to make India third largest economy in the world. The challenge is to broaden of these reforms to transform the quality of human resources, to take the advantage of new trends in global polity and economy, so that fast growth can be sustained.

India has been transformed on many fronts and is ready for take-off. There has been a massive expansion in social and economic infrastructure through policies and schemes in past years such as Samagra Shiksha Abhiyan and expansion of Universities, IITs, IIMs, Medical and Nursing Colleges, Skilling (Pradhan Mantri Kaushal Vikas Yojana). In the last decade, the number of universities and colleges

have increased manifold, and the Indian the Indian higher education system today boasts 1,113 universities/University level institutions, 43796 Colleges, and 11, 296 standalone institutions with 4.33 crore students. The gross enrolment ratio (GER) in higher education has steadily increased to 28.4%. Similarly, the healthcare sector has expanded massively on all fronts. In 2022, there were 1,56,000 Ayushman Bharat centers, providing primary health care services to communities. Rural India is also transforming. We are close to achieving or have already achieved universal coverage in electricity, drinking water, bank accounts, roads, mobile connectivity etc. rural India is now starting to have the same benefits of urban India. MNREGA and Pradhan Mantri Garib Kalyan Anna Yojana have strengthened and avoided distress for the poor people. Pradhan Mantri Awas Yojana is trying to provide housing for all.

Young India's creativity and potential for innovation coupled with supportive government policies like digital India and startup India are enabling youth to become job creators. India is home to over 100 unicorns with a total valuation upwards of USS $ 340 billion and has emerged as the world's 3rd largest startup ecosystem. While all these point to take of moment we are in now, the most important is our demographic divided. With a population of 144 crores, India is one of the youngest nations with a median age of 29 years. It accounts for nearly 20% of the world's total young population. This is an enormous opportunity, likely to last till 2047. Using this dividend well, we can propel India into Viksit Bharat.

Key Focus Area:

- Education: Enhancing educational infrastructure, increasing school enrollments, and improving the quality of education.
- Healthcare: Ensuring accessible and quality healthcare services for all citizens.
- Technology: Embracing and innovating technology for the nation's progress.
- Infrastructure: Developing robust infrastructure including transportation, communication and urban facilities.
- Agricultural: Modernizing farming techniques and supporting farmers for increased productivity.
- Environment: Implementing sustainable practices and preserving natural resources for a cleaner and healthier environment.

Vision of ViKasit Bharat 2047: Prosperous Bharat in harmony with nature, modern infrastructure and opportunities to all

Goals of ViKasit Bharat 2047:

- Ensure 100% literacy rate across the nation.
- Provide quality healthcare services accessible to every citizen.
- People centric inclusive development:

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- Substantive development of all forms of infrastructure-physical, digital and social.
- Digital Public Infrastructure (DPI)-promoted formalization and financial inclusion.
- Deepening and widening of tax base via GST.
- Strengthened financial sector brought savings, credit and investment back on track.
- GIFT IFSC-A robust gateway for global capital and financial services for the economy.
- Proactive inflation management
- All parts of country becoming active participants in economic growth.

Resilient Performance of Indian Economy:

The performance of Indian economy in the last ten years depicts comprehensive growth as GDP growth rate recorded 7.6% in 2023-24. Unemployment is the major issue of Indian economy. Unemployment rate was 6.1% in 2017-18 and it was declined to 3.2% in 2022-23, therefore it indicates that the employment is rising in India. Inflation is fall down from 9.4% in 2014 to 5.5% in 2024. FDI is doubling from $ 298 USD Billion in 2014 to $ 596 USD Billion in 2023. Rise in average monthly gross GST collections from 0.9 trillion in 2018 to 1.7 trillion in 2024. Direct tax collections more than trebled in last 10 years. Revenue receipts were recorded Rs. 30 lakhs crore against revenue expenditure recorded at 36.5 lakhs crore in 2024-25. Capital receipts were 17.6 lakhs crore against of capital expenditure 15 lakhs crore in 2024-25. Indian economy is having resilient performance in last 10 years, on the basis of such figures expert's predicted; the Indian economy will be the third largest economy in the world. Experts also warn that weak state administration, uneven distribution of growth, and low per capita income remain obstacles. Stable governance and reforms on land, labour, and public administration are critical to unlocking this vision. Alignment and coordination between Centre and states, guided by platforms like NITI Aayog, are pivotal. The government and policy experts envision India reaching a $30 trillion economy by 2047, with some projections even pointing to $34.7 trillion, via sustained 7–10% annual GDP growth. A detailed roadmap prepared by NITI Aayog projects GDP milestones of $6.69 trillion by 2030**,** $16.13 trillion by 2040**,** and $29.02 trillion by 2047, with corresponding per capita targets of $4,418**,** $10,021**,** and $17,590 respectively. 17 states have developed or are near completing their "Viksit Bharat 2047" vision documents, integrating state-level KPIs into the national strategy. NITI Aayog projects India could become the 3rd largest economy within 2–3 years if current momentum continues.

A Roadmap to Becoming the Third-Largest Economy

1 **Ambitious Economic Targets:** The initiative aims to elevate India's GDP to $30–40 trillion by 2047, positioning the country among the world's top three

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economies. Key projected milestones include reaching approximately $6.7 trillion by 2030, around $16 trillion by 2040, and nearly $29 trillion by 2047. This ambitious vision is underpinned by a sustained annual GDP growth rate of 7–10%. Achieving these targets would not only transform India's economic landscape but also solidify its position as one of the largest global economies.

2 **Boosting Manufacturing, Exports and Investment**: Since 1992, India has transformed the manufacturing sector which has tremendous growth. Manufacturing is targeted to contribute 25% of GDP, backed by initiatives like Make in India and PLI schemes. Export goals are ambitious, aiming to increase to $2 trillion by 2047. Encouraging foreign direct investment and creating business-friendly environments through regulatory reforms and state-level competition are central strategies. India's manufacturing sector is performing very well but need to boost export of India to strengthen the economy.

3 **State-Level Vision and Collaborative Governance**: NITI Aayog has encouraged states to formulate their own "Viksit Bharat" visions such as *"Viksit UP"* and *"Viksit Tripura"*—to align regional development with national objectives. So far, 17 states have come on board with these initiatives. These state-level plans are designed to be actionable, equipped with measurable Key Performance Indicators (KPIs), and aligned with India's broader development goals. As the premier policy think tank of the Government of India, NITI Aayog plays a crucial role in guiding the formulation and implementation of policies aimed at accelerating the country's socio-economic growth.

4 **Transformative Reforms across Sectors**: India is transforming agriculture sector. Enhancements via the *FARM* strategy better farm finance, market access, diversified livelihoods, land security, and agri-export growth. Infrastructure and Logistics are transforming India and making the future of India. Projects like PM Gati Shakti, smart cities, and multimodal connectivity are crucial to enabling national productivity. Technology and Innovation are not behind back, they leading to the nation. Emphasis is on green energy, semiconductors, AI, and R and D including bodies like ANRF to foster a resilient future-ready ecosystem. A governance reform is also significant to integrate, regulate, and execute the various strategies and plans. Ten sectoral vision groups are steering inputs across rural, finance, technology, and governance strategies. A broader blueprint of 100 reform ideas spans over labour, taxation, climate, infrastructure, and digital sovereignty.

5 **Social Inclusion and Human Capital Development**: Social inclusion of poor farmers, women and youths are essential for crating awareness of all economic activities and seeking the benefits of that. Targets include achieving zero poverty, 100% literacy, and improved health indicators across the board. The vision extends to women's empowerment, aiming for 70% participation in economic activities, along with focused upliftment of farmers and marginalized communities. Further, support via education, healthcare, and digital infrastructure is being ramped up evidenced by rising budgets for PM SHRI schools and expanding broadband access.

6 **Recent Developments:** Mining sector reforms are underway to modernize laws, boosting economic contribution under the Viksit Bharat umbrella. States like Uttar Pradesh and Tripura have unveiled their own 2047 vision

documents, targeting strong GDP growth and leveraging local strengths. On the investment and governance front, state-wide alignment and citizen-centric development are being prioritized. Therefore, every state should have vision documents to accelerate towards the vision of Viksit Bharat.

7 **India the 3rd-Largest Economy**: India currently ranks as the 4th-largest economy in the world, with a GDP of approximately $4.2 trillion an impressive rise from the 11th position in 2014. Experts predict that if the current growth trajectory continues, India could become the 3rd-largest economy within the next 2–3 years. To sustain this momentum, continuous monitoring of economic fluctuations is essential. Strategic focus should be placed on high-impact sectors that have the potential to significantly boost GDP, thereby steering the country toward its long-term economic goals.

Barriers to Attaining Third-Largest Economy Status

1 **Uneven State Capacity and Governance Gaps**: Significant disparities exist between high-performing states (e.g., Maharashtra, Gujarat) and lagging ones (e.g., Bihar, Jharkhand, and parts of the North-East). Many states struggle with weak institutions, poor administrative capacity, and inefficient public service delivery. The disparity gap in states is decreasing in India. There is a need to enhance basic infrastructure and facilities, especially in disadvantaged areas. There should be a smooth and healthy administration to overcome these barriers.

2 **Low Per Capita Income and Inequality:** India's GDP size may grow rapidly, but per capita income ($2,700 as of 2024) remains much lower than other large economies. Rising wealth disparities and rural-urban divides risk social unrest and threaten consumption growth. India's per capita income is low compared to the world average due its vast, rapidly growing population and significant income inequality. Other factors include a large unorganized sector with low productivity, reliance on traditional agriculture, a lack of adequate education and economic opportunities for its large workforce, and insufficient infrastructure.

3 **Labour Force Challenges:** Despite a demographic dividend**,** India faces: High unemployment/underemployment**,** especially among youth and graduates. A large informal sector (80% of employment), Low female labour force participation (25%). The current unemployment rate is 5.2%, dropping from 6.0% in 2017-18 to 3.2 in 2023-24. The main cause of unemployment is the rising population. The unemployment challenge can be overcome through a systematic development plan. A productive workforce requires strong human capital. Hence, India is transforming in skilling through skill India and make in India.

4 **Slow Judicial and Regulatory Systems:** Contract enforcement, land acquisition, and commercial dispute resolution in India continue to be slow and unpredictable. While there has been progress in improving the ease of doing business, significant challenges remain due to complex and inconsistent regulations across different states. To foster a more conducive environment for economic growth, India requires a transparent, streamlined, and robust regulatory framework—one that can effectively oversee and govern all activities related to society, business, commerce, and industry.

5 **Infrastructure Deficits:** While the PM Gati Shakti initiative has brought notable improvements in infrastructure planning and execution, India continues to face several critical challenges in its logistics and infrastructure ecosystem. Logistics inefficiencies remain a major bottleneck, with high transportation costs, fragmented supply chains, and slow freight movement affecting overall productivity. Power shortages persist in certain regions, particularly during peak demand seasons, disrupting both industrial output and daily life. Additionally, urban areas struggle with severe congestion, resulting in lost economic output, increased pollution, and reduced quality of life. Meanwhile, remote and rural regions still suffer from poor connectivity, including inadequate road networks, limited rail access, and underdeveloped digital infrastructure, all of which hinder inclusive growth and access to opportunities. Addressing these structural gaps is essential for unlocking India's full economic potential and ensuring balanced development across all regions.

6 **Educational and Health Gaps:** Rural literacy is around 73.5%, while urban areas report 87.7%. Access to schools decreases at higher levels: about 91% have a primary school within 1 km; this drops to 72% for upper primary and 48% for secondary. In many tribal and marginalized communities, schooling access remains limited SC and ST students average 4–5 years of education, compared to 5.4–6.7 years in higher caste groups. Although the education inequality index has dropped from 72.4% in 1986 to 46.6% in 2023, disparities persist especially in states like Bihar, Uttar Pradesh, Rajasthan, Jharkhand, Madhya Pradesh, and Andhra Pradesh (all >50%) On the other hand, Kerala, Delhi, Goa, and Chandigarh have significantly reduced inequality (around 26–31%). Health facilities and infrastructure are not enough. Approximately 74% of doctors serve urban populations (28% of the population), leaving rural areas underserved. This leads to limited facilities, fewer hospital beds, and reliance on informal or unqualified healthcare providers in rural areas. Public healthcare infrastructure is weak, especially in rural India.

7 **Environmental Sustainability:** Rapid industrialization, while essential for economic growth, poses significant environmental risks. It can lead to increased air and water pollution, overdependence on fossil fuels, and heightened vulnerability to climate-related stocks such as droughts and floods. To ensure sustainable development, India must strike a balance between industrial growth and environmental responsibility. This includes investing in green energy, promoting clean technologies, and building resilience against the impacts of climate change.

8 **Global Uncertainties:** Over the past decade, trade wars have intensified significantly, creating widespread economic uncertainty. Recently, the United States has further escalated tensions by increasing tariff duties, imposing a 26% rate on Indian imports. This move comes amid ongoing disruptions in global supply chains, fluctuations in oil prices, and the strengthening of the U.S. dollar all of which contribute to a volatile global economic environment. In light of these uncertainties, it is essential for India to prepare for potential contingencies. While developed countries possess advanced technologies and resilient infrastructures, India must accelerate the adoption of new technological advancements. By strengthening its technological readiness and

fostering innovation, India can enhance its global competitiveness and secure a more favorable position in the evolving economic landscape.

9 **India Lags Behind In:** Research and Development (R&D) is the cornerstone of a nation's progress. However, India continues to lag behind in high-end R&D, largely due to limited and stagnant budget allocations over the past two decades. Without a robust innovation ecosystem, long-term productivity and competitiveness may suffer. Emerging technologies like Artificial Intelligence (AI) are transforming the global digital landscape, reshaping industries, corporate institutions, education, and governance. Yet, India remains behind in patent filings, which reflects a gap in innovation and impacts the growth of multiple sectors. To bridge this gap, stronger collaboration between universities and industries is essential. Such partnerships can boost innovation, enhance employment opportunities, and ensure that academic curricula are aligned with practical, industry-specific needs. Universities must take the lead in designing application-oriented programs that equip students with the skills demanded by modern industries.

Conclusion

"Viksit Bharat 2047" is more than a slogan, it's a multi-dimensional, actionable plan charted out across economic, social, and institutional domains. Anchored by long-term targets, state-level collaboration, and comprehensive reforms, it's shaping India's trajectory toward becoming a global powerhouse with inclusive prosperity. India's ambition to become the third-largest economy by 2027–2030 is realistic but not guaranteed. Success depends on Deep governance reforms, Inclusive and people-centric development, a shift from growth quantity to growth quality, Effective centre–state collaboration**,** and resilience against external shocks. To achieve sustained and substantial growth, India must maintain a consistent GDP growth rate of 7–10% over the next two decades. Key priorities should include strengthening research and development, fostering meaningful university–industry collaboration to generate employment, and creating an enabling environment to attract higher levels of foreign direct investment (FDI). Expanding export capacities will also play a crucial role in driving economic momentum. Additionally, good governance and a transparent, efficient regulatory framework are essential for ensuring long-term national development and global competitiveness.

References:

1. ViKasit Bharat 2047: A Blue Print of Micro and Macroeconomic Dynamics, (2024), PHD Chamber of Commerce and Industry.
2. Arvind Virmani, (2024), Vikasit Bharat: Unshackling Job Creators, Empowering Growth Drivers, NITI Working Paper, NITI Aayog.
3. Dr. A. Shankar Prakash and Dr. Richa Chaurasia, (2024) Vision ViKasit Bharat 2047:Paving India's Path to Growth and Development, Saheed Anurup Chandra Mahavidyalya, ISBN-978-81-974000-2-5.
4. Mukesh Kumar Jain, Sandip Kumar Goel, and Yashika Verma (2025), Viksit Bharat @ 2047:Transformative Role of Commerce Management and Technology, MGM Publishing House, Jaipur-Delhi, ISBN: 978-81-981913-3-5, DOI: 10.62823/MGM/2025/9788198191335.

5. Ideas for the vision of ViKasit Bharat 2047, (2024), My Government.
6. Key Features of Budget 2024 taken from https://www.bjp.org/files/union-budget-documents/Key-Features-Budget-2024.pdf
7. Avinash C. Dhotre, Dilip Khairnar, and Kishor N. Chinchodkar, "Unemployment Problems of Persons with Disabilities (Divyangjan) in Marathwada Region of India." American Journal of Rural Development, vol. 11, no. 1 (2023): 9-14. doi: 10.12691/ajrd-11-1-2.
8. Key Features of Budget 2023, Ministry of Finance-Budget Division, Government of India.
9. ViKasit Bharat @ 2047 – concept Note for Discussion with Universities on Vision for 2047, CircularAttach-ViksitBharat@2047Public-Discussion-Note-Base-Paper.
10. Dhotre, Avinash C., Kishor N. Chinchodkar, Abhijeet D. Ghodake, and Bhausaheb N. Shinde. 2024. "Contribution of Goods and Services Tax (GST) Revenue: India's March towards $5 Trillion Economy". Asian Journal of Advanced Research and Reports 18 (8):45-53. https://doi.org/10.9734/ajarr/2024/v18i8708.
11. Prof. Sudhir Gavhane, (2025), Knowledge Economy, Research, Innovation and Development in India: A Global Comparison, Where are we? And Where to reach? Lecture Delivered in Faculty Development Program Organized by M.S.P. Mandal's Deogiri College, Chhatrapati Sambhajinagar, Maharashtra.
12. Vipin Patel and Rohit Kumar (2024), Viksit Bharat 2047: A Journey Towards India's Future, Shabdkosh: Journal of Visual and Performing Art, ISSN (Online): 2582-7472.

Building a Sustainable Future: Rethinking Food, Waste, and Resource Use

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Abstract

This paper explores the regenerative revolution, a shift in how we produce food, manage waste, and use resources to create a more sustainable future. It focuses on key practices such as organic and urban farming, eco-friendly packaging and refill services, recycling, upcycling, composting, and green consulting services. These methods help reduce environmental impact, save resources, support local communities, and promote economic opportunities while protecting the planet. The research highlights how adopting regenerative practices is essential for building a healthier, more resilient world.

Keywords: Regenerative Revolution, Sustainability, Organic Farming, Urban Farming, Eco-Friendly Packaging, Recycling, Upcycling, Green Consulting.

Introduction

Our world is facing urgent environmental challenges, from climate change and resource depletion to growing waste and food insecurity. Traditional ways of producing, consuming, and managing resources are no longer sustainable. In response, a regenerative revolution is emerging one that reimagines how we interact with food, waste, and natural resources in a way that restores, renews, and sustains the planet.

This research explores key sustainable practices that are reshaping our future, including organic and urban farming**,** eco-friendly packaging and refill services**,** recycling, upcycling, and composting**,** and green services and consulting**.** Organic and urban farming are changing how we produce food, bringing agriculture closer to cities and emphasizing natural methods that protect the environment and strengthen communities. Eco-friendly packaging and refill services are helping businesses reduce waste by promoting reusable, recyclable, and biodegradable solutions, while minimizing single-use packaging. Recycling, upcycling, and composting offer practical ways to divert materials from landfills, reduce pollution, and return valuable resources back to the earth. Meanwhile, green consulting services guide businesses in adopting sustainable practices, improving energy use, cutting waste, and meeting environmental regulations. By adopting these methods, we can reduce our environmental impact, save resources, support healthier communities, and create economic opportunities that align with the planet's well-being. This paper will examine these regenerative practices in detail, highlighting their benefits and role in building a sustainable future. To better understand how the regenerative revolution is transforming our approach to sustainability, let us explore key practices and services that are helping us rethink the way we produce food, manage waste, and use resources.

1. Organic & Urban Farming

Organic farming is a natural approach to agriculture that focuses on keeping the environment, people, and resources healthy and balanced. It avoids harmful chemicals and works closely with nature to grow food in a safe, fair, and eco-friendly way. The main ideas behind organic farming are:

- **Health:** It aims to keep the soil, plants, animals, people, and the planet healthy by avoiding synthetic fertilizers, chemical pesticides, and genetically modified organisms.
- **Ecology:** Organic farming follows natural processes. It promotes biodiversity, recycles nutrients, saves water and energy, and reduces pollution. Common practices include crop rotation, using cover crops, and natural pest control methods.
- **Fairness:** It focuses on fair treatment of farmers, workers, and consumers, while respecting the environment. This includes fair trade, good animal welfare, and responsible use of natural resources for future generations.
- **Care:** Organic farming is done carefully and responsibly to protect the planet and the well-being of both present and future generations.

Benefits of Organic Farming

- **Environmental:** Helps improve soil quality, reduces water pollution, increases biodiversity, lowers greenhouse gas emissions, and retains more water in the soil.
- **Social:** Supports local rural economies, encourages healthier lifestyles, and builds a stronger connection between farmers and consumers.
- **Economic:** Organic products often sell at higher prices, and healthier soil can lead to better crop yields over time.

Urban Farming: Growing Food in the City: Urban farming, or urban agriculture, means growing, processing, and distributing food within or near cities. It makes use of available urban spaces, turning rooftops, vacant lots, and even walls into productive farming areas.

Common Methods of Urban Farming

- **Rooftop Gardens:** Growing vegetables and fruits on the rooftops of buildings, making use of unused space.
- **Vertical Farming:** Crops are grown in stacked layers, often indoors, which saves space and allows year-round production.
- **Hydroponics:** Growing plants in water mixed with nutrients, without using soil.
- **Aquaponics:** A system where fish and plants are grown together—fish waste helps feed the plants, and the plants clean the water for the fish.
- **Community Gardens:** Shared garden spaces where people can grow their own fruits and vegetables.
- **Indoor Farming / Controlled Environment Agriculture (CEA):** Crops are grown inside warehouses or containers with controlled light, temperature, and humidity for optimal growth.
- **Container Gardening:** Growing plants in pots or boxes, perfect for balconies, patios, or small urban spaces.

Benefits of Urban Farming

- **Better Food Access:** Provides fresh, healthy food close to where people live, reducing dependence on long supply chains.

- **Lower Carbon Footprint:** Shorter transportation distances mean fewer emissions and less food waste.
- **Environmental Benefits:** Helps cool cities, improve air quality, manage rainwater, and turn unused urban spaces into green areas.
- **New Job Opportunities:** Creates local jobs, supports small businesses, and can help revitalize neighbourhoods.
- **Stronger Communities:** Brings people together, offers learning opportunities, and builds a sense of shared purpose around food

2. Eco-friendly Packaging & Refill Services

Eco-friendly packaging, also called sustainable or green packaging, uses materials and processes that reduce harm to the environment throughout its life—from raw material sourcing to production, delivery, use, and disposal.

Key Features of Eco-Friendly Packaging

- **Made from Recycled or Sustainable Materials:** Helps save natural resources by using recycled paper, cardboard, or plant-based materials instead of new ones.
- **Recyclable:** Can be processed again to make new packaging after use.
- **Biodegradable or Compostable:** Breaks down naturally into harmless organic matter. Compostable materials turn into nutrient-rich soil but need special conditions to decompose.
- **Minimal Design:** Uses only the material needed—like a box that fits the product perfectly—reducing waste and shipping costs.
- **Reusable:** Designed to be used multiple times, supporting refill services and reducing single-use packaging.

Examples of Eco-Friendly Packaging Materials

- Recycled cardboard and paperboard
- Plant-based bioplastics (like PLA from cornstarch or sugarcane)
- Moulded pulp (made from recycled paper, used for trays and packaging inserts)
- Biodegradable foams (made from materials like chitin, a seafood byproduct)

Refill Services: A Smarter Way to Package Products

Refill services reduce waste by encouraging customers to reuse containers instead of buying new packaging every time.

How Refill Services Work

1. **In-Store Refill Stations:** Customers bring their own clean bottles or containers to refill products like soap, grains, spices, or oils. They pay based on the amount they refill, promoting a zero-waste lifestyle.
2. **Container Return Programs:** Companies sell products in durable containers. After use, customers return the empty container to be cleaned and reused. A well-known example is Loop, which partners with brands like Nestlé and Unilever.
3. **Refill Pouches or Concentrates:** Customers buy a durable bottle once and later refill it with smaller pouches or concentrate tablets. These use less packaging and may be compostable or returnable for recycling.

Benefits of Refill Services

- **Reduces Waste:** No need to throw away packaging every time you buy a product.
- **Lower Environmental Impact:** Saves energy, water, and reduces carbon emissions from producing and transporting packaging.

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- **Saves Money:** Since customers aren't paying for new packaging each time, refills are often cheaper.
- **Builds Customer Loyalty:** Consumers who care about sustainability often prefer brands that offer refill options, creating a stronger connection

3. Recycling, Upcycling & Composting

Recycling, upcycling, and composting are three important and complementary methods to handle waste and support a sustainable environment. They all help keep materials out of landfills, but they work in different ways.

Recycling

Recycling is the process of turning waste materials into new products. It usually involves breaking down items into their basic components and then remaking them into something new. Although recycling uses energy and resources, it is generally more eco-friendly than producing products from new raw materials.

- **How it Works:** Materials like plastic, paper, glass, and metal are collected, sorted, cleaned, and processed into raw materials to make new products.
- **Examples:**
    - Plastic bottles are melted to create new bottles or synthetic fabrics.
    - Old newspapers are pulped to make recycled paper.
    - Aluminium cans are melted and reshaped into new cans.
- **Key Point:** Recycling is often a large-scale industrial process and can lead to "downcycling," where the material loses quality over time (for example, recycled paper isn't as strong as new paper).

Upcycling

Upcycling, also called creative reuse, is the process of turning old or unwanted items into something new and more valuable. Unlike recycling, upcycling doesn't break down the material; instead, it repurposes the item in its current form.

- **How it Works:** An item is redesigned or creatively reused to extend its life and usefulness, usually through simple manual methods.
- **Examples:**
    - Old wooden pallets transformed into a coffee table.
    - Worn-out jeans turned into a tote bag.
    - Glass jars used as drinking glasses or storage containers.
- **Key Point:** Upcycling focuses on adding value and giving products a second life without industrial processing, making it a creative and eco-friendly solution
- **Composting**

Composting is a natural process where organic waste breaks down into nutrient-rich soil, called compost. Microorganisms, moisture, and air work together to decompose food scraps and garden waste, similar to what happens in nature.

- **How it Works:**Organic "green" materials (like food scraps) are mixed with "brown" materials (like dry leaves or shredded cardboard), layered, and left to decompose. The final compost is used to improve soil, reducing the need for chemical fertilizers.
- **Examples:**
    - Food scraps like vegetable peels, coffee grounds, and eggshells.

- Yard waste like grass clippings and leaves.

- **Key Point:** Composting returns valuable nutrients to the soil and keeps a large portion of household organic waste from creating methane in landfills, which harms the environment.

4. Types of Green Services and Consulting

Green services and consulting help businesses and organizations reduce their environmental impact and operate more sustainably. This field covers a wide range of specializations:

- **Environmental Impact Assessment (EIA):** Evaluating the possible environmental effects of planned projects before they start.
- **Regulatory Compliance Consulting:** Helping businesses understand and follow environmental laws and regulations.
- **Energy and Sustainability Consulting:** Advising on energy-saving practices, using renewable energy, and developing sustainability strategies.
- **Waste Management and Recycling Consulting:** Creating plans to reduce waste, improve recycling programs, and ensure responsible disposal of materials.
- **Climate Change Consulting:** Helping organizations lower their carbon footprint, plan for climate risks, and develop strategies to adapt to changing conditions.
- **Green Building Consulting:** Guiding sustainable building design, construction, and operation to reduce environmental impact and improve comfort for occupants.
- **Environmental Health and Safety (EHS) Consulting:** Ensuring safe workplaces while meeting health and safety rules.
- **Supply Chain Sustainability Consulting:** Improving the environmental and social responsibility of supply chains.
- **ESG (Environmental, Social, and Governance) Consulting:** Helping businesses include environmental, social, and governance practices in their strategies and operations.

Benefits of Green Services and Consulting

Using green consulting services offers many advantages for businesses:

- **Lower Environmental Impact:** Reduces carbon emissions, cuts down waste, and improves how resources are used.
- **Cost Savings:** Energy efficiency, better waste management, and optimized resource use often lead to lower costs.
- **Better Brand Image:** Shows customers the business cares about the environment, attracting eco-conscious consumers and building loyalty.
- **Regulatory Compliance:** Helps avoid fines and legal problems by following environmental rules.
- **Innovation and Competitive Edge:** Encourages new ideas and sustainable practices that open up new market opportunities.

5. Upcycling & Creative DIY

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Upcycling and Creative DIY (Do-It-Yourself) are two closely related concepts that are at the heart of the modern sustainability and maker movements. While "DIY" is a broad term for creating or repairing things yourself, "upcycling" is a specific type of DIY that focuses on transforming waste into something new and more valuable, often of higher quality or value than the original item. It's a key principle of the circular economy, as it diverts waste from landfills and reduces the demand for new resources. Upcycling is inherently creative because it requires you to look at an item not for what it is, but for what it could become.

Examples of Upcycling:

- **Old furniture:** A worn-out dresser can be sanded, repainted, and fitted with new hardware to become a stylish, custom piece of furniture.
- **Clothing:** A pair of old denim jeans can be cut and sewn into a tote bag, a skirt, or a quilt.
- **Glass jars and bottles:** They can be cleaned and repurposed as planters, vases, or food storage containers.
- **Wooden pallets:** Often discarded, they can be disassembled and used to build everything from coffee tables to bookshelves.
- **Tin cans:** Can be painted and decorated to become pen holders, planters, or lanterns.

Creative DIY: The Broader Context

Creative DIY is a wider category that encompasses any project where you build, create, or modify something yourself. It's an expression of personal style and a way to develop practical skills. Upcycling is a fantastic subset of creative DIY, but not all DIY projects are upcycling projects. For instance, building a piece of furniture from new, raw lumber is a DIY project, but it's not upcycling.

The DIY ethos is driven by several key motivations:

- **Personalization:** Creating something unique that reflects your individual taste and style, rather than buying mass-produced items.
- **Skill-building:** Learning new skills like woodworking, sewing, painting, or gardening.
- **Cost-effectiveness:** Saving money by making something yourself instead of purchasing it.
- **Mindfulness and well-being:** The act of creating can be a meditative and stress-relieving activity.

Conclusion

In conclusion, the regenerative revolution offers a powerful shift in the way we interact with food, waste, and natural resources. Practices like organic and urban farming**,** recycling, upcycling, and composting**,** as well as specialized green services and consulting**,** are not just temporary solutions—they represent a long-term strategy to create a healthier planet. By adopting these sustainable approaches, we can reduce pollution, save energy, cut costs, support local communities, and build a more resilient and environmentally responsible economy. The future depends on how we rethink our current systems, shift towards regeneration, and make conscious choices that restore the environment rather than deplete it. Together, these practices pave the way toward a more sustainable, balanced, and hopeful future for generations to come.

References

- https://www.geeksforgeeks.org/upsc/urban-farming-types-benefi
- https://senr.osu.edu/sites/senr/files/imce/files/publications/Lorenz_SoilSci.pdf
- https://upcycleluxe.com/blogs/our-readers-digest/reduce-reuse-recycle-list-of-25-best-eco-friendly-packaging
- https://www.dhl.com/discover/en-in/logistics-advice/sustainability-and-green-logistics/sustainable-packaging-in-logistics
- https://www.sumoftheirstories.com/waste-not-want-not

Viksit Bharat 2047: An Analytical Perspective

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Abstract:

The chapter, "Developed India 2047: An Analytical Perspective", highlights India's aspiration to become a fully developed nation by 2047, the centenary of independence. The vision of a developed India goes beyond economic indicators and global rankings, aiming to build a strong, modern, equitable and sustainable nation where all citizens enjoy dignity, equality and quality of life. The chapter identifies the key pillars of this vision – economic growth, social justice, technological advancement, environmental care, good governance and cultural pride. It also acknowledges the persistent challenges such as inflation, unemployment, rural distress, agrarian distress, inadequacy of healthcare in rural areas and low quality of education, which continue to be a hindrance to development. To address these, the Government of India has provided continuous support through multi-pronged policies and reforms. Initiatives such as economic liberalisation, digital empowerment, skill development, industrial diversification, modern education, healthcare expansion and sustainable environmental strategy reflect the proactive role of the Government. Programmes such as Make in India, Start-up India, Digital India and Ayushman Bharat reflect a firm commitment to inclusive growth. However, this chapter emphasises that government efforts alone are not enough. Active participation of youth and society is equally important. With innovation, responsibility and collaboration, India can realise its vision of a Viksit Bharat by 2047.

Keywords: Viksit Bharat 2047, Economic Development, Social Justice, Good Governance, Sustainable Growth, Digital Empowerment, Youth Participation, Inclusive Growth.

Introduction

In the year 2047, India will complete 100 years of its independence. In 1947, when India became independent from British rule, the country faced many problems and wounds of partition, but also great hopes and dreams. Since then, India has come a long way. From a poor and struggling nation, it has now become one of the fastest growing economies and a strong democracy.

Now, as India looks towards 2047, the idea of "Viksit Bharat" has become very important in government schemes, political discussions and in people's minds. But the question is, does being developed mean only having a high GDP or being a global economic power? Or does it mean much more than that-such as social justice, equality, care for the environment, use of modern technology and leadership in culture, etc.

This chapter will try to explain various aspects of Viksit Bharat 2047. It will look at India's goals, policies and social and economic changes, as well as the challenges the country faces on this journey. While we celebrate India's progress so far, we will also carefully consider what India needs to do to build a future that is globally respected, inclusive for all and sustainable for generations to come.

History of Developed India Vision:

India's development journey has been long and inspiring. In 1951-52, the country's growth rate was only 2.9%. Over time, India has made several achievements - ensuring food security, opening up the economy through reforms, developing its own technology, and becoming a global IT hub. The Gross Domestic Product (GDP) is expected to cross US$4 trillion in 2024 and reach US$7 trillion by 2030. With this progress, the dream of Viksit Bharat 2047 has become a natural goal. The vision is to see India as the third largest economy in the world and a leading power in the Asia-Pacific region by 2047.

To understand this futuristic dream, we need to look at history. In 1947, when India became independent, the economy was largely agriculture-based. Its contribution to world GDP was less than 3%. Poverty was widespread, industries were few, literacy was less than 20%, life expectancy was only 32 years, and basic infrastructure such as roads, electricity, and healthcare were not available in many areas.

After we become independent, India adopted a planned approach for the development. The five-year plans focused on agriculture, industry, and becoming self-sufficient. In the 1960s, the Green Revolution helped India move from a food deficit to a food surplus. The economic reforms of 1991 opened up the country to globalization, foreign investment, and private businesses, which significantly boosted growth. Today, India is the fifth-largest economy in the world and is famous for IT services, space research, and innovation. But progress is not equal for everyone. Many people still live in poverty, healthcare is not adequate for everyone, and there is a huge gap between our expectations and reality. These remain significant challenges for policymakers.

Viksit Bharat 2047: Dream, Pillars and Challenges:

Viksit Bharat 2047: Dream:

The vision of Viksit Bharat 2047 is not limited to economic statistics or global rankings. It is about building a nation that is strong, fair, modern and sustainable. As India completes 100 years of independence in 2047, our dream is to build a country where every citizen enjoys dignity, equal opportunity and a good quality of life. This dream spans various aspects such as economic progress, social justice, technology, environment, governance and culture.

- **Economic Dream:** India wants to be among the top three economies of the world by 2047. This means higher incomes of citizens, elimination of extreme poverty and a strong base of industries and innovation. "Make in India" products must be able to compete in global markets. The benefits of growth

must reach not just big cities, but also villages, farmers and small businesses, so that growth is balanced across the country.

- **Social Dream:** Social progress is central to this vision. It aims for 100% literacy and quality education for all. Affordable healthcare should be available to every individual. Discrimination on the basis of caste, gender or religion must end and youth as well as women should play a leading role in shaping the country's future.
- **Technological Dream:** Technology is expected to become a major driver of growth. By 2047, India aims to lead the world in areas such as artificial intelligence, biotechnology, quantum computing, space research and renewable energy. Every citizen should be digitally connected and have equal access to knowledge and innovation, to ensure that no one is left behind.
- **Environmental Dream:** A sustainable future is equally important. This vision includes clean air, safe drinking water, green cities and eco-friendly agricultural practices. India is working towards achieving net-zero carbon emissions and balancing economic growth with nature conservation.
- **Political and Global Dream:** India also aims to become a respected leader in the global community. A strong democracy that safeguards freedom, equality and justice will be its foundation. At the same time, India should play a leading role in world governance, promote peace with neighbours and contribute to the creation of a fair international order.

Viksit Bharat 2047- Pillars:

The vision of Viksit Bharat 2047 rests on a strong foundation. These are the main pillars that will guide India towards becoming a developed, fair and sustainable nation.

1. Strong and fast economic growth:

The economy is the backbone of development. Our India aim is to be become a $30 trillion economy till 2047. To achieve this aim, India will:

- Support job-creating MSMEs (small and medium businesses).
- Encourage startups and entrepreneurship with easy regulations.
- Attract foreign investment and strengthen global trade.
- Focus on both manufacturing and services sectors to remain globally competitive.
- Improve infrastructure like roads, ports, railways & digital networks.

The goal is not just to increase numbers but also to create jobs, increase incomes and reduce poverty.

2. Inclusive growth and social equity:

The growth must be reach everyone like villages, towns & cities.

The main focus is on farmer welfare and modern farming.

- Complete eradication of poverty and hunger.
- Equal opportunities for women, youth and marginalized groups.

- Reducing the gap between rich and poor, rural and urban, and different regions.
- Ensuring quality education and healthcare for all citizens.

True progress means leaving no one behind.

3. Technology and digital transformation:

Technology will shape the future. India plans to:

- Become a global leader in artificial intelligence, biotechnology, quantum computing and space research.
- Use IoT, digitization and smart governance for faster and transparent services.
- Strengthen research and innovation, especially for youth and startups.
- Expand digital infrastructure so that every citizen is connected.

Technology should make the lives of farmers, businesses, students and common citizens easier.

4. Environmental Sustainability:

A developed India should also be a green India. Its focus will be on the following:

- Turning to renewable energy like solar, wind and hydropower.
- Preserving forests, rivers and wildlife.
- Promoting eco-friendly farming and green cities.
- Reducing pollution and waste.
- Moving towards net-zero carbon emissions.

It aims to create a balance between development and nature, ensuring clean air, pure water and a healthy environment.

5. Good Governance and Security:

Good governance is the key to trust and progress. India aims to:

- Create a corruption-free and transparent system.
- Decentralise power so that local bodies and citizens can play an active role.
- Modernise government services with e-governance.
- Ensuring strong internal and external security with modern technology.
- Promote youth participation in politics and policy-making.

Governance should be simple, honest and people-friendly.

6. Cultural renaissance and empowerment:

A developed India should also be proud of its heritage and values. This vision includes:

- Preservation of Indian art, literature, philosophy and traditions.
- Blending tradition with modern ideas and global values.
- Encouraging sports, yoga and healthy lifestyle.
- Making India a cultural leader in the world.
- Promoting scientific thinking, innovation and creativity.

Development is not just about wealth but also about identity, values and pride of being an Indian. In short, the pillars of Viksit Bharat 2047 combine economic strength, social equality, modern technology, environmental protection, good governance and cultural pride. All these together will shape India into a truly developed and respected nation by the 100th year of its independence.

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Viksit Bharat 2047- Challenges:

Inflation, unemployment, agricultural crisis, health system, slowdown in industries, damage to the environment, all these problems are in front of our eyes in today's India. Their solution is the first step in the journey of development. The central government has announced to appoint a task force for this. India is still trapped in the cage of the word 'developing' in the development figures, and it is definitely difficult to develop it because the country's Gross Domestic Product (GDP) figures show light for some years and darkness for some years. In some rural areas, there are still long queues for drinking water, farmers commit suicide, there is a shortage of hospitals in rural areas and there is a shortage of doctors and medicines. The standard of living of citizens, equal opportunities, quality education, health and social security are important questions. Today a large part of India's population does not get these basic guarantees. The poor condition of government schools, lack of teachers, imbalance in the curriculum, all these weaken the foundation of development. But now a new education system has come. Furthermore, in the wave of privatisation in our health system, the rights of the poor seem to be left behind. Insurance schemes and planned hospitals are on paper: but in reality their benefits are limited to only a few percent of the people. The real situation of employment generation is serious. Diversification and autonomy of industries is necessary to become a developed nation, agriculture is still the backbone of India's economy: but doubling the income of farmers is necessary. Climate change, indebtedness, market volatility are also such problems. But for its development, the administration of today's government is transparent, accountable and dedicated to the public. But how soon these problems will end is important. We believe that our government is making a great effort to strategically face these challenges with unity, innovation and strong governance. The government is making multi-dimensional efforts from economic reforms and employment generation to digital empowerment, education, healthcare, environmental sustainability, governance reforms and cultural pride. By integrating tradition with modernity and inclusiveness with innovation, India is moving rapidly towards the dream of a developed India by 2047.

Role of Youth & Society for Viksit Bharat 2047:

Development is a collective process in which every citizen, especially the younger generation and the wider community must contribute with responsibility, awareness and dedication. Therefore, the dream of a Viksit Bharat 2047 cannot be fulfilled only by government policies and programs; it requires the active participation of both the youth and society of the country.

Role of Youth:

India ranks highest in the world in terms of youth population. Youth represent energy, innovation and future vision of the nation. Therefore, active participation of youth is necessary in this. The first responsibility of the youth is to equip themselves with quality education and relevant skills so that they can effectively contribute to the

economy. Moreover, the youth should adopt innovation, technology and entrepreneurship to become job creators instead of becoming only job seekers.
Apart from economic contribution, the young generation also bears a moral responsibility towards the society. They should promote inclusiveness, gender equality and social harmony by abandoning divisive tendencies like caste and religious discrimination. Moreover, the youth should participate in environmental protection. The younger generation should take the lead, enter public service and contribute to policy-making with sincerity and vision. Thus, youth as a true patriot can play a leading role in this transformation in making India a developed nation.

Role of Society:

Society, as the collective power of citizens, plays a very important role in realizing the dream of a developed India by 2047. Its main duty is to provide an environment where education, equality and justice are accessible to all. Society should promote women empowerment, literacy and equal opportunities. Also, social harmony should be maintained by abandoning discrimination and strengthening unity in diversity. By following the laws, paying taxes honestly and participating in democracy, citizens can build strong governance. At the same time, society should preserve the cultural traditions of India while accepting modern values.

Joint Role of Youth and Society:

When youth and society work together, their contribution becomes even stronger. They can help in proper utilization of government schemes, spreading awareness, cooperating in environmental protection and promoting digital literacy and innovation. Through community service and collective efforts, they can ensure balanced development, strengthen democracy and present India to the world as a progressive and culturally rich nation. The Indian government is providing strong support through various policies and reforms. Initiatives like economic growth, digital progress, skill training, more industries, better education, better healthcare and environmental protection reflect the government's proactive role. Big programmes like Make in India, Start-up India, Digital India and Ayushman Bharat prove its commitment to equitable development for all. But this chapter also makes it clear that the government alone cannot fulfil the dream of a developed India. The active role of the youth and society is equally important. With new ideas, responsibility and solidarity, India can achieve its goal of becoming a developed nation by 2047.

Here’s a refined overview of recent success stories and milestones that showcase India’s advancing journey towards Viksit Bharat 2047.

Sector	**Milestones/ Achievements**	**Details/Significance**
Quantum Technology	Launch of Indus (25-qubit quantum computer) by QpiAI (2025)	India’s first full-stack quantum computer under the National Quantum Mission. Positions India in advanced computing, essential for AI, defence, and space tech.

Innovation & Academia	IIT Indore filed 215 patents in 2024–25 (112% increase)	Patents cover healthcare, defence, aerospace, and renewable energy. Many are transferred to start-ups and industries, showing strong research-industry linkage.
Space & Human Achievement	Chandrayaan-3 soft-landing (2023) and Shubhanshu Shukla's ISS mission (2025)	India became the first nation to land on the Moon's south pole. First Indian astronaut conducted 60+ experiments on ISS, boosting India's global space leadership.
Digital Outreach	Viksit Bharat Sankalp Yatra reached over 10 crore citizens (2024–25)	A nationwide campaign to connect government schemes with people at the grassroots, ensuring inclusivity and public participation.
Economy & Finance	India became 5th largest economy (~$4.2 trillion GDP) & UPI scaling to 640M transactions/day	GST, Insolvency reforms, and PLI boosted growth. UPI has made India a world leader in digital payments; financial inclusion rose from 35% (2011) to 89% (2025).
Infrastructure & Industry	Amrit Bharat Station Scheme (redeveloping 103 stations) & 12 new industrial nodes (2025)	Stations modernised with world-class facilities. Industrial corridors under PM GatiShakti expected to create 4 million jobs with Rs. 28,600 crore investment.
Social Welfare	25 crore people lifted out of poverty, health & housing expansion	Schemes like Ayushman Bharat, PM-KISAN, Ujjwala Yojana and JAM (Jan Dhan-Aadhaar-Mobile) improved welfare delivery and reduced leakages.
Automobile Industry	India became the 3rd largest automobile sector globally (surpassing Japan)	Employs ~40 million people, contributes heavily to exports and GST. Electric vehicles and green mobility policies are accelerating future readiness.
Tech Startups & Biotech	200+ space start-ups (2025) and biotech sector growth to $130 billion	Space start-ups attracted Rs.1,000 crore funding; biotech produced breakthroughs like indigenous antibiotic Nafithromycin and CAR-T cell therapy NexCAR19.

These milestones reflects India's multi-dimensional progress across technology, infrastructure, economy, social welfare and innovation demonstrating solid strides ahead on the path to Viksit Bharat 2047.

Conclusion:

The vision of Developed India 2047 is more than just economic growth – it is a holistic mission to build a strong, modern, inclusive and sustainable India. The Government of India is playing a proactive and supportive role through reforms, policies and flagship programmes such as Make in India, Start-up India, Digital India and Ayushman Bharat, focused on development, innovation, education, healthcare

and environmental protection. These initiatives provide a strong foundation for achieving inclusive and sustainable growth. However, this ambitious goal cannot be achieved by government efforts alone. Active participation of citizens, especially the youth, is equally important. Their energy, creativity and responsibility, combined with government support, can help address challenges such as unemployment, rural and agricultural distress, gaps in education and healthcare, and environmental issues. Society as a whole must work together with awareness, cooperation and commitment to ensure that progress reaches everyone. By integrating the dedicated efforts of the Government with the active participation of the youth and communities, India can realize the vision of a developed India 2047 – a nation where every citizen enjoys dignity, equality, opportunity and a high quality of life. This journey is both a challenge and a promise, which can be achieved through collective effort and strong government support.

References:

1. Acharya, M. (2024, August 19), "Viksit Bharat 2047: Meaning, vision, objective, registration".
2. Hafzal, M., B. J., G., & Shet, M. M. (2024, December), 'Shaping the future: Education and skill development for Viksit Bharat @ 2047', The Scientific Temper, 15(spl-2), 160–165.
3. Mohapatra, S., & Pohit, S. (2024, July 11), 'Charting the path to a developed India: Viksit Bharat 2047', National Council of Applied Economic Research (NCAER).
4. Savarimuthu, X., Bakshi, S. A., Kelsy, A., & Singh, V. (Eds.). (2024), 'Envisaging Viksit Bharat @ 2047', Bloomsbury Prime.
5. Sharma, A. K. (2025, April 4), 'Viksit Bharat 2047: Driving economic transformation for a sustainable and inclusive future', ETGovernment.
6. Upadhyay, M., & Nigam, A. K. (2024), 'Improving, performing and transforming Indian economic development through agri-entrepreneurship: A vision for Viksit Bharat @ 2047', Research Review International Journal of Multidisciplinary, 9(12), Article 014.
7. Business Today, (2025, August 17), 'India at 2047: A reform blueprint of 100 ideas to power the journey to Viksit Bharat'.
8. The Daily Guardian. (2023, December 29). 'Viksit Bharat 2047: A vision for a developed India'.
9. India Today. (2025, August 26), 'What India really needs to become Viksit Bharat by 2047'.
10. News18. (2023, December 13), 'Viksit Bharat 2047: How PM Modi is making India's development journey a people's movement'.
11. https://en.wikipedia.org

Transforming India's Future: A Development Economics Analysis of Viksit Bharat 2047

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Abstract

As India approaches its centenary of independence in 2047, the vision of Viksit Bharat aims to transform the nation into a developed economy. This goal encompasses economic growth, social justice, technological leadership, and environmental sustainability. Vision Viksit Bharat 2047 outlines India's roadmap to becoming a developed nation by the centenary of its independence in 2047. From a development economics perspective, the vision focuses on achieving sustainable and inclusive growth through technological advancement, infrastructure development, social equity and global competitiveness. This emphasizes the need to address critical challenges such as poverty, unemployment, regional disparities, climate change, and policy implementation gaps. This study also highlights key recommendations, including strengthening governance, promoting innovation, enhancing human capital, and adopting sustainable practices. If executed effectively, this vision has the potential to transform India into a prosperous, equitable, and globally influential economy by 2047. This paper explores these aspects in detail and proposes a Transforming India's Future: A Development Economics Analysis of Viksit Bharat 2047.

Keywords: Viksit Bharat, Economic growth, Objectives, Theories of development Challenges and Recommendation.

Introduction

The Viksit Bharat 2047" initiative of the Government of India laid the impetus for providing practical suggestions in certain specific aspects relevant to the entire country. There is a paucity of qualitative articles published by citizens and academicians in India and foreign countries relating to suggestions for fostering changes in the areas of education, employability, work-related remuneration policies in the private sector, and ethical administration in their country.. The suggestions provided in this article for promoting changes in certain aspects relevant to our country are primarily for gracious consideration by all the apex constitutional authorities of our nation, concerned top officials working in the Government of India, and specialists entrusted with the obligation of developing various policies relevant to our nation.

What is mean by Viksit Bharat?

'Viksit Bharat' means 'Developed India.' Viksit Bharat 2047 is the government's initiative to achieve the goal and vision of transforming India into a developed entity by 2047, the 100th year of independence for India. The government is working

towards achieving the all-round development of the country by empowering and improving the capabilities of people to achieve a developed nation or Viksit Bharat.

Background on the importance of Youth for Viksit Bharat 2047

Viksit Bharat 2047 is the vision of the Government of India to make India a developed nation by 2047, the 100th year of its independence. The vision encompasses various aspects of development, including economic growth, social progress, environmental sustainability and good governance. As India stands at this crucial juncture, poised to take off on its growth trajectory, it is important to realize that tremendous dedication and belief in India's destiny, immense desire, potential, talent, and capabilities of the Indians, especially the youth, coupled with steadfast leadership, are necessary to realize this potential. Enormous work needs to be undertaken in mission mode to make India Viksit Bharat by 2047. Youth, who constitute the largest population group, have a huge role to play as they will be the vanguard to lead India to Viksit Bharat by 2047. The Prime Minister has invited the youth of the country to participate in India's bold, ambitious, and transformative agenda, Viksit Bharat 2047, by participating in a youth movement of "Ideas from Youth for Viksit Bharat 2047".

Objectives of Viksit Bharat 2047

- Zero Poverty
- 100% Good Quality School Education.
- Access to high-quality, affordable, and comprehensive healthcare.
- 100% Skilled Labour.
- 70% of women are engaged in economic activities.
- Farmers are making our country the food basket of the world.

Key Pillars of Viksit Bharat 2047

1. Economic Growth and Structural Transformation
   - Shifting from agriculture-driven to knowledge-driven growth.
   - Strengthening manufacturing via "Make in India" and global value chains.
2. Human Capital Development
   - Universal access to quality education healthcare and skilling
   - Leveraging India's demographic dividend to fuel productivity in the economy.
3. Technology and Innovation
   - Building a robust digital economy.
   - Investment in AI 5G/6G semiconductors and space technology.
4. Environmental Sustainability
   - Pursuing green growth through renewable energy, climate resilience, and circular economy models.
5. Inclusive and Equitable Development
   - Focus on reducing poverty, gender inequality, and regional disparities.
   - Strengthening social safety nets and financial inclusion is also important.

Viksit Bharat: A Vision for a Developed India

India, the world's fifth-largest economy and home to more than 1.4 billion people, is at a critical turning point in its developmental journey. As the nation approaches the centenary of its independence in 2047, the Government of India has envisioned a transformative roadmap called "Viksit Bharat 2047, a comprehensive framework designed to establish India as a developed nation. The vision seeks to create a prosperous, inclusive, innovative, and sustainable India that ensures a high

quality of life for all its citizens while positioning the country as a global economic powerhouse. In the 21st century, development is no longer measured solely by GDP growth but also by improvements in human development, technological leadership, social equity and environmental sustainability. The Viksit Bharat vision integrates these dimensions to create a future-ready India that can compete globally while meeting the aspirations of its citizens. From a development economics perspective, the vision reflects a strategic blend of structural reforms, technological advancement, and human capital development. This aligns with global trends such as the Fourth Industrial Revolution, the transition towards a green economy, and the integration of digital ecosystems into economic growth models. With initiatives focused on innovation, skills enhancement, infrastructure expansion, and sustainable development, the framework aims to transform India into a $30–40 trillion economy by 2047. However, achieving this vision requires overcoming significant challenges, including income inequality, climate change, infrastructure gaps, regional disparities, and the need for institutional reform. Through collective efforts from the government, private sector, and citizens, Viksit Bharat aims to deliver inclusive prosperity, promote technological leadership, and ensure social and environmental wellbeing.

In essence, "Viksit Bharat: A Vision for a Developed India" represents not only an economic aspiration but also a national transformation agenda that seeks to balance growth with equity, progress with sustainability, and global integration with local empowerment.

Aspects of Viksit Bharat

1. **Structural transformation**: This refers to the shift of resources from low-productivity sectors to high-productivity sectors. This can boost economic growth, create jobs, and reduce poverty rates.
2. **Organizing labor markets**: This involves improving the quality and quantity of labor supply, enhancing workers 'skills and employability, and ensuring fair and efficient labor regulations. This can increase labor productivity, reduce informality, and promote social protection.
3. **Increasing competitiveness:** This entails enhancing the efficiency and innovation of firms, improving the quality and diversity of products and services, and expanding domestic and international markets. This can foster economic dynamism, increase exports, and attract investment.
4. **Improving financial and social inclusion**: This implies expanding access to and affordability of financial services and social welfare schemes for poor and marginalized groups. This can improve their income, savings, and consumption, as well as health, education, and empowerment.
5. **Governance reforms:** This involves strengthening the institutions and processes of governance, such as the rule of law, accountability, transparency, and participation in the political process. This can improve the delivery of public goods and services, reduce corruption, and enhance trust and legitimacy of the government.
6. **Seizing opportunities in the Green Revolution:** This refers to the adoption and promotion of green technologies and practices, such as renewable energy, energy efficiency, and climate resilience. This can reduce greenhouse gas emissions, mitigate environmental degradation, and create new opportunities for growth and development.

Challenges in Vision Viksit Bharat 2047

1. Economic Challenges: Slow structural transformation, jobless growth, low R&D spending, and investment gaps.
2. Social Challenges: Persistent poverty, income inequality, gender disparities, and inadequate skill development.
3. Technological Gaps: Limited innovation ecosystem, low digital literacy, and dependence on imported technologies.
4. Environmental Concerns: Climate change, rising pollution, energy dependency, and unsustainable urbanization.
5. Governance and Institutional Issues: Policy implementation delays, bureaucratic inefficiencies, and regional development disparities.
6. Global Economic Uncertainties: Supply chain disruptions, trade imbalances, and competition from emerging economies.

Recommendations for Vision Viksit Bharat 2047

1. Accelerate Economic Growth: Promote manufacturing, innovation, and global competitiveness to achieve a high-income economy.
2. Invest in Human Capital: Strengthen education, healthcare, and skill development to build a future ready workforce.
3. Foster Technological Innovation: Increase R\&D spending, support startups, and lead in AI, green technology, and digital infrastructure.
4. Ensure Inclusive Development by reducing poverty, bridging income gaps, and empowering women, youth, and marginalized groups.
5. Adopt Sustainable Practices: Focus on renewable energy, climate-resilient agriculture, and green mobility.
6. Improve Governance: Enhance policy implementation, transparency, and inter-state coordination for balanced regional growth.

Conclusion

The vision of Viksit Bharat 2047 is a transformative framework for India's development, integrating the economic theories of growth and indigenous wisdom. It reemphasizes development as a process that does not merely represent economic growth but much beyond that, focusing instead on inclusivity, sustainability, and the holistic well-being of all. The Vision of Viksit Bharat 2047 is a holistic and innovative development model integrates sating modern economic paradigms with traditional wisdom. It positions India as a global leader by 2047 and aspires that India not only achieves economic prosperity but also serves as a model for ethical, inclusive, and sustainable development for the world

References

1. De Janvry, A.,& Sadoulet, E. (2015). Development economics: Theory and practice. Rutledge. DOI: https://doi.org/10.4324/9781315715520
2. Mission Statement for Pt. Madan Mohan Malviya National Mission for Teachers & Teaching.
3. Domar, E. (1946). Capital expansion, rate of growth, and employment. Econometric a, 14(2).
4. Bhatia, A. K., Singhal, G., & Arora, M. S. (2024). Towards an Empowered India: Women's Role in Achieving the Viksit Bharat 2047 Vision. In Proceedings of the 2nd ICSSR Conference on "India towards Viksit Bharat (Vol. 2047, pp. 13th-14th).

5. Rekha Sharma VEETHIKA-An International Interdisciplinary Research Journal | E-ISSN: 2454-342XDOI:10.48001/veethika.1004007| V.10 | 4: Oct-Dec 2024
6. Elementary educations in India: Trends, National University of Educational Planning and Administration.
7. Ministry of Human Resource Development.
8. http://www.teindia.nic.in. Accessed April 20, 2018
9. https://no1hussainpur.kvs.ac.in/en/mission-statement-of-viksit-bharat/
10. https://pib.gov.in/PressReleaseIframePage.aspx?PRID= 1985077
11. https://www.gktoday.in/viksit-bharat-2047-voice-ofyouth-initiative/
12. .http://www.thehindu.com/news/national/UNICEFreport-shows-results-of-integrated-schools-in Rajasthan/article14463872.ece. Accessed May 03, 2018

An Overview of India's Defence Manufacturing Sector

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Abstract:

The Defence manufacturing industry is a major contributor in the growth of an Indian economy. Demand for Defence equipment is rising as India prepares to modernize its forces in response to the increased prospect of a two-front war. India's approach to developing, scaling, and exporting Defence assets is changing dramatically. For a longer period, the government relied on imports for critical equipment and systems, frequently at the expense of sovereignty, delays, and strategic inflexibility. However, a new ecosystem is emerging—one in which indigenous capacity, private-sector innovation, and policy backing are working together to reshape India's Defence manufacturing industry. Setting the tone in 2020 was the Atmanirbhar Bharat initiative. Since then, India has increased its Defence modernization spending, implemented positive indigenization lists, prohibited the import of more than 400 products, established a single-window system for policy clearances and procurement, and opened up Defence corridors for industry clusters in Tamil Nadu and Uttar Pradesh. This chapter shows how India is moving toward self-reliance by looking at the path of Defence manufacturing in the larger context of politics and economics. It also shows how this sector is important for both national security and industrial capability in the 21st century.

Keywords: Defence Manufacturing, Technological Innovation, Public-private Collaboration

1. Context of the Chapter:

For the FY 2024-25 the government of India has allotted a largest budget to the Ministry of Defence. The exports performance of the Defence marked an increase of 32.5%. In the Interim Budget for 2024-25, an allocation of INR 238.5 billion was made to the Defence Research and Development Organization (DRDO). In FY26, the Ministry of Defence (MoD) was allocated a total Budget of Rs. 6.81 lakh crore (US$ 78.7 billion), which is 9.5% YoY increase from FY25 budget. Now the India is among the strongest military powers focusing on expanding its Defence sector to strengthen national security. By allocating 75% of Defence capital procurement budget for purchasing from domestic sources the govt. of India is pushing to strengthen the Defence sector. Grounded in strategic insight and with a forward-looking perspective on shaping the robust Defence ecosystem govt. of India uncovers the critical gaps and proposes well-defined time bound actionable - paving a path toward achieving our vision of Viksit Bharat by the year 2047.

To encourage the companies to build designing capabilities the IDDM i.e. Indigenously Designed, Developed and Manufactured in India was introduced. This was a significant reform to prioritize domestic procurement. The Defence Acquisition Procedure (DAP) 2020 further refined procurement rules to ensure fair competition and equal opportunity for Indian private companies alongside public sector

undertakings (PSUs). Revamped trial and testing protocols increased transparency and fairness. Under the Strategic Partnership Model, only companies owned and controlled by Indian citizens could qualify as strategic partners, encouraging homegrown leadership. Preference to Make in India Initiative 46 Defence Items were notified under the public procurement. This also mandated from local suppliers irrespective of purchase value, provided local capacity and competition exist.

2. Recent Developments in Defence Manufacturing:

2.1 SAMARTHYA: Showcasing India's Defence Indigenization:

At the Aero India 2025 event "SAMARTHYA," which highlighted India's advancements in defense manufacturing, the success story of indigenization and innovation in the defense sector was highlighted. Along with nine successful innovation projects from iDEX, the event showcased 33 significant indigenized items, 24 of which were created by the Indian Navy, the Defence Research and Development Organization (DRDO), and Defence Public Sector Undertakings (DPSUs).

Among the key indigenized items displayed were:

- Electro Block of the Anti-Aircraft Machine Gun
- Electric Mobile Part for Submarines
- Torsion Bar Suspension for HMV 6x6
- Extruded Aluminium Alloy for LCA MK-I/II and LCH Components
- Indian High-Temperature Alloy (IHTA)
- VPX-135 Single Board Computer
- Naval Anti-Ship Missile (Short Range)
- RudraM II Missile
- C4ISR System
- DIFM R118 Electronic Warfare Systems

2.2 Defence Industrial Corridors:

- Two Defence Industrial Corridors (DICs) have been set up in Uttar Pradesh and Tamil Nadu to boost Defence Manufacturing. These corridors provide incentives to companies investing in the sector.
- Investments worth more than Rs 8,658 crore have already been made in the 6 nodes of UP viz. Agra, Aligarh, Chitrakoot, Jhansi, Kanpur and Lucknow and 5 nodes of Tamil Nadu viz. Chennai, Coimbatore, Hosur, Salem and Tiruchirappalli.
- As of February 2025, 253 MoUs have been signed, with a potential investment of ₹53,439 crore.

2.3 Top Ten Defence Manufacturing Companies in India:

1. Hindustan Aeronautics Limited (HAL)
2. Bharat Electronics Limited (BEL)
3. Bharat Dynamics Limited (BDL)
4. Mazagon Dock Shipbuilders Limited (MDL)
5. Cochin Shipyard Limited (CSL)
6. Larsen & Toubro (L&T)
7. Tata Advanced Systems Limited (TASL)
8. Bharat Forge Limited (Kalyani Group)
9. Solar Industries India Limited

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10. Zen Technologies Limited

2.4 Role of DRDO:

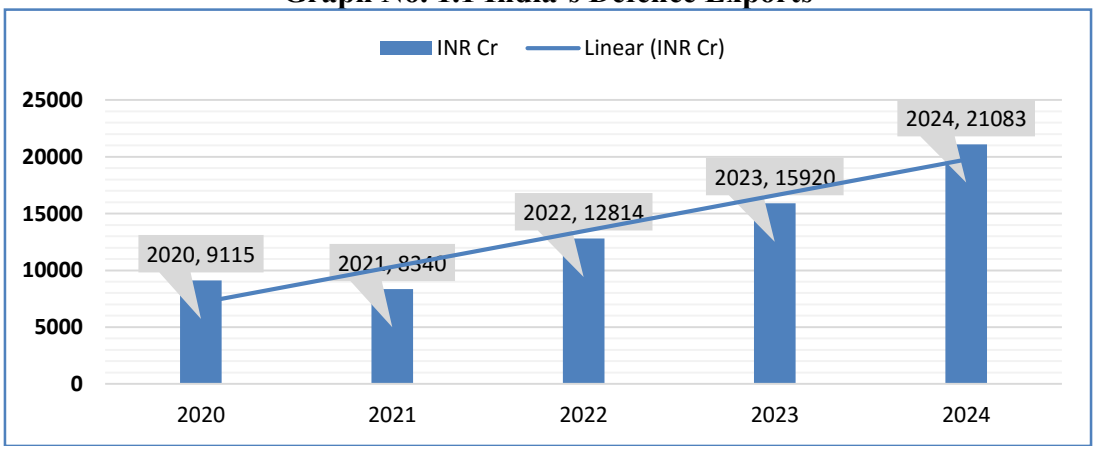
India's top defense R&D organization is the Defence Research and Development Organization, or DRDO. It was created in 1958 by the Defense Science Organization and the Directorate of Technical Development and Production. After 61 years of operation, DRDO has advanced significantly and is now essential to the nation's defense requirements. The business has successfully completed thousands of projects. It comprises more than 25,000 individuals who serve as technical, support, or scientific staff, as well as more than 5,000 scientists who are employed by the Defence Research and Development Service.

3.0 India's Defence Sector at a Glance:

3.1 India's Defence Exports:

India has exported defense equipment, subsystems, parts, and components valued at around INR 21,083 Cr. Weapon simulators, torpedo loading mechanisms, tear gas launchers, night vision binoculars, alarm monitoring and control, lightweight torpedo and fire control systems, armored protection vehicles, weapons locating radar, and coastal surveillance radar are just a few of the defense products that India exports to more than 80 nations. India has set high goals, hoping to reach US$5 billion in defense exports by CY25. India's expanding defense exports demonstrate the improved capabilities and competitiveness of its defense-based products and reflect developments in global defense production, decreased reliance on imports, simplified export processes, and government initiatives to support the sector.

Graph No. 1.1 India's Defence Exports



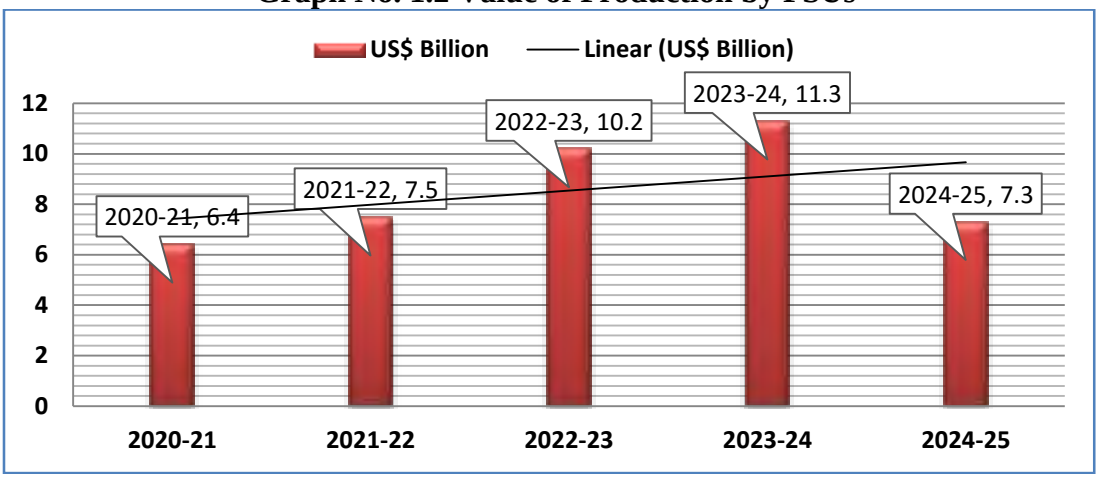
Source: PIB

3.2 Value of Production by PSUs:

The rise in defence production from 2020-21 to 2023-24 reflects success in national policies promoting indigenization, such as Make in India and Aatmanirbhar Bharat. Strategic reforms—including streamlined procurement, incentives for private sector participation, and innovation initiatives like iDEX and SRIJAN—have led to record-breaking growth and expanded exports. The sharp drop in 2024-25 suggests cyclical shifts, budgetary constraints, or completion of major contracts, but does not diminish the underlying strength of India's defence manufacturing ecosystem.

Following graph shows the y-o-y value of defence production by public sector units:

Graph No. 1.2 Value of Production by PSUs



Global supply chains have been interrupted and prices have reached an all-time high due to a geopolitical crisis triggered by the Russia-Ukraine war in CY22. India was impacted, although ultimately things stabilized as a result of the CPI falling from 6.7% in CY22 to 5.4% in CY23. The gradual lowering of the fiscal deficit and the inflation control policies put in place by the RBI and Indian government were the main causes of this decline. In FY23, FY24, and FY25, India's budget deficit was 6.4% of GDP, 5.8%, and 4.9%, respectively. This improvement in the budget deficit has been essential in reducing inflationary pressures, controlling public debt, and stabilizing market expectations by reducing the need for government borrowing. The RBI kept repo rates steady to prevent unnecessary market disruptions. Concurrently, the government lowered excise rates on gasoline and diesel as well as import duties on fundamental raw materials such crude edible oils. The anticipated drop in inflation during the following years is the result of the government's comprehensive economic policies, which include supply-side, fiscal, and monetary initiatives.

4.0 Conclusion:

India has been putting a lot of effort into creating its own defense items in an effort to become a major supplier of military hardware. Over the past year, investors in large defense PSUs have seen substantial returns due to the rise in defense manufacturing. ICRA projects opportunities worth Rs2.75 lakh crore for Indian domestic entities over the next two years, with 22% of those opportunities being available to private sector entities. This is supported by the increased budgetary allocation, the government's goal of reducing reliance on imports, and its target production of Rs. 1.75 lakh crore by 2025.

Strategic reforms, private sector participation, and innovation have boosted indigenous manufacturing, making India a self-reliant, globally trusted defence exporter while strengthening national security and economic growth. The increasing allocation of resources for defence not only enhances India’s military capabilities but also fuels job creation, technological advancement, and industrial growth. As India emerges as a credible defence manufacturing hub, its defence diplomacy and strategic footprint continue to expand on the global stage.

References:

1. Kaur, T., & Mehta, S. (2024). Indian Defence Manufacturing Industry: Import Substitution, Self-Reliance and Public Policy. Int. Jr. of Contemp. Res. In Multi., 3(5), 82-96. https://multiarticlesjournal.com/uploads/articles/IJCRM-2024-3-5-1.pdf
2. Abhimanyu. (2024). Atmanirbhar Bharat in Defence: Historical Context and Contemporary Implications for India's Strategic Autonomy. International Journal of Social Impact, 9(4), 84-91. https://doi.org/10.25215/2455/0904008
3. Yuvaraj Gogoi (PhD) (December-2024). India's Emphasis on Self Reliance in Defence Manufacturing and Technology and the Role of Private Players. International Journal Of Novel Research And Development, 9(12), a764-a769. https://doi.org/10.5281/zenodo.15105055
4. Madhavan J. P.(2025). Indigenization of Indian Defence Sector. Journal of Emerging Technologies and Innovative Research.12 (2), a479-a486.
5. https://www.ibef.org/
6. https://mod.gov.in/

Health and Nutritional Benefits of Millets: A Kerala-Based Business Perspective for Viksit Bharat 2047

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Abstract

Millets, recognized as "nutri-cereals," are increasingly positioned as climate-resilient and nutrient-rich crops that can address health, nutrition, and livelihood challenges. This study explores the health and nutritional benefits of millets from a Kerala-based business perspective, linking local initiatives with India's national vision of Viksit Bharat 2047. Using secondary data from government policies, institutional reports, scholarly articles, and state-led projects, the paper analyzes initiatives such as the Poshaka Samriddhi Mission, Attappadi Millet Village Project, and Millet Cafes. Findings highlight millets' potential to combat lifestyle diseases, enhance rural livelihoods, and support climate-resilient farming. The study emphasizes the need for strengthened value chains, farmer empowerment, entrepreneurship, and export-oriented strategies to mainstream millets into Kerala's food systems. By bridging traditional practices with modern innovations, millets emerge as a pathway to sustainable nutrition, inclusive growth, and rural development in Kerala, contributing to the realization of Viksit Bharat 2047.

Keywords: Millets, Nutritional security, Climate-resilient agriculture, Rural entrepreneurship, Viksit Bharat 2047

Introduction:

Millets, often referred to as "nutri-cereals," are emerging as superfoods in the global food industry due to their rich nutritional profile and adaptability to diverse climatic conditions. In India, the promotion of millets has gained significant momentum as part of sustainable agricultural practices and food security initiatives. Kerala, known for its health-conscious consumer base and growing organic food market, offers immense potential for millet-based business ventures.

Millets are rich in protein, dietary fiber, vitamins, and minerals, making them an ideal substitute for rice and wheat in combating lifestyle diseases such as diabetes, obesity, and cardiovascular disorders. With the rising awareness of health and wellness, the demand for millet-based products in Kerala is witnessing an upward trend. From a business perspective, millets present unique opportunities for value addition through ready-to-eat snacks, bakery products, health mixes, and beverages. Kerala's evolving consumer preferences, coupled with its strong tourism and hospitality sector, can act as a platform to promote millet-based diets. The Government of India's vision of Viksit Bharat 2047 emphasizes sustainable food systems, farmer empowerment, and nutrition security, where millets can play a

pivotal role. In Kerala, promoting millet cultivation and business enterprises not only strengthens rural livelihoods but also aligns with the larger national development agenda. Thus, exploring the health and nutritional benefits of millets from a Kerala-based business perspective provides insights into how traditional crops can be transformed into modern economic opportunities, paving the way toward Viksit Bharat 2047.

Research Problem:

Despite the growing recognition of millets as nutrient-rich and climate-resilient crops, their production, consumption, and commercialization in Kerala remain limited compared to other staple cereals like rice and wheat. The lack of large-scale cultivation, weak supply chains, and insufficient market awareness have restricted the integration of millets into the mainstream food system of the state. Although consumer interest in health and wellness products is rising, many millet-based business opportunities remain untapped due to inadequate promotion, branding, and value addition. Furthermore, small-scale farmers in Kerala face challenges in adopting millet cultivation because of low profitability, limited government support, and lack of organized processing units. This gap between nutritional potential and business viability highlights the need for research into the health and nutritional benefits of millets, while exploring their prospects as sustainable business models within Kerala. Addressing this problem will not only enhance food and nutrition security but also contribute to the vision of Viksit Bharat 2047 by promoting inclusive growth and rural empowerment.

Importance of the Study:

The present study is significant as it bridges the nutritional, economic, and policy dimensions of millet promotion within Kerala's unique socio-economic context. While millets are globally recognized as "nutri-cereals" for their role in combating lifestyle diseases and ensuring climate-resilient farming, their business potential in Kerala remains underexplored. By analyzing state-led initiatives such as the *Poshaka Samriddhi Mission*, millet cafes, and tribal livelihood projects, this research highlights how traditional crops can be repositioned as modern business opportunities. The study is important not only for addressing malnutrition, lifestyle disorders, and food insecurity but also for identifying pathways to farmer empowerment, rural entrepreneurship, and sustainable agricultural practices. Most importantly, it contributes to the realization of *Viksit Bharat 2047* by aligning Kerala's millet-based strategies with national goals of health, nutrition, and inclusive economic growth.

Objectives

- To identify and analyze the key millet promotion initiatives undertaken by the Kerala state government and associated institutions.
- To critically evaluate Kerala's millet-based agricultural interventions as a model for climate-resilient farming, emphasizing their scalability, role in rural

empowerment, nutritional security, and contribution to India's sustainable development under *Viksit Bharat 2047*.

Research Methodology:

The present study relies entirely on secondary data sources. Key references include government reports, policy documents, and mission guidelines such as the *Poshaka Samriddhi Mission* and the *Attappadi Millet Village Project*. In addition, scholarly articles and review papers published in reputed journals like *Frontiers in Nutrition*, *Discover Food*, and the *Journal of Drug Research in Ayurvedic Sciences* were examined to capture the nutritional and therapeutic dimensions of millets. Reports and publications from the Indian Council of Agricultural Research (ICAR) and the Indian Institute of Millets Research (IIMR) were also reviewed to understand national-level perspectives. Furthermore, news articles, official press releases, and online resources from the Kerala Agriculture Department and related institutions were analyzed to gather current information on state-level millet initiatives. A systematic content analysis was carried out to review state-level millet promotion initiatives, focusing on their objectives, implementation strategies, and documented outcomes. This was followed by a comparative analysis, where Kerala's millet promotion strategies were examined against national-level approaches to assess their scalability and alignment with the broader vision of *Viksit Bharat 2047*.

Scope of the Study:

The scope of this study is both thematic and geographical, focusing on the health and nutritional benefits of millets from a Kerala-based business perspective within the broader framework of *Viksit Bharat 2047*. Geographically, the study is confined to Kerala, with special emphasis on millet promotion initiatives in districts such as Palakkad, Idukki, Wayanad, Kozhikode, and Alappuzha, which represent diverse agro-ecological zones and innovative millet-based interventions.

Review of Literature

Jacob et al. (2024) provided a comprehensive narrative review highlighting millets' therapeutic potential in combating diabetes, cardiovascular diseases, and malnutrition, positioning them as functional foods with global market relevance. In the Indian context, *Discover Food* (2024) underscored the potential of integrating millets into mainstream diets by documenting their antioxidant, antihyperglycemic, and anti-hypertensive properties, while also linking millet promotion with India's sustainable development goals.

A review in the *Journal of Drug Research in Ayurvedic Sciences* (2023) further explored the Ayurvedic and nutritional dimensions of millets, noting their high protein content, essential amino acids, and role in lifestyle disease management. Mishra et al. (2022) analyzed the nutritional values and phytochemical properties of millets, arguing that they are effective alternatives to rice and wheat in addressing micronutrient deficiencies.

Chandrakar and Shahi (2023) synthesized findings on millets' macronutrient and micronutrient values, linking their consumption with gastrointestinal health, chronic disease prevention, and sustainable agricultural practices.

Content Analysis

Millet promotion initiatives undertaken by the Kerala state government and associated institutions.

- **Poshaka Samriddhi Mission**
  Launched in August 2023, the *Poshaka Samriddhi Mission* is a flagship initiative of the Kerala government to revive and expand millet cultivation. The mission has set an ambitious target of producing 3,000 tonnes of millets annually. To achieve this, six new millet processing units are being established across the state, in addition to the one functioning in Attappadi. These units are designed to support value addition, packaging, and marketing, thereby enhancing the income of farmers and boosting millet availability in both rural and urban markets.
- **Millet Cafes Across Districts**
  Under the *Poshaka Mission*, the Agriculture Department is promoting consumer awareness and demand creation through the establishment of *Millet Cafes*. The plan envisions at least one Millet Café in every district, run by collectives such as Kudumbashree units or Farmer Producer Organizations (FPOs). These cafés serve and sell millet-based food products, making millets accessible to the wider population. The first such café was launched in Attappadi in 2022 by Kudumbashree, which not only promotes healthier eating habits but also creates livelihood opportunities for women and farmers engaged in millet enterprises.
- **MoU with Indian Institute of Millets Research (IIMR)**
  In October 2023, Kerala signed a Memorandum of Understanding (MoU) with the ICAR–Indian Institute of Millets Research (IIMR), Hyderabad. This partnership aims to provide technical support to the Poshaka Samriddhi Mission, particularly in areas such as millet processing, branding, marketing, and value addition. The collaboration ensures that Kerala's millet initiatives are aligned with national research and development efforts, while also helping to standardize quality and expand the market reach of millet products both domestically and globally.
- **Attappadi Millet Village & Expansion Efforts**
  The *Attappadi Millet Village Project*, launched in 2017, marked a turning point in reviving traditional millet farming practices among tribal communities. Initially covering over 1,200 hectares, the project now aims to expand to 3,000 hectares with government support. To encourage farmers, the state provides subsidies, fencing to prevent crop damage from wildlife, and procurement at attractive prices—₹40 per kg for conventional millets and up

to ₹60 for organically grown produce. This initiative has not only restored food sovereignty among tribal households but also turned Attappadi into a role model for millet-based rural development.

- **Model Millet Farm for Education & Research**
  A *Model Millet Farm* was established in Kozhikode (Orkkatteri) to cultivate all nine millet varieties, serving as a center for research, farmer training, and student learning. Beyond cultivation, the farm plays a vital role in awareness creation by hosting educational programs and competitions. For example, an essay competition on millets' role in addressing lifestyle diseases was conducted, with millets given as prizes to participants—linking knowledge dissemination with practical promotion. This initiative has created a bridge between research, policy, and public participation in millet revival.
- **Crop Insurance Inclusion**
  Since 2020, Kerala has included major millet crops such as ragi, jowar, bajra, and foxtail millet under the *Restructured Weather-Based Crop Insurance Scheme (RWBCIS)*. This policy ensures financial protection for farmers against weather-related risks such as drought, excessive rainfall, or unseasonal climate changes. By integrating millets into formal risk-management mechanisms, the state has reduced farmers' vulnerability to climate shocks and encouraged more cultivators to shift towards resilient millet farming.
- **Tribal Livelihood & Health Improvements**
  The Millet Village Project in Attappadi, jointly implemented by the Agriculture Department and the Scheduled Tribes Development Department, has demonstrated how millet promotion can transform livelihoods and health. Traditionally grown millets, once abandoned, have now been reintroduced into tribal diets, improving nutritional security. Studies have shown a decline in malnutrition and infant mortality rates among Attappadi's tribal population since the project's implementation. At the same time, millet cultivation has become a source of income and empowerment for tribal farmers, particularly women, strengthening their economic independence and food sovereignty. This holistic impact makes the Attappadi project an inspiring example of linking agriculture with community health and social justice.

a) Key Millet-Producing Districts in Kerala

Millet cultivation in Kerala is regionally concentrated, with certain districts emerging as hubs of production and innovation. **Palakkad**, particularly the Attappady region, is often referred to as the "millet capital of Kerala." Here, tribal communities have preserved millet cultivation as part of their traditional dietary practices. The government's Millet Village scheme, launched in 2017–18, has further strengthened this effort by promoting traditional farming methods and securing livelihoods. Attappady has since become the epicenter of millet revival, showcasing how community-driven approaches can revive forgotten crops.

Beyond Palakkad, tribal settlements in **Idukki and Wayanad** have also contributed to millet farming, though production here remains localized. These regions, known for their diverse agro-ecological conditions, offer potential for scaling up millet cultivation, especially as part of livelihood programs targeting tribal empowerment and nutritional security.

A different success story has emerged in **Alappuzha's Cherthala South panchayat**, where large-scale ragi (finger millet) cultivation has been undertaken in sandy coastal soils. Spread across more than 250 acres and 22 wards, this initiative has demonstrated yields of approximately 2.1 tonnes per hectare, proving the adaptability of millets even in non-traditional environments. Inspired by the Attappady model, the Cherthala project highlights the scalability of millet farming beyond tribal belts.

In **Kozhikode**, the establishment of a model millet farm at Orkkatteri under the Millet Mission Kerala represents a research and training hub for farmers, students, and policymakers. This farm cultivates all nine major millet varieties, serving as a living laboratory for knowledge dissemination, awareness campaigns, and farmer education. By integrating production with training and awareness, Kozhikode's farm underscores the role of education in mainstreaming millet cultivation.

Together, these district-level initiatives demonstrate Kerala's diverse and innovative approaches to millet promotion. Palakkad showcases tribal heritage and community-led farming, Idukki and Wayanad represent opportunities for tribal empowerment, Alappuzha highlights millet adaptability in coastal ecosystems, and Kozhikode emphasizes research and education. Collectively, they create a state-wide framework for positioning Kerala as a model for millet-based climate-resilient agriculture.

A Futuristic Model for Increasing Millet Production in Kerala: A Climate-Resilient Roadmap to Viksit Bharat 2047

1. **Climate-Resilient Potential of Millets**

Millets, often referred to as "climate-smart crops", present Kerala with a unique opportunity to address the intersecting challenges of climate change, food security, and public health. Unlike conventional cereals such as rice and wheat—which demand high water input, chemical fertilizers, and stable weather patterns—millets are naturally adapted to low-water, heat-stressed, and nutrient-poor conditions. Their short growing cycle (60–90 days) allows for flexible cultivation windows, making them highly adaptable to Kerala's increasingly erratic monsoons. Furthermore, their resilience to pests and minimal input requirements lower the risk and cost for farmers, making millet cultivation both economically viable and ecologically sustainable.

From an agro-ecological perspective, millets can be grown on degraded soils, hilly terrains, and marginal lands, which are otherwise unsuitable for rice or cash crops. This is particularly relevant for Kerala, where land fragmentation, soil erosion, and deforestation have reduced the scope for conventional farming. By restoring such

marginal areas through millet farming, Kerala can achieve both land-use efficiency and ecological regeneration.

In addition to ecological resilience, millets are powerful tools for addressing nutritional insecurity and lifestyle diseases. Rich in dietary fiber, iron, calcium, magnesium, and antioxidants, millets help combat malnutrition while reducing risks of diabetes, hypertension, and obesity—conditions increasingly prevalent in Kerala. Their low glycemic index makes them particularly beneficial in addressing the state's rising diabetes burden. By mainstreaming millets in school mid-day meals, public distribution systems, and state-run Millet Cafes, Kerala can integrate nutrition-sensitive agriculture into its broader public health agenda.

Economically, millet promotion strengthens inclusive livelihoods. Tribal communities in Attappadi and farmer producer collectives across Kerala are already witnessing improved income stability through value addition, assured procurement, and millet-based enterprises. When supported by crop insurance and branding initiatives, millets can reduce farmer vulnerability to market and climate shocks.

Strategically, scaling up millet cultivation aligns with the national priorities of Viksit Bharat 2047, which envisions a self-reliant, nutritionally secure, and sustainable India. By positioning itself as a model state for millet-driven climate-resilient agriculture, Kerala can inspire other regions to replicate this approach, ensuring a triple dividend—climate adaptation, nutritional well-being, and rural empowerment.

2. ey Millet-Producing Districts as Pillars of Expansion

The existing millet-producing districts of Kerala provide a foundation for scaling production. Palakkad's Attappady region, known as the "millet capital," already showcases successful tribal-led millet farming under the Millet Village scheme. Similarly, Idukki and Wayanad demonstrate localized tribal cultivation with potential for organized scaling. In Alappuzha's Cherthala South, millet production has proven viable even in sandy coastal soils, achieving yields of 2.1 tonnes per hectare—showing adaptability beyond traditional belts. Meanwhile, Kozhikode's Orkkatteri model farm, which cultivates all nine major millet varieties, stands as a center for innovation, research, and farmer training. Together, these districts illustrate Kerala's diverse agro-ecological potential, providing replicable models that can be scaled statewide.

3. Futuristic Model for Scaling Millet Production

To transform Kerala into a millet hub by 2047, a multi-pronged futuristic model can be envisioned:

- **Cluster-Based Farming:** Expand millet cultivation in identified clusters of Palakkad, Wayanad, Idukki, Alappuzha, and Kozhikode, with Farmer Producer Organizations (FPOs) leading collective farming and aggregation.
- **Technology Integration:** Deploy precision farming tools, AI-driven crop monitoring, and mobile apps for weather prediction, soil health analysis, and pest management.

- **Value Chain Development:** Strengthen processing units, storage, and branding strategies to ensure that farmers benefit from value addition rather than raw sales.
- **Agro-Education Hubs:** Replicate the Kozhikode model farm in every millet-producing district as "Centers of Excellence" for research, training, and student engagement.
- **Market Linkages:** Scale Millet Cafes, supermarkets, and e-commerce platforms to create urban-rural demand loops. Kerala's strong hospitality sector can integrate millet diets into tourism experiences.
- **Policy Support:** Expand subsidies, minimum support prices, and crop insurance schemes tailored to millets. Encourage corporate partnerships for millet-based CSR activities.
- **Youth and Women Entrepreneurship:** Promote startups focusing on millet-based health products, ready-to-eat foods, and exports, leveraging Kerala's educated workforce and Kudumbashree networks.

4. Kerala as a Model for Climate-Resilient Agriculture

By combining its district-level initiatives with futuristic interventions, Kerala can present itself as a national model for climate-resilient millet production. Attappady represents community-led traditional wisdom; Wayanad and Idukki reflect tribal empowerment opportunities; Cherthala South demonstrates millet adaptability in coastal zones; and Kozhikode provides a research-driven innovation hub. Collectively, these regions show how diverse ecosystems can be aligned with sustainable, resilient agriculture.

5. Contribution to Viksit Bharat 2047

Scaling up millet initiatives in Kerala through this futuristic model directly contributes to the vision of Viksit Bharat 2047. Nutritional security will be enhanced through widespread millet consumption; rural livelihoods will be strengthened via farmer empowerment and entrepreneurial opportunities; climate resilience will be built through sustainable farming systems; and rural employment will expand with value chain and agro-tourism industries. Moreover, Kerala can position India globally as a leader in millet-based innovation and exports, reflecting the country's commitment to sustainable agriculture and holistic development.

Findings

- Kerala has shown strong commitment to millet revival through the Poshaka Samriddhi Mission, which targets 3,000 tonnes of annual production and the establishment of new processing units.
- The setting up of millet processing units and Millet Cafes reflects the government's efforts to promote value addition, consumer awareness, and sustainable market linkages.

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- The MoU signed with the Indian Institute of Millets Research (IIMR) provides scientific support, technology transfer, and branding assistance for Kerala's millet mission.
- The Attappadi Millet Village Project illustrates how tribal communities can revive traditional farming while improving food sovereignty, nutrition, and incomes.
- The Model Millet Farm at Kozhikode serves as an educational hub by integrating research, farmer training, and student participation to strengthen awareness.
- The inclusion of millets under crop insurance schemes since 2020 has encouraged more farmers to adopt millet cultivation by reducing weather-related risks.
- Millet promotion in Attappadi has reduced malnutrition and infant mortality while creating income opportunities and empowering women farmers.
- Districts such as Palakkad, Idukki, Wayanad, Alappuzha, and Kozhikode demonstrate Kerala's diverse agro-ecological potential, proving that millets can adapt to both tribal and coastal ecosystems.
- Kerala has already developed a futuristic roadmap that highlights cluster-based farming, technology integration, market linkages, and entrepreneurship to scale millet production by 2047.
- Kerala's millet initiatives align with the national vision of *Viksit Bharat 2047* by contributing to climate resilience, nutritional security, rural livelihood development, and positioning India as a global leader in millet innovation.

Suggestions

- Millet cultivation should be expanded in Kerala by providing subsidies and assured procurement to support small and marginal farmers.
- The value chain must be strengthened by establishing more millet processing units and linking them with Farmer Producer Organizations (FPOs).
- Public awareness should be promoted through nationwide campaigns that highlight the health and climate benefits of millets.
- Millets need to be integrated into government programs such as mid-day meals, hospitals, and public distribution systems.
- Millet entrepreneurship should be encouraged by supporting startups in millet-based snacks, bakery items, and health products.
- An export-oriented strategy should be developed by creating strong branding for Indian millets in global markets.

Conclusion

The promotion of millets in Kerala represents a holistic strategy that integrates health, nutrition, climate resilience, and rural development. With flagship initiatives

such as the Poshaka Samriddhi Mission, Attappadi Millet Village, and the establishment of Millet Cafes and research farms, the state has demonstrated how traditional crops can be revitalized to meet contemporary challenges. Millets not only address the growing concerns of lifestyle diseases and nutritional insecurity but also provide sustainable livelihood opportunities for farmers, particularly tribal and marginalized communities. By strengthening value chains, encouraging entrepreneurship, and aligning with national priorities under *Viksit Bharat 2047*, Kerala can position itself as a model state for millet-based innovation and climate-resilient agriculture. Thus, millets hold the potential to bridge the gap between tradition and modernity, ensuring a healthier population, empowered rural economy, and sustainable future.

Reference

1. Chandrakar, L., & Shahi, S. (2023). Millets and their nutritional value: A review. *Journal of Advanced Zoology*, *44*(2), 118–123. https://www.jazindia.com/index.php/jaz/article/view/2387
2. Comprehensive review on millets: Nutritional values, effect of processing and therapeutic potential. (2023). *Journal of Drug Research in Ayurvedic Sciences*, *8*(Supplement 1), 14–20. https://doi.org/10.4103/jdras.jdras_123_23
3. Discover Food. (2024). Promising potential of millets as the staple of our plate: An Indian perspective. *Discover Food.* https://doi.org/10.1007/s44187-024-00176-7
4. Government of Kerala. (2023). *Poshaka Samriddhi Mission guidelines.* Kerala Agriculture Department. https://www.keralaagriculture.gov.in/
5. Indian Council of Agricultural Research. (2022). *Millets for nutritional security and climate resilience.* ICAR Publications. https://icar.org.in/
6. Indian Institute of Millets Research. (2023). *Annual report 2022–23.* ICAR–IIMR. https://millets.res.in/
7. Jacob, J., Krishnan, V., Antony, C., Bhavyasri, M., Aruna, C., Mishra, K., Nepolean, T., Satyavathi, C. T., & Visarada, K. B. R. S. (2024). The nutrition and therapeutic potential of millets: An updated narrative review. *Frontiers in Nutrition, 11,* Article 1346869. https://doi.org/10.3389/fnut.2024.1346869
8. Mishra, A., Pattnaik, B., Dutta, T., & Baitharu, I. (2022). Nutritional values and potential health benefits of millets: A review. *Journal of Nutrients, 8*(1), 9–26. https://doi.org/10.18488/87.v8i1.3176
9. Press Information Bureau. (2023, July 28). *Kerala launches Attappadi Millet Village expansion to 3,000 hectares.* Government of India. https://pib.gov.in/
10. World Health Organization. (2021). *Millets: Enhancing nutrition and food security.* WHO Regional Office for South-East Asia.

LPG and Ecosystem of Digital Payment

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Abstract:-

In India Indian Banking, Liberalization, Privatization and Globalization play a very important role. The present study depicts that the online banking system in India and the concepts of LPG in Indian Banking Sector and also as well as researcher taken the various review of other authors. E-Banking system is very simple, cost less, and timeless with security. The researcher has discussed the concept of E-Banking with figure. The concept of Privatization refers to the transfer of assets or service functions from public to private ownership. Liberalization refers to relaxation of previous government restrictions usually in areas of social and economic policies and Globalization is the process of interaction and integration among the people, companies, and governments of different nations and lastly the researcher has concluded this research.

Keywords: *E-Banking, Liberalization, Privatization and Globalization, Digital Payment Options*

Introduction:

In the age of Liberalization, Privatization and Globalization Indian Banking plays an important role in strengthens Indian economy. Electronic Banking includes all monetary and non-monetary transaction via electronic systems. In modern economics banking has very important place. Banks provides a lot of facilities to the customers and fulfils their needs easily. Banking plays a very important role in development in Indian economy like importance of Bloodline in the human body. The banking system has capacity to add to the total supply of money by means of credit creations. The Indian banking sector has emerged as one of the strongest drivers of India's economic growth. The Indian banking industry has made an outstanding advancement in last few years. The Indian banking can be broadly categorized into nationalized (government owned), private banks and specialized banking institutions. The Reserve Bank of India acts a centralized body monitoring any discrepancies and shortcoming in the system ,since the nationalization of banks in 1969 the public sector banks or the nationalized banks have acquired a place of prominence and has since then seen tremendous progress. The need to become highly customer focused has forced the slow-moving public sector banks to adopt a fast track approach.

Digital Payment System:

Digital Payment System means making payments by using electronic devices. In digital payments, users use digital modes to send and receive money It is also called electronic payment system. No paper cash is included in the digital payments. All the transactions in digital payments are done using electronic devices like online. It is fast and easy way to make payment. This method of transaction is very simple and time saving. For the use of digital payment we just need to a bank account, by

using bank account we can simply connect bank account to various banks application to use the digital or online transactions.

Review of Literature:

P.K.Gupta (2008): Study relates with ' Internet Banking In India – Consumer Concerns And Bank Strategies' study suggest that Internet banking in India is only at its primitive stage dominated by the Indian private and foreign banks. The use of Internet banking is confined to a few consumer segments. The legal framework as its exits requires an updating to streamline and handle the issues associated with Internet banking.

Sreya Guha (2012): Study relates With 'Paperless Banking in Indian Public Sector Banks' study suggest that paperless banking system is required for day-to-day banking transaction to reduce paper cost of banking.

Research Methodology:

The present study is based on mostly on secondary sources of data. Which are collected from Various Books, Research Journals, Annual Report of RBI, Research Articles and various websites to conclude the present research paper.

Objectives of the Study:

The following objectives are made for current research.

1. To understand the concept of E-Banking.
2. To know the concept of liberalization, privatization and globalization.
3. To Know the Digital Payment Options in India.

Concept of E- Banking:

E- Banking or Internet Banking is a term used to describe banking transactions that are performed via a secured Internet application. E-banking transactions include such things as paying bills, transferring funds, viewing account statements and paying down loans and mortgages. Although E- Banking has been popular among young Internet-savvy people for many years, its popularity is expected to grow rapidly as Internet usage grows internationally and people discover the many advantages that it provides. Online banking is an electronic payment system that enables customers of a financial institution to conduct financial transactions on a website operated by the institution, such as a retail bank, virtual bank, credit union or building society. Online banking is also referred as Internet banking, e-banking, virtual banking and by other terms.

Conducting a successful electronic banking transaction, like paying bills online, requires basic computer skills and knowing your way around the Internet. Being computer-literate is not common to everyone especially seniors who might not have grown up using computers and this is a major disadvantage to electronic banking.

Concept of Liberalization:

In general, liberalization refers to relaxation of previous government restrictions usually in areas of social and economic policies. Thus, when government liberalizes trade it means it has removed the tariff, subsidies and other restrictions on the flow of goods and services between countries. Liberalization in banking sector in India noticed in early 1990s, when India adopted a new economic policy for the

development of the nation. Narasimha Rao Government embarked on a policy of liberalization, licensing a small number of private banks. For the first time in India new private banks got license for providing banking services. The first bank in India set up after adaptation of new liberalization policy in banking sector was Global Trust Bank. It was later amalgamated with Oriental Bank of Commerce. This move towards the liberalization along with fastest economic growth in India. Indian Banking sector has noticed rapid growth with strong contribution from all sectors of banks. The next step for Indian banking sector has been set up with the proposed relaxation in the norms of Foreign Direct Investment. All foreign investors in banks can holds up to 74% with some restrictions of the company.

Concept of Privatization:-

Privatization in general, refers to the transfer of assets or service functions from public to private ownership. Privatization can be achieved in many ways-franchising, leasing, contracting and divesture. Privatization means transfer of ownership and management of an enterprise from the public sector to private sector. It also means the withdrawal of the state from an industry or sector, partially or fully. Privatization makes a change from dogmatism to pragmatism and amounts to a reversal of policy. The most common motive for privatization appears to be fiscal compulsion coupled with fiscal allurement. A Reserve Bank of India (RBI) panel set up to review governance of bank board's has suggested that the government should either privatize or merge state-run banks, or design a new governance structure for these banks to allow them to compete better and avoid repeated requests for recapitalization. The panel suggested privatization or a different governance structure in view of the low productivity and steep erosion in asset quality and "demonstrated competitiveness of public sector banks over varying time periods". The panel suggested that the RBI should designate a specific category of investors in banks known as authorized bank investors (ABI), who would be allowed to hold as much as 20% in banks without regulatory approval. Such investors would include funds with diversified investors.

Globalization:

Globalization is a process of interaction and integration among the people, companies, and governments of different nations, a process driven by international trade and investment and aided by information technology. This process has effects on the environment, on culture, on political systems, on economic development and prosperity, and on human physical well-being in societies around the world. Globalizations not new, though. For thousands of years, people—and, later, corporations—have been buying from and selling to each other in lands at great distances, such as through the famed Silk Road across Central Asia that connected China and Europe during the Middle Ages. Likewise, for centuries, people and corporations have invested in enterprises in other countries. In fact, many of the features of the current wave of globalization are similar to those prevailing before the outbreak of the First World War in 1914. Globalization means several things to several people. For some it is a new paradigm. Globalization is a term whose meaning has become both more complex and more diffuse — at the same time, more generic and more pejorative. For some, it's a dirty word that is all about the domination of powerful nations and powerful corporations, at the expense of local cultures and businesses. For others, globalization means growth, opportunity and freedom. For

banks, the word embodies both promise — new markets and customers, and expanded resources for employees and partners — and risk, whether it's political and economic risk, an increasingly strict and punitive body of regulation, or the operational challenges of extended platforms, systems and products beyond their core markets. Integration of economies leads to integration of financial markets catalyzing the globalization process. The growing role of the financial sector in allocation of resources has significant potential advantages for the efficiency with which our economy functions. Consequently, the adverse consequences of malfunction of the financial system are likely to be more severe than they used to be in the past. Hence, all our efforts today are focused at ensuring greater financial stability. Given the significance of the Indian banking system, one cannot afford to underplay the importance of a robust and resilient banking system.

Digital Payment Options in India:

The digital payments options in India are as follows

Mobile Wallet:

Is available on every mobile phone, we can store cash on the mobile to make online payments. Various applications are available we just need to download the applications on phone. We can transfer the cash through these wallets online using credit/debit card or Net banking. This means that every time everywhere we can easily access this method.

UPI:

UPI is a mobile payment system which allows us to do various financial transactions on your Smartphone. UPI allows you to send or receive money using virtual payment address like UPI Apps are SBI Pay, ICICI Pocket, Axis Pay UPI App, Union Bank UPI Phone etc.To pay using this system called Unified Payments

Plastic Money:

Plastic money means Debit Cards and Credit Cards which are used at ATM's for cash withdrawal and swipe machines while shopping using a debit or credit cards without carrying cash. This includes credit and debit cards it's also known as paperless cash transaction.

Net Banking:

Net Banking is use to transfer money through national electronic funds transfer (NEFT), real-time gross settlement (RTGS) or immediate payment service (IMPS), all of which come at a nominal cost ranging from Rs. 5 lakh to 55 lakh.

Aadhaar Enabled Payment System:

Aadhaar Enabled Payment System (AEPS) is one of the best digital payment methods. In AEPS finger prints of customers are taken a finger-print scanner is used for the transaction. In order to use this facility, it is important to link your Aadhaar card to your saving bank account. We can use AEPS for transaction like Aadhar to Aadhar fund transfer, withdrawal and deposit of cash.

Mobile Banking:

Mobile banking is a service provided by a bank or other financial institution that allows its customers to conduct different types of financial transactions remotely using a mobile device such as a mobile phone or tablet. It uses software, usually called an app, provided by the banks or financial institution for the purpose. Each Bank provides its own mobile banking App for Android, Windows and iOS mobile platform. Mobile banking refers to the use of a smartphone or other cellular device to perform online banking tasks while away from your home computer, such as

monitoring account balances, transferring funds between accounts, bill payment and locating an ATM.

Cheque:

The cheque is an oldest method of cashless payment. It is a known method to everyone. In this method, we can issue a cheque for the specific amount and gets deposited in the respective bank. The bank processes a payment through a clearing house. The entire transaction are very simple we do not need to carry cash just give a cheque for the payment. It is the best paperless cash transaction and it will be used for the future records.

Demand Draft:

Demand draft is another simple way of cashless transaction like cheque. It is a safest option to receive payment from anyone. Demand draft (DD) never gets defaulted as it is signed by the banker. The disadvantage of DD and cheque is you need to visit a bank in order to deposit cheque and demand draft. The clearance of cheque or DD takes additional time.

Conclusion:

In the era of Liberalization, Privatization, and Globalization (LPG), the Indian banking sector has become a strong pillar supporting the growth and modernization of the Indian economy. The rapid advancement of technology has transformed traditional banking into electronic banking, offering faster, safer, and more convenient services to customers. Digital payment systems such as UPI, mobile wallets, net banking, AEPS, plastic money, and mobile banking have revolutionized the way financial transactions are conducted, reducing dependence on cash and saving valuable time. These systems have not only improved efficiency but have also enhanced financial inclusion, allowing even rural populations to access banking services. Liberalization opened the doors for private players, privatization improved competitiveness, and globalization expanded the scope of Indian banks in international markets. Together, these factors have made banking more dynamic, customer-centric, and innovative. The Reserve Bank of India continues to play a crucial role in maintaining stability and trust in the system.

Bibliography:

1. P.K.Gupta,jamia Milia Islamia (2008): 'Internet Banking In India – Consumer Concerns And Bank Strategies' Global Journal of Business Research Vol.2 Number 1.
2. Sreya Guha (2012): 'Paperless Banking in Indian Public Sector Banks' A Canada Paper.
3. General Economics: Common Proficiency Test 'Board of Studies The Institute of Chartered Accountants of India' New Delhi. August, 2012. Page No. 363-367.
4. www.bankingawareness.com
5. www.wikipedia.org
6. Research Methodology: Kothari.
7. Prof. Madan Shelke (2017): "Demonetization: One Step for Cashless Economy", Digital Monetization of Indian Economy. P.P. No.167-170.
8. http://www.gktoday.in/iaspoint/current/prospects-for-cashless-economy-in-india/

Skill Gaps and Employability in India: Bridging the Mismatch

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Abstract:

India today faces a unique challenge while we have one of the world's largest pools of young people, many of them still struggle to find meaningful jobs. The problem is not just the shortage of opportunities, but also a clear mismatch between what young people are taught and what modern industries actually need. This chapter, Skill Gaps and Employability in India: Bridging the Mismatch, looks closely at why this gap exists and what can be done to address it. It discusses issues like outdated teaching methods, weak connections between colleges and industries, and uneven access to training programs across rural and urban areas. The chapter also examines key government initiatives under the Skill India Mission including PMKVY, DDU GKY, and NAPS that were designed to improve employability and create stronger industry-ready skills. By reflecting on both achievements and continuing challenges, the chapter argues for a more integrated approach that blends classroom learning with hands-on experience, promotes entrepreneurship, and uses digital platforms to make learning more accessible. Bridging this skill gap is not just about improving employability, but also about unlocking India's demographic potential and ensuring growth that benefits everyone.

Keywords: Skill India Mission; employability; skill gaps; youth skills; PMKVY; DDU–GKY; NAPS; vocational education; industry linkages; entrepreneurship; demographic dividend

Introduction

The Indian workforce is facing a significant challenge in terms of skill gaps and employability. Despite having a large and growing workforce, India is struggling to provide the necessary skills to its workforce to meet the demands of modern industries. This chapter will explore the mismatch between the skills of the Indian workforce and the demands of modern industries, along with strategies to bridge this gap.

Understanding the Mismatch

The skills mismatch in India is a multifaceted issue. A key factor is the outdated curriculum in many educational institutions, which often fails to keep pace with rapid technological advancements and evolving industry needs. The traditional focus on theoretical knowledge leaves graduates ill-equipped for the practical demands of the workplace. Furthermore, there's a lack of vocational and specialized training. While India produces a large number of general graduates, there is a shortage of people with specific technical and soft skills, such as digital literacy, critical thinking, communication, and problem-solving, which are highly valued by employers. The absence of a strong apprenticeship and on-the-job training culture

also contributes to the problem, as it limits opportunities for students and fresh graduates to gain real-world experience.

The Skill Gap Challenge in India

India is facing a significant skill gap challenge, with a large number of graduates and diploma holders being unemployable due to lack of relevant skills. According to a report by the National Skill Development Corporation (NSDC), India needs to create 109 million skilled workers by 2022 to meet the demands of various industries.

Causes of Skill Gaps

The skill gaps in India can be attributed to several factors, including:

1. **Lack of Industry-Academia Collaboration:** There is a significant disconnect between the academia and industry, resulting in a mismatch between the skills imparted and the requirements of the industry.
2. **Outdated Curriculum**: The curriculum in many educational institutions is outdated and does not reflect the changing needs of the industry.
3. **Lack of Practical Training:** Many educational institutions focus on theoretical knowledge, neglecting practical training and hands-on experience.
4. **Insufficient Infrastructure:** Many educational institutions lack the necessary infrastructure, including equipment, technology, and faculty, to provide quality education and training.

Strategies to Bridge the Gap

1. **Curriculum and Education Reform:** Educational institutions need to overhaul their curricula to align with industry requirements. This involves integrating practical, hands-on learning and new-age courses in fields like AI, data science, cybersecurity, and green technologies. The National Education Policy (NEP) 2020 is a step in this direction, aiming to introduce vocational education from an early age and encourage multidisciplinary learning.
2. **Strengthening Vocational Training and Apprenticeships:** There must be a concerted effort to promote vocational and skills-based training. Programs should be designed in close consultation with industries to ensure their relevance. The National Apprenticeship Promotion Scheme (NAPS) and other government initiatives need to be expanded to incentivize companies to offer more on-the-job training opportunities. This "earn while you learn" model is highly effective in making youth job-ready.
3. **Enhancing Digital and Soft Skills**: In today's economy, digital fluency is non-negotiable. It is critical to equip the workforce with the knowledge and skills needed to use modern tools and platforms. Additionally, soft skills like communication, collaboration, and professional ethics should be incorporated into all training programs.
4. **Industry-Academia Collaboration**: The disconnect between academia and the workplace must be bridged. This can be achieved through regular interactions, joint research projects, and guest lectures by industry experts. Creating skill hubs and centers of excellence within educational institutions, as envisioned by schemes like PMKVY, can provide students with exposure to real-world industrial environments and emerging technologies.

5. **Skill Development Programs**: Government and private organizations can launch skill development programs to provide training and certification in specific skills.
6. **Infrastructure Development**: Educational institutions should invest in infrastructure development, including equipment, technology, and faculty, to provide quality education and training.
7. **Lifelong Learning:** Encourage a culture of lifelong learning, enabling workers to continuously update their skills and stay relevant in the job market

Government Initiatives

The Indian government has launched several schemes under the Skill India Mission to address the skills gap. The Pradhan Mantri Kaushal Vikas Yojana (PMKVY) offers short-term training and certification programs to a large number of young people. The National Skill Development Corporation (NSDC) acts as a public-private partnership to catalyze the skill development ecosystem. Furthermore, programs like the PM Vishwakarma Yojana focus on upskilling traditional artisans, preserving heritage skills, and promoting entrepreneurship. The introduction of platforms like Skill India Digital Hub (SIDH) aims to unify the skilling, education, employment, and entrepreneurship ecosystems. While these initiatives are crucial, their success hinges on effective implementation, continuous feedback from industries, and a focus on quality training that leads to meaningful employment.

Key Government Initiatives for Skill Development and Employability in India

Initiative	Year of Launch	Nodal Ministry/Agency	Key Features / Objectives	Target Group
Skill India Mission	2015	Ministry of Skill Development & Entrepreneurship (MSDE)	Umbrella campaign to coordinate all skill development initiatives; aims to train over 40 crore individuals by 2022; promotes industry linkages and standards.	Youth across sectors
Pradhan Mantri Kaushal Vikas Yojana (PMKVY)	2015	National Skill Development Corporation (NSDC), under MSDE	Short-term training programs; Recognition of Prior Learning (RPL); monetary rewards for skill certification; industry-led training modules.	School/college dropouts, unemployed youth
National Apprenticeship Promotion Scheme (NAPS)	2016	MSDE & Directorate General of Training	Promotes apprenticeship training by providing financial support to establishments; encourages earn-while-learn model.	Youth, industries seeking apprentices
Deen Dayal	2014	Ministry of Rural	Focuses on rural youth	Rural

Upadhyaya Grameen Kaushalya Yojana (DDU–GKY)		Development	from poor families; demand-led skill training linked with placement opportunities; emphasis on social inclusion.	poor youth (15–35 years)
Samagra Shiksha Abhiyan (Vocationalisation of Education)	2018 (integration)	Ministry of Education	Integrates vocational education at school level (secondary & higher secondary); sector skill councils involved; bridges academia-industry gap.	School students (Class IX–XII)
Jan Shikshan Sansthan (JSS)	Revamped in 2018 (originally 1967)	MSDE	Provides vocational training to non-literate, neo-literate, and school dropouts in rural areas; promotes life skills, entrepreneurship.	Marginalized groups, rural youth, women
Stand-Up India / Startup India (Skill Component)	2016	Ministry of Finance & MSDE collaboration	Encourages entrepreneurial ventures by providing credit support, handholding, and skill training for SC/ST and women entrepreneurs.	Aspiring entrepreneurs
SANKALP (Skill Acquisition and Knowledge Awareness for Livelihood Promotion)	2018	MSDE, supported by World Bank	Focus on district-level skilling ecosystem reforms; strengthens institutions and quality assurance; fosters convergence of schemes.	State & district-level skilling institutions
STRIVE (Skill Strengthening for Industrial Value Enhancement)	2017	MSDE with World Bank support	Improves performance of Industrial Training Institutes (ITIs); strengthens apprenticeship and industry-institute linkages.	ITI students, industry apprentices

Source: Compiled from Ministry of Skill Development & Entrepreneurship (MSDE) & NSDC, and Government of India policy documents (2015–2023).

The Indian government's Skill India Mission has launched several key programs to address this issue. The Pradhan Mantri Kaushal Vikas Yojana (PMKVY) offers short-term training and certification, although its effectiveness is debated, with

reports suggesting low placement rates. Other initiatives, such as the PM Vishwakarma Yojana, focus on upskilling traditional artisans. The National Skill Development Corporation (NSDC) acts as a public-private partnership to drive the skilling ecosystem.

Conclusion

India's journey towards becoming a global economic leader depends greatly on how well it can prepare its youth for the jobs of tomorrow. While the country has launched several large-scale initiatives under the Skill India Mission, the persistent mismatch between education, training, and industry needs continues to limit employability. The analysis in this chapter shows that although schemes such as PMKVY, DDU–GKY, and NAPS have expanded training opportunities, challenges remain in ensuring quality, relevance, and inclusiveness. Skill development cannot succeed in isolation—it must be tied to real job opportunities, entrepreneurship, and lifelong learning. Unless education systems, industries, and policy makers work hand in hand, the demographic dividend risks turning into a demographic burden. Bridging the skill gap is therefore not just an employment issue, but a national priority for sustainable growth and social equity. The skill gap challenge in India is significant, but it can be addressed through a combination of industry-academia collaboration, vocational training, skill development programs, infrastructure development, and lifelong learning. By bridging the skill gap, India can unlock the potential of its workforce and drive economic growth and development.

Recommendations

1. **Strengthen industry–academia partnerships**: Regular dialogue between employers and educational institutions can ensure that training programs reflect evolving workplace needs.
2. **Update curricula and teaching methods**: Commerce, management, and technical courses should include practical modules, digital literacy, and problem-solving skills that industries demand.
3. **Promote vocational education in schools**: Integrating skill-based courses at the secondary and higher secondary levels will help students build employability early.
4. **Focus on rural and marginalized youth**: Programs like DDU–GKY and JSS should be scaled up with better placement linkages to ensure inclusivity.
5. **Encourage entrepreneurship and startups**: Support systems such as mentorship, credit access, and incubation centers can help youth move from job-seekers to job-creators.
6. **Leverage digital platforms**: Online training, e-learning, and blended models can expand access to quality skill programs, particularly in underserved regions.
7. **Enhance monitoring and evaluation**: Transparent assessment mechanisms should track the outcomes of training schemes, ensuring that "skilled" means "employable."

   By implementing these strategies, India can bridge the skill gap and unlock the potential of its workforce, driving economic growth and development.

References:

1. Drishti IAS. (2025). Bridging India's Skill Gap. Retrieved from https://www.drishtiias.com/daily-updates/daily-news-editorials/bridging-india-s-skill-gap.
2. Ministry of Education. (2020). National Education Policy 2020. Retrieved from https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf.
3. Mitra, S., & Verick, S. (2013). How can the expansion of the apprenticeship system in India create conditions for greater equity and social justice?. ResearchGate. Retrieved from https://www.researchgate.net/publication/294787659_How_can_the_expansion_of_the_apprenticeship_system_in_India_create_conditions_for_greater_equity_and_social_justice.
4. Press Information Bureau (PIB). (2024). Navigating India's Skill Landscape. Retrieved from https://www.pib.gov.in/PressReleasePage.aspx?PRID=2053796.
5. ResearchGate. (2024). The Impact of Skill Gap on Employability: Study on Strategies and Skill Development in Higher Education. Retrieved from https://www.glbimr.ac.in/pages/OJRM-16-2/Chap4%20Vol.%2016(2)%20July-December%202024.pdf.
6. PRS Legislative Research. (2025). Implementation of Pradhan Mantri Kaushal Vikas Yojana. Retrieved from https://prsindia.org/policy/report-summaries/implementation-of-pradhan-mantri-kaushal-vikas-yojana.
7. National Skill Development Corporation (NSDC). (2022). Skill Gap Analysis Report.
8. International Labour Organization (ILO). (2020). Global Employment Trends for Youth 2020.
9. World Economic Forum (WEF). (2020). The Future of Jobs Report 2020.
10. Government of India. (2020). National Education Policy 2020.
11. FICCI. (2019). Skills Development for Industry: A Study of Industry Requirements.
12. CII. (2020). Skill Development and Employability in India.
13. Aspiring Minds. (2020). National Employability Report.
14. NASSCOM. (2020). IT-BPM Industry in India: Strategic Review 2020.

A Study on the Adoption of AI in Small and Medium Enterprises for Supply Chain Optimization

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Abstract

This study explores the adoption of Artificial Intelligence (AI) in Small and Medium Enterprises (SMEs) for supply chain optimization. SMEs often face challenges such as resource constraints, inefficiencies, and demand fluctuations, which AI can help address. The study reviews existing literature, identifies key adoption drivers and barriers, and examines the impact of AI on supply chain efficiency. A descriptive research method was employed, utilizing surveys and case studies to gather insights from SMEs integrating AI. The findings indicate that AI adoption enhances operational efficiency, reduces costs, and improves decision-making. However, challenges such as high implementation costs and lack of expertise persist. The study provides recommendations to facilitate AI adoption in SMEs, ensuring competitive and sustainable supply chains.

Keywords: Artificial Intelligence, Small and Medium Enterprises, Supply Chain Optimization, AI Adoption, Business Efficiency

Introduction

The rapid advancement of artificial intelligence (AI) has transformed various industries, including supply chain management. Small and medium enterprises (SMEs), which play a crucial role in global economies, are increasingly exploring AI solutions to enhance efficiency, reduce costs, and improve decision-making in supply chain operations. However, the adoption of AI in SMEs presents unique challenges and opportunities that differ from those faced by larger corporations.

This study examines the adoption of AI in SMEs for supply chain optimization, focusing on the key drivers, barriers, and potential benefits. While AI offers capabilities such as demand forecasting, inventory management, route optimization, and supplier selection, many SMEs face hurdles such as high implementation costs, lack of technical expertise, and concerns about data security. Understanding these factors is critical to facilitating the integration of AI technologies in SME supply chains.

The research aims to explore how SMEs leverage AI-driven tools to optimize their supply chains, the challenges they encounter, and the strategies they employ to overcome them. Through this study, we seek to provide insights into the current trends, best practices, and future outlook of AI adoption in SME supply chain management. Small and Medium Enterprises (SMEs) play a crucial role in global economies, contributing significantly to employment and innovation. However,

SMEs often struggle with supply chain inefficiencies due to limited resources and expertise. Artificial Intelligence (AI) offers promising solutions for supply chain optimization, enabling data-driven decision-making, predictive analytics, and automation. This study aims to examine the adoption of AI in SMEs and its impact on supply chain efficiency.

Objectives

1. To analyze the extent of AI adoption in SMEs for supply chain management.
2. To identify the key drivers and barriers to AI adoption.
3. To evaluate the impact of AI on supply chain efficiency and cost reduction.
4. To provide recommendations for SMEs to enhance AI adoption for better supply chain management

Advantages of AI Adoption in SMEs for Supply Chain Optimization

- ✓ **Cost Reduction**: AI-driven automation minimizes operational costs by reducing manual labor and improving resource allocation.
- ✓ **Improved Efficiency:** AI enhances productivity through predictive analytics, real-time tracking, and intelligent automation.
- ✓ **Better Demand Forecasting:** Machine learning algorithms analyze historical data and market trends to improve demand prediction.
- ✓ **Enhanced Supplier Management:** AI helps in evaluating supplier performance, reducing risks, and improving procurement decisions.
- ✓ **Faster Decision-Making:** AI processes vast amounts of data quickly, enabling SMEs to make informed and timely decisions.
- ✓ **Reduced Waste and Inventory Optimization:** AI optimizes inventory levels, reducing overstocking and stock outs.
- ✓ **Customer Satisfaction:** AI-driven insights allow SMEs to respond proactively to customer needs, improving service levels.

Importance of AI in SMEs for Supply Chain Optimization

- **Competitive Advantage:** AI enables SMEs to compete with larger firms by optimizing operations and reducing costs.
- **Data-Driven Decision Making:** AI provides real-time insights, improving decision-making across the supply chain.
- **Scalability:** AI solutions help SMEs scale operations efficiently as they grow.
- **Risk Management: AI** identifies potential supply chain disruptions and provides alternative solutions.
- **Sustainability:** AI enhances eco-friendly practices by reducing waste and optimizing resource utilization.
- **Real-Time Monitoring:** AI-powered IoT devices provide real-time tracking of shipments and inventory.
- **Process Automation:** AI streamlines procurement, logistics, and inventory management, reducing human error.

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Challenges of AI Adoption in SMEs for Supply Chain Optimization

- **High Implementation Costs:** AI solutions can be expensive, making adoption challenging for SMEs with limited budgets.
- **Lack of Technical Expertise:** Many SMEs lack the necessary AI skills and knowledge to integrate AI into their supply chains.
- **Data Privacy and Security Risks:** AI requires vast amounts of data, raising concerns about data breaches and security.
- **Resistance to Change:** Employees and management may resist AI adoption due to fear of job losses or lack of understanding.
- **Integration with Existing Systems:** AI implementation requires compatibility with legacy systems, which can be complex and costly.
- **Limited Access to Quality Data:** SMEs may struggle to collect and analyze high-quality data necessary for AI applications.
- **Regulatory and Ethical Concerns:** Compliance with data protection laws and ethical AI usage can be challenging for SMEs.

Future Implications of AI in SMEs for Supply Chain Optimization

- **Increased AI Accessibility:** As AI technology advances, solutions will become more affordable and accessible for SMEs.
- **Greater Adoption of Autonomous Systems:** AI-driven robotics and automation will revolutionize supply chain operations.
- **Personalized Supply Chains:** AI will enable SMEs to create more customized and responsive supply chain strategies.
- **Integration with Block chain:** AI combined with block chain will enhance transparency, security, and efficiency in supply chains.
- **Improved Sustainability Efforts:** AI will play a key role in achieving greener supply chain practices by optimizing logistics and reducing waste.
- **Enhanced Predictive Analytics:** AI will improve demand forecasting, helping SMEs make proactive decisions.
- **Wider Regulatory Frameworks:** Governments and industry bodies will introduce more regulations to guide ethical AI use in supply chains.

Conclusion

The adoption of Artificial Intelligence (AI) in Small and Medium Enterprises (SMEs) for supply chain optimization presents significant opportunities and challenges. AI-powered solutions, such as predictive analytics, machine learning, and automation, enhance efficiency, reduce operational costs, and improve decision-making. However, SMEs often face barriers such as high implementation costs, lack of expertise, and resistance to change. Despite these challenges, the increasing accessibility of AI tools and cloud-based solutions is making it more feasible for SMEs to integrate AI into their supply chains. For successful AI adoption, SMEs should focus on strategic planning, workforce upskilling, and collaboration with technology providers. Governments and industry stakeholders can play a vital role by

offering financial incentives, technical support, and regulatory frameworks that facilitate AI integration. As AI technologies continue to evolve, their adoption in SME supply chains will likely become a competitive necessity rather than an option. Future research should explore industry-specific AI applications and long-term impacts on SME performance and sustainability.

Reference

1 Babiceanu, R. F., & Seker, R. (2020). Big Data and Artificial Intelligence in the Supply Chain: A Review of the Literature and Research Challenges. Computers & Industrial Engineering, 149, 106793

2 Baryannis, G., Validi, S., Dani, S., & Antoniou, G. (2019). Supply Chain Risk Management and Artificial Intelligence: State of the Art and Future Research Directions. International Journal of Production Research, 57(7), 2179-2202

3 Ghadge, A., Er Kara, M., Moradlou, H., & Goswami, M. (2020). The Impact of Industry 4.0 on Supply Chain Sustainability. Journal of Manufacturing Technology Management, 31(5), 992-1011.

4 Ivanov, D., & Dolgui, A. (2020). Viability of Supply Chain Networks and Firms Under Disruption Risks: Research Questions and Literature Review. Annals of Operations Research, 292(1), 1-21.

5 Wamba, S. F., Akter, S., Edwards, A., Chopin, G., & Gnanzou, D. (2015) How 'Big Data' Can Make Big Impact: Findings from a Systematic Review and a Longitudinal Case Study. International Journal of Production Economics, 165, 234-246.

6 Choi, T. M., Wallace, S. W., & Wang, Y. (2018) Big Data Analytics in Operations Management. Production and Operations Management, 27(10), 1868-1884.

7 Dubey, R., Gunasekaran, A., Childe, S. J., Papadopoulos, T., & Fosso Wamba, S. (2019). Big Data and Predictive Analytics and Manufacturing Performance: Integrating Institutional Theory, Resource-Based View and Big Data Culture. British Journal of Management, 30(2), 341-361

8 Kamble, S. S., Gunasekaran, A., & Gawankar, S. A. (2020). Sustainable Industry 4.0 Framework: A Systematic Literature Review Identifying the Current Trends and Future Perspectives. Business Strategy and the Environment, 29(3), 619-637

The Role of Zinc-Solubilizing Rhizobacteria in Improving Plant Growth and Yield

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Abstract

Zinc (Zn) is an essential micronutrient for plant growth and development, but its deficiency in arable lands worldwide limits agricultural productivity. Zinc-solubilizing plant growth-promoting rhizobacteria (ZSB-PGPR) offer a sustainable solution to enhance Zn bioavailability and plant nutrition. This review explores the significance of ZSB-PGPR in agricultural practices, focusing on their characterization, isolation techniques, and mechanisms of nutrient acquisition facilitation. ZSB-PGPR primarily solubilize Zn through the secretion of organic acids, protons, and chelating agents, while also producing plant growth hormones, enzymes, and siderophores that synergistically improve nutrient uptake and stress resilience. Experimental studies on various crops, such as maize, wheat, and canola, demonstrate the efficacy of ZSB-PGPR inoculation in enhancing Zn bioavailability, plant growth, and yield. Statistical analyses reveal significant improvements in growth parameters and grain yield in response to ZSB-PGPR treatments, highlighting their potential as bioinoculants. The integration of ZSB-PGPR into agricultural practices promotes sustainable crop production by reducing chemical fertilizer use and improving soil health. Further research on genomic and metabolic characterization of ZSB-PGPR strains will facilitate the development of efficient bioinoculant formulations for widespread application in agriculture.

Keywords: Zinc-solubilizing, Rhizobacteria, Plant growth-promoting, Bioinoculants, Zinc deficiency.

Introduction

Zinc (Zn) is an essential micronutrient required for the growth and development of many agriculturally important plants (Kumar Goteti et al., 2013). However, Zn deficiency reduces membrane integrity and the synthesis of auxins, cytokinins, nitrogen metabolism, and protein synthesis, rendering plants susceptible to biotic and abiotic stress. Furthermore, the excessive use of Zn fertilizers not only impairs human health but also represses male sexuality in humans and cattle. About 30–40 % of the world's arable lands are Zn deficient, including regions within Asia, Africa, and the Pacific islands. Soluble Zn in soil mainly depends on soil pH and moisture, which are either neutral to alkaline and low to medium, respectively, in arid and semi-arid regions of the world. In India, maize is cultivated under diverse environments, including semi-arid regions and natural summer rain-fed plains on Zn-deficient soils. In these areas, low Zn solubility and not low total Zn in soil is the major cause of Zn deficiency. Most of the inorganic Zn applied to soils gets fixed quickly in soil and becomes insoluble within a short time; as result, it becomes unavailable to the plants. Modifying soil physics and using the right amount of Zn at the right time might be a good practise, but this is both difficult and labour intensive at the farmer level. The use of Zn-solubilizing bacteria as bioinoculants is an

alternative approach for Zn nutrition that does not adversely affect the ecosystem and acts as a catalyst in making insoluble forms of Zn available to plants. Bioinoculants are the natural and most feasible way for nutrient acquisition by plants. Rhizosphere bacteria such as Pseudomonas, Bacillus, Rhizobium, and Azospirillum have been reported to effectively increase Zn availability and boost plant biomass production.

Zinc in Agriculture

Importance of Zinc for Plant Growth

Zinc constitutes an essential micronutrient required in small concentrations for healthy plant growth and reproduction. Deficiency disrupts membrane integrity along with the biosynthesis of carbohydrates, auxins, nucleotides, cytochromes, and chlorophyll, thereby increasing susceptibility to heat stress. However, excess zinc supply impairs iron and copper absorption and represses male sexuality. The solubility of zinc depends on soil pH and moisture; deficiency therefore tends to be common in arid and semiarid regimes. In India, zinc deficiency affects crops such as maize when cultivated on zinc-deficient soil, because most applied zinc becomes insoluble within a few days. Microorganisms belonging to genera including Pseudomonas and Bacillus can solubilize zinc in soil by producing protons, chelating ligands, and oxidoreductive systems, thereby increasing its availability to plants. They also benefit plants by producing phytohormones, antibiotics, siderophores, vitamins, antifungal substances, and hydrogen cyanide (Kumar Goteti et al., 2013).

Impact of Zinc on Crop Yield

Zinc is a crucial micronutrient that influences crop yield. It is actively involved in starch formation and translocation to seeds or grains, thereby directly affecting crop productivity (Kumar Goteti et al., 2013). Zinc deficiency in plants leads to reduced membrane integrity and interferes with the synthesis of essential biomolecules such as carbohydrates, auxins, nucleotides, cytochromes, and chlorophyll, which in turn increases susceptibility to heat stress. Although manganese and iron oxides are abundant in soil, zinc—and to a lesser extent copper—availability often limits crop growth and yield in calcareous soils (Shakeel et al., 2015). Due to its limited mobility and low concentration in many agro-ecosystems worldwide, zinc frequently acts as a key limiting factor for enhanced crop production.

Zinc-Solubilizing Bacteria

Characterization of Zinc-Solubilizing Strains

Rhizobacteria that can solubilize zinc have been isolated and characterized. These strains produce biochemicals like indole-3-acetic acid, ammonia, hydrogen cyanide and phosphate solubilization (Kumar Goteti et al., 2013). Zinc solubilizing strains have been isolated from wheat rhizosphere using direct isolation method and matrix-assisted laser desorption/ ionization time-of-flight mass spectrometry (MALDI-TOF MS) for rapid identification (Costerousse et al., 2018). Among these isolates were Curtobacterium, Plantibacter, Pseudomonas, Stenotrophomonas and Streptomyces. Glucose stimulates organic acid production that leads to zinc oxide solubilization; Streptomyces and Curtobacterium strains produce multiple organic acids whereas others secrete gluconic, malonic and oxalic acids. Proton extrusion and

organic acid production are the main mechanisms of zinc solubilization among rhizosphere bacteria.

Isolation Techniques for Zinc Solubilizing Bacteria

Isolation of zinc solubilizing bacteria is an important step in understanding the bacteria and how they help in nutrient acquisition and plant growth and yield. Bacterial population from rhizospheric soil samples can be enumerated by serial dilution and plating on agars containing different insoluble zinc compounds like ZnO, Zn3(PO4)2 and ZnCO3 (Zaheer et al., 2019). In a procedure developed for direct isolation of zinc solubilizing bacteria (ZSB) from rhizosphere soil, serial dilutions were plated on media containing zinc oxide (ZnO) and 115 putative Zn-solubilizing isolates were detected as indicated by solubilization halos (Costerousse et al., 2018). Several strains were then selected for further study based on their solubilization efficiency and siderophore production including representatives of Curtobacterium, Plantibacter, Pseudomonas, Stenotrophomonas and Streptomyces. Isolates that solubilize Zn and/or form biofilm in TiO2 nanotubes synthesized through hydrothermal treatment can also be selected for characterization.

Mechanisms of Nutrient Acquisition Facilitated by Zinc-Solubilizing PGPR

Zinc Solubilization and Mobilization

PGPR achieves zinc solubilization through organic acid secretion which decreases rhizosphere pH to extract zinc ions from insoluble compounds. The organic acids gluconic acid and citric acid and oxalic acid function as chelating agents to convert insoluble zinc into soluble forms that plants can absorb through their roots. The production of siderophores by certain ZSB enables these microbes to bind zinc ions which results in enhanced mobility and bioavailability of zinc in the rhizosphere. Some Zinc Solubilizing Plant Growth Promoting Microbes produce zinc nanoparticles through biosynthesis which creates a new method to enhance nutrient availability by increasing zinc particle surface area and plant absorption. The Bacillus and Pseudomonas strains produced zinc nanoparticles through a novel method which resulted in stable nanoscale particles that exceeded traditional solubilization methods (Uzma Sultana et al., 2019). The generated nanoparticulate zinc from Bacillus and Pseudomonas strains showed nanoscale dimensions and stability which established a fresh approach for zinc mobilization. The combined action of these mechanisms makes ZSB effective agents in overcoming zinc bioavailability limitations. The zinc solubilizing activity of Priestia aryabhattai strains in canola experiments led to better zinc solubilization and plant zinc availability (Sabahet Jalal-Ud-Din et al., 2024). The ability of ZSB to extract zinc from soil complexes positions them as essential agents for micronutrient cycling and makes them suitable for use in biofertilizer production (Journal of Pure and Applied Microbiology, n.d.).

Production of Plant Growth Hormones and Enzymes

ZSB strains enhance plant growth through their ability to produce indole acetic acid (IAA) which stimulates root growth and branching and increases surface area for better water and nutrient absorption. The production of 1-aminocyclopropane-1-carboxylate (ACC) deaminase by PGPR helps control plant ethylene levels to protect root development from stress ethylene inhibition and create

stronger root systems. The enzymatic activities of phosphatases and chitinases in soil improve nutrient cycling by converting organic phosphorus into available minerals and by fighting against plant pathogens. The biochemical analysis of ten zinc-solubilizing rhizobacterial strains from canola rhizosphere showed they produced IAA and hydrogen cyanide and siderophores and exopolysaccharides which worked together to boost nutrient absorption and plant development (Shabnam S Shaikh & M. Saraf, 2017). The presence of ACC deaminase in certain strains helps French bean plants survive salinity stress which demonstrates their multiple advantages during abiotic stress situations (Shikha Gupta & Sangeeta Pandey, 2019). The combination of zinc solubilizing Bacillus with phosphate-solubilizing Paenibacillus in cotton soil resulted in enhanced antioxidant enzyme activities and better growth performance which indicates hormonal and enzymatic factors that boost plant health (I. Ahmad et al., 2023). The biochemical signaling of ZSB-PGPR through direct mechanisms and enzymatic processes leads to better nutrient uptake and stress tolerance in plants.

Synergistic Nutrient Solubilization and Fixation

Many zinc-solubilizing rhizobacteria also possess the ability to fix atmospheric nitrogen, furnishing plants with an additional essential macronutrient that complements zinc nutrition and overall growth. Moreover, they often solubilize other vital nutrients, including phosphorus and potassium, creating a comprehensive nutrient mobilization system within the rhizosphere. The integration of multiple nutrient solubilization and fixation mechanisms enhances the bioavailability of macro and micronutrients, leading to improved plant nutrition efficiency. Formulation studies using consortia composed of zinc solubilizing bacteria along with strains capable of phosphorus, potassium, and silica solubilization have demonstrated greater efficacy in enhancing nutrient acquisition compared to single strains (Keerthana Rs et al., 2024). Such synergistic activity promotes enhanced plant growth, soil fertility, and sustainability. Additionally, zinc-solubilizing Bacillus strains have been shown to successfully colonize roots and function alongside other PGPR, exemplifying the multi-trait nutrient solubilization and fixation often exhibited by these bacteria (Sughra Hakim et al., 2021). This collaboration among rhizobacteria improves nutrient cycling and uptake efficiencies, establishing an intricate network that supports plant health and soil ecosystem functioning (Magdalena Wjcik et al., 2023).

Effects on Plant Growth and Yield

Experimental Design and Methodologies

Soil zinc deficiency limits the production of crop plants and endangers human health . Zinc bioavailability and plant growth promotion are linked, ensuring zinc acquisition and enhanced crop yield. Application of rhizobacterial strains that solubilise insoluble Zn compounds increases the efficiency of Zn fertilisers and plant development and facilitates the growth and sustainable production of agricultural crops. To evaluate the zinc solubilisation ability of bacterial strains and their effects on plant growth and yield, four potent zinc-solubilising plant growth-promoting rhizobacterial (ZSB) strains—Pseudomonas fragi (CM37), Pseudomonas putida (SM17), Bacillus cereus (PM23), and Bacillus arbutinivorans (PM16)—were examined.

Case Studies on Agricultural Plants

Zinc-solubilizing plant growth-promoting rhizobacteria (PGPR) constitute a significant and environmentally attractive alternative for enhancing the yield of various crops (Kumar Goteti et al., 2013). Zinc is an essential micronutrient for healthy plant growth, playing a major role in membrane integrity, carbohydrate synthesis and chlorophyll production. Its deficiency affects growth and makes the plant more susceptible to heat stress, especially in arid and semi-arid soils where the solubility of zinc is low. Most agricultural sites in India are characterized by zinc deficiency associated with low soil-zinc solubility rather than low total zinc content, and the majority of zinc applied through chemical fertilizers is quickly converted to insoluble forms, restricting its uptake by crops. Maize (Zea mays L.) is grown in diverse environments in the country — these range from the arid environments of Rajasthan to the water-logged conditions of coastal Tamil Nadu and west Bengal. Bacteria belonging to the genus Pseudomonas and Bacillus have evolved several mechanisms to solubilize zinc through acidification by organic acids, secretion of protons, chelating agents, and reductive systems. Besides, these bacteria possess the ability to produce phytohormones, antibiotics, siderophores and other growth-promoting compounds. The zinc solubilization activity of on a few bacterial strains and their potential to promote growth in maize under pot-house conditions were investigated.

The prospect of Pseudomonas and Bacillus strains isolated from maize rhizosphere for zinc solubilization was determined on Wesson's media amended with different insoluble zinc sources. Maximum solubilization of zinc was recorded with zinc phosphate followed by zinc carbonate and zinc oxide. Bacterial cells would have lowered the pH of the medium by the release of organic acids, thereby dissociating the zinc complexes, making the zinc available for assimilation. A dominant ability to solubilize different insoluble zinc forms was evident in a single strain. The production of indole acetic acid (IAA), siderophores and hydrogen cyanide (HCN) was also evaluated. Among the tested strains; BMRR126, BMRR118 and BMRR118 from the genera Bacillus and Pseudomonas, respectively, emerge for further evaluation under field conditions for zinc biofortification, nutrient management and enhancement of maize growth and yield. Several Pseudomonas and Bacillus strains have demonstrated the potential to enhance wheat, rice, soybean and rice yields (Costerousse et al., 2018). Root colonization capacity was notably greater for the wheat rhizosphere isolates ZTB15 (Pseudomonas chlororaphis) and ZTB24 (Bacillus cereus), with the highest levels maintained for 30 days after inoculation. Their further study suggested that a distinct heterotrophic mechanism of Zn dissolution could be used to selectively mobilize specific inorganic, water insoluble Zn forms, making these isolates promising candidates for bacterial inoculants with targeted zinc biofortification.

Statistical Analysis of Growth Parameters

The statistical evaluation established that zinc sources significantly affected plant heights at 45 days after sowing (DAS) but not at 60 or 90 DAS. Inoculation treatments had significant effects on plant height at 90 DAS and on the number of leaves at both 45 and 90 DAS. Plant height remained unaffected by zinc sources at 60 and 90 DAS. Interactions between zinc sources and inoculation treatments

significantly influenced plant height only at 90 DAS and leaf number at 45 DAS. Variation in grain yield due to zinc sources depended on the specific bacterial inoculant used. Among inoculants, strains T13, T17, and zinc sulfate ($ZnSO_4$) treatments were most effective in enhancing grain yield compared to controls. Bacterial inoculation thus improved crop yield regardless of zinc source; inoculated treatments yielded more grain than uninoculated counterparts (Costerousse et al., 2018).

Conclusion

Zinc-solubilizing plant growth-promoting rhizobacteria play a vital role in enhancing nutrient acquisition, growth, and yield of various agricultural crops. Their mechanisms—ranging from organic acid-mediated zinc solubilization to hormone production and stress mitigation—collectively improve plant physiological and biochemical processes, leading to increased crop productivity and nutritional quality. The application of ZSB demonstrates consistent yield improvements and biofortification potential in key crops such as canola, rice, and wheat. Integration of ZSB inoculation with reduced chemical fertilizer use supports sustainable agriculture by lowering environmental impacts and input costs. Genomic and metabolic characterizations have advanced understanding, facilitating the development of efficient bioinoculant formulations. Overall, ZSB represent a promising biological tool to address micronutrient deficiencies, enhance soil health, and promote food security.

References:

1. Ahmad, I., Ahmad, M., Bushra, Hussain, A., Mumtaz, M., Najm-ul-Seher, Abbasi, G., Nazli, F., Pataczek, L., & Ali, H. (2023). Mineral-solubilizing bacteria-mediated enzymatic regulation and nutrient acquisition benefit cotton (*Gossypium hirsutum* L.) vegetative and reproductive growth. *Microorganisms, 11*(2), 459.
2. Costerousse, B., Schönholzer-Mauclaire, L., Frossard, E., & Thonar, C. (2018). Identification of heterotrophic zinc mobilization processes among bacterial strains isolated from wheat rhizosphere (Triticum aestivum L.). Applied and Environmental Microbiology, 84(1), e01715-17.
3. Ehinmitan, E., Losenge, T., Mamati, E., Ngumi, V., Juma, P., & Siamalube, B. (2024). Biosolutions for green agriculture: Unveiling the diverse roles of plant growth-promoting rhizobacteria. *International Journal of Microbiology*, 2024, 1–14. https://doi.org/10.1155/2024/8853276
4. Gupta, S., & Pandey, S. (2019). ACC deaminase producing bacteria with multifarious plant growth-promoting traits alleviates salinity stress in French bean (*Phaseolus vulgaris*) plants. *Frontiers in Microbiology, 10*, 1506. https://doi.org/10.3389/fmicb.2019.01506
5. Hakim, S., Naqqash, T., Nawaz, M. S., Laraib, I., Siddique, M., Zia, R., Mirza, M. S., & Imran, A. (2021). Rhizosphere engineering with plant growth-promoting microorganisms for agriculture and ecological sustainability. *Frontiers in Sustainable Food Systems, 5*, 617157. https://doi.org/10.3389/fsufs.2021.617157

6. Jalal, A., Júnior, E. F., & Filho, M. T. T. (2024). Interaction of zinc mineral nutrition and plant growth-promoting bacteria in tropical agricultural systems: A review. *Plants, 13*(2), 219. https://doi.org/10.3390/plants13020219

7. Jalal-Ud-Din, S., Elahi, N., & Mubeen, F. (2024). Significance of zinc-solubilizing plant growth-promoting rhizobacterial strains in nutrient acquisition, enhancement of growth, yield, and oil content of canola (*Brassica napus* L.). *Frontiers in Microbiology, 15,* 1323850. https://doi.org/10.3389/fmicb.2024.1323850

8. Kumar Goteti, P., Daniel Amalraj Emmanuel, L., Desai, S., & Hassan Ahmed Shaik, M. (2013). Prospective zinc solubilising bacteria for enhanced nutrient uptake and growth promotion in maize (*Zea mays* L.). *International Journal of Microbiology, 2013,* 1–7. https://doi.org/10.1155/2013/869697

9. Journal of Pure and Applied Microbiology. (n.d.). Pioneering biofertilization: Advanced zinc solubilizing bacteria use as biostimulants for transforming mustard yields: A review. *Journal of Pure and Applied Microbiology*. Retrieved September 10, 2025, from https://www.microbiologyjournal.org

10. Rion, M., Rahman, A., Khatun, M. J., Zakir, H. M., Rashid, M. H., & Quadir, Q. (2022). Screening of zinc solubilizing plant growth-promoting rhizobacteria (PGPR) as potential tool for biofortification in rice. *Journal of Experimental Agriculture International, 44*(11), 39–52. https://doi.org/10.9734/jeai/2022/v44i112078

11. Rs, K., Cr, P., & M, B. (2024). Formulating rhizosphere consortia: Harnessing plant growth-promoting rhizobacteria for enhanced agricultural sustainability. *Journal of Advances in Microbiology Research, 24*(3), 15–25. https://doi.org/10.9734/jamr.2024.003

12. Shaikh, S. S., & Saraf, M. (2017). Optimization of growth conditions for zinc-solubilizing plant growth-associated bacteria and fungi. *International Journal of Current Microbiology and Applied Sciences, 6*(8), 230–240. https://doi.org/10.20546/ijcmas.2017.608.031

13. Shakeel, M., Rais, A., Hassan, M. N., & Hafeez, F. Y. (2015). Root-associated *Bacillus* sp. improves growth, yield and zinc translocation for Basmati rice (*Oryza sativa*) varieties. *Frontiers in Plant Science, 6,* 1286. https://doi.org/10.3389/fpls.2015.01286

14. Sultana, U., Desai, S., Reddy, G., & Prasad, T. (2019). Zinc solubilizing plant growth-promoting microbes produce zinc nanoparticles. *bioRxiv*. https://doi.org/10.1101/558692

15. Wójcik, M., Koper, P., Łebracki, K., Marczak, M., & Mazur, A. (2023). Genomic and metabolic characterization of plant growth-promoting rhizobacteria isolated from nodules of clovers grown in non-farmed soil. *International Journal of Molecular Sciences, 24*(4), 3569. https://doi.org/10.3390/ijms24043569

Shaping Viksit Bharat 2047: The Role of Digital Marketing, E-Commerce, and Policy-Driven Innovation

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Abstract:

India stands at the threshold of a historic transformation with the vision of Viksit Bharat 2047, aspiring to become a developed nation by its centenary of independence. Digital marketing and e-commerce have emerged as cornerstones of this vision, enabled by innovation, technology adoption, and forward-looking policies. This paper explores how India's evolving digital economy can accelerate this journey, drawing on evidence from the e-commerce boom, government initiatives like Digital India, GeM, and ONDC, and technological shifts in payments, logistics, and consumer behavior. The study highlights not only growth opportunities but also pressing challenges such as the digital divide, cybersecurity risks, and sustainability concerns. Through a synthesis of academic research, industry insights, and policy analysis, it argues that inclusive digital literacy, green logistics, ethical AI adoption, and policy-driven innovation will be critical to India's long-term development agenda. The findings suggest that digital marketing and e-commerce will not only propel economic growth but also create equitable, sustainable, and globally competitive systems—vital for realizing the vision of Viksit Bharat 2047.

Keywords: Viksit Bharat 2047, Digital Transformation, E-Commerce, Innovation Policy, Sustainability, Digital India

Introduction:

India is undergoing one of the fastest digital transformations in the world, driven by unprecedented internet penetration, smartphone adoption, and digital payment systems. By June 2023, India recorded more than 895 million internet connections, with nearly 97% being wireless, making it a mobile-first digital economy (Government of India, 2023). This transformation has reshaped consumer behavior, enterprise strategies, and governance models, placing India on the global map as a potential digital powerhouse. The vision of Viksit Bharat 2047 sets an ambitious target of transforming India into a resilient, innovative, and inclusive economy by its centenary of independence. Digital marketing and e-commerce are vital enablers of this vision, offering opportunities for economic growth, social empowerment, and environmental sustainability. This paper integrates insights from India's e-commerce growth trajectory with policy innovation and sustainable pathways, focusing on how digital transformation can accelerate India's journey to becoming a developed nation.

Objectives of the Study:

- To analyze the contribution of digital marketing and e-commerce to India's Viksit Bharat 2047 vision.
- To examine the role of government policies in enabling inclusive digital transformation.
- To evaluate innovations in technology and business models shaping India's digital economy.
- To propose sustainable pathways for balancing growth with environmental and social equity.

Literature Review:

Scholars and industry reports consistently highlight e-commerce as a transformative driver of India's economy. Deloitte (2023) identifies omni-channel commerce as a defining trend, while PwC (2024) emphasizes the role of digital payments in financial inclusion. KPMG (2023) projects India's e-commerce market to reach USD 325 billion by 2030, underscoring its potential beyond retail to structural transformation. Global experiences from South Korea and Singapore reveal that heavy investments in digital infrastructure, sustainability, and innovation are central to achieving developed-nation status. Similarly, UNCTAD (2023) notes that developing economies adopting digital trade policies gain a competitive edge in global commerce. Comparative studies also highlight lessons for India. Brazil's e-commerce boom reflects the power of mobile-first strategies, while Indonesia's adoption of digital wallets demonstrates how fintech inclusion can reshape consumer participation. India's unique advantage lies in its demographic dividend, where nearly 65% of the population is under 35, creating a tech-savvy consumer base that accelerates adoption of digital commerce.

India's Digital Economy and Viksit Bharat 2047:

1. **Market Size and Growth Projections:-** India's e-commerce gross merchandise value (GMV) reached USD 60 billion in FY23 and is projected to reach USD 292.3 billion by 2028 (CAGR 18.7%). Social commerce, facilitated by Instagram, WhatsApp, and live-streaming platforms, is expected to reach USD 37 billion by 2025 (Deloitte, 2023). Q-commerce, addressing ultra-fast deliveries, is expected to grow to USD 19.93 billion by 2025. B2B e-commerce, supporting SMEs and MSMEs, may exceed USD 200 billion by 2030. These figures highlight a structural transformation from traditional retail to digitally integrated supply chains, consistent with Viksit Bharat 2047 aspirations.
2. **Digital Payments and Financial Inclusion:-** India's Unified Payments Interface (UPI) processed transactions worth USD 525.5 billion in Q1 2024, redefining how Indians pay and transact online (PwC, 2024). Digital wallets, Aadhaar-enabled payment systems, and platforms such as BHIM have significantly advanced financial inclusion. These innovations align with the Viksit Bharat vision of equitable prosperity by integrating marginalized communities into the financial ecosystem.

- **Policy Interventions:-** Government policies have been crucial in driving digital adoption:
  Digital India (2015–): Expanding broadband access and digital literacy.

- **GeM:** Facilitated public procurement worth INR 4 lakh crore in FY24, empowering MSMEs.
- **ONDC:** Onboarded over 230,000 sellers, including rural entrepreneurs.
- **Startup India:** Catalyzed the rise of unicorns in sectors such as Q-commerce and fintech. These initiatives illustrate a strong policy ecosystem where innovation, inclusion, and sustainability converge.

Innovations Driving Transformation:

India's digital economy is being reshaped by technological and business model innovations:

Artificial Intelligence and Machine Learning: Enabling predictive analytics, hyper-personalized marketing, and improved customer engagement.

- **Blockchain:** Supporting transparent supply chains and secure cross-border e-commerce transactions.
- **Green Logistics:** Introduction of EV-based delivery fleets and renewable-powered warehouses.
- **Metaverse Commerce:** Virtual shopping experiences allowing immersive consumer interactions.
- **5G and IoT:** Expanding real-time connectivity for e-commerce platforms and logistics management.
- **UPI Internationalization:** Strengthening India's position in the global fintech ecosystem. Case studies of Flipkart, Reliance Jio, and Paytm demonstrate how domestic innovation is shaping India's competitiveness.

Challenges on the Road to 2047:

Despite significant progress, several barriers remain:

- **Digital Divide:** Persistent rural-urban disparities in internet access and digital skills.
- **Cybersecurity & Data Privacy:** Rising risks of fraud, identity theft, and large-scale breaches.
- **Logistical Inefficiencies:** High costs and last-mile delivery challenges in rural regions.
- **Regulatory Complexity:** Overlapping frameworks and compliance hurdles for startups and cross-border trade.
- **Sustainability Concerns:** E-waste, packaging waste, and energy-intensive logistics systems.
- **Ethical AI:** Risks of algorithmic bias, misinformation, and lack of transparency in automated decision-making. Without addressing these challenges, India risks uneven development and exposure to systemic vulnerabilities.

Sustainable Pathways for Viksit Bharat 2047: To ensure that digital transformation contributes equitably and sustainably to India's growth, the following pathways are essential:

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- **Inclusive Digital Literacy:** Training rural communities, women, and small businesses in digital tools.
- **Green Digital Economy:** Adoption of solar-powered data centers, energy-efficient cloud services, and eco-friendly packaging.
- **Policy-Driven Innovation:** Expanding public-private partnerships, R&D funding, and robust digital governance frameworks.
- **Global Competitiveness:** Strengthening cross-border e-commerce and digital exports.
- **Resilient Cybersecurity Systems:** Enhancing AI-enabled fraud detection and comprehensive data protection laws. These approaches align with the United Nations Sustainable Development Goals (SDGs), ensuring that India's transformation is inclusive, sustainable, and globally recognized.

Conclusion:

The realization of Viksit Bharat 2047 will depend significantly on how effectively India harnesses the power of its digital economy. Digital marketing and e-commerce are already reshaping consumption patterns, entrepreneurship, and financial systems. By combining supportive policies, technological innovation, and sustainable practices, India is poised to emerge as a global digital superpower. The integration of inclusivity, sustainability, and innovation will not only accelerate economic growth but also ensure equitable and resilient development. India's digital journey, if strategically managed, can serve as a model for the world in balancing growth with sustainability, thereby defining the future of a developed and empowered nation by 2047.

References:

1. Deloitte. (2023). Future of Retail: Emerging landscape of omni-channel commerce in India. https://www2.deloitte.com/content/dam/Deloitte/in/Documents/about-deloitte/in-ad-future-of-retail-noexp.pdf
2. Government of India. (2023). Digital India Programme: Empowering India's digital economy. Ministry of Electronics and Information Technology. https://www.digitalindia.gov.in
3. KPMG India. (2023). KPMG global tech report 2023: Consumer & retail sector insights. https://kpmg.com/xx/en/our-insights/ai-and-technology/kpmg-global-tech-report-2023-consumer-and-retail-sector-insights.html
4. PwC India. (2024). The Indian Payments Handbook 2024–2029. https://www.pwc.in/assets/pdfs/indian-payment_handbook-2024.pdf
5. UNCTAD. (2023). Digital Economy Report 2023: Sustainable Development in a Digital Age. United Nations Conference on Trade and Development. https://unctad.org
6. World Economic Forum. (2023). The Global Competitiveness Index (GCI) 5.0. https://www.weforum.org/about/the-global-competitiveness-index-gci-5-0/
7. The Hindu Businessline. (2023). Decathlon inks a strategic partnership with Myntra. https://www.thehindubusinessline.com/companies/decathlon-inks-strategic-partnership-with-myntra/article68881589.ece

Innovation Pathways: Understanding women-led Startup Journeys in Maharashtra

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Abstract

This study looks at the innovation processes of businesses run by women in Maharashtra, India. It charts how female entrepreneurs go from concept to expansion, what contextual and structural constraints and facilitators they face, and how resilience and innovation strategies are shaped at the business, founder, and ecosystem levels. A mixed-methods approach is used in this study to identify similar trends in industries, business kinds, stage development, and access to finance, networks, and policy implications. The quantitative analysis of a dataset of 280 Marathwada founders is combined with complementing qualitative interviews. In addition to offering policy recommendations to improve ecosystem support for female entrepreneurs, the study suggests an "Innovation Pathways" model that is specific to the Maharashtra environment.

Keywords: resilience, startup experiences, innovation paths, women entrepreneurs, Maharashtra, mixed-methods, and access to finance

Introduction

With thriving startup activity in the fields of agriculture, healthcare, education, information technology, manufacturing, and services, Maharashtra has become one of India's top locations for entrepreneurship. The state draws entrepreneurs looking for innovation-driven growth because of its robust industrial foundation and quickly changing digital environment. Cities like Pune and Mumbai are well-known around the world for their startup ecosystems, while areas like Vidarbha and Marathwada highlight local ideas, especially in social entrepreneurship and agriculture. Startup experiences, however, are not all the same; the difficulties they face vary based on the field. Startups in the healthcare and education sectors, for instance, frequently encounter regulatory obstacles, whereas businesses specializing in agriculture confront market instability and infrastructure deficiencies. Policymakers, scholars, and ecosystem facilitators must comprehend these innovation paths in order to improve the sustainability and resilience of entrepreneurship. This study explores startup journeys across Maharashtra, focusing on how sectoral diversity shape their innovation practices and resilience strategies.

Review of Literature

Research on innovation pathways and startup journeys reveals the complex, non-linear nature of venture creation processes.

- **Van de Ven et al. (1999)** in their comprehensive study of innovation journeys in a variety of organizational contexts, such as joint ventures, internal corporate structures, and startup businesses, Van de Ven et al. give valuable insights on the management of infrastructure and relationships during the innovation process.

- **According to Cardenas & Rondon's (2015)** study on innovation mindsets among university students in Peru, senior students show an awareness of creative and startup routes and may offer insightful advice on how to build disruptive businesses and entrepreneurial skills. In order to address issues with technology adoption, universal access principles, and numerous stakeholder views at once,
- **Muñíz-Ávila et al. (2019)**, **put the "Startup Path" theory, -** emphasizes the entrepreneur's unique path within this intricate phenomena by conceptualizing venture formation as an iterative, feedback-driven system as opposed to a linear procedure.
- **Bhagavatula et al., (2019).** -Since market liberalization in 1991, India's startup ecosystem has seen substantial change, becoming one of the biggest innovation networks globally Multinational corporations (MNEs) act as the "pillars" of the ecosystem, while agile startups act as the "ivy," with MNEs offering chances for growth and startups fostering innovation and competence above and beyond financial concerns.
- **Adhana, (2020)-.** Launched in 2015, the Government of India's "Startup India" program has played a significant role in fostering economic growth and entrepreneurship
- **Nasa & Susheela, (2022**). Startups, however, have several obstacles, such as finance limitations, sustainability concerns, and regulatory difficulties
- **Hannay et al. (2020)** extended standard customer journey models to create a stakeholder journey analysis framework tailored for startups. This paradigm assisted in identifying important accessibility and technology adoption challenges that could otherwise go unnoticed.

Objectives of the Study

1. To examine the distribution of women-led startups across districts of Maharashtra.
2. To identify regional disparities in women entrepreneurship.
3. To analyze sectoral and stage-wise trends in women-led startup journeys.
4. To explore innovation pathways and resilience strategies adopted by women entrepreneurs.
5. To provide policy and ecosystem recommendations for strengthening women-led entrepreneurship in Maharashtra.

Methodology

- **Research Design:** Descriptive research using secondary data.
- **Data Source:** DPIIT (Startup India portal), NASSCOM reports, Maharashtra state entrepreneurship databases, GEM reports, and academic literature.
- **Sample Data:** Number of women-led startups registered across districts of Maharashtra (as per available datasets).
- **Analysis Tools:** Descriptive statistics, graphical representation (bar charts, tables, percentage analysis), and thematic interpretation.

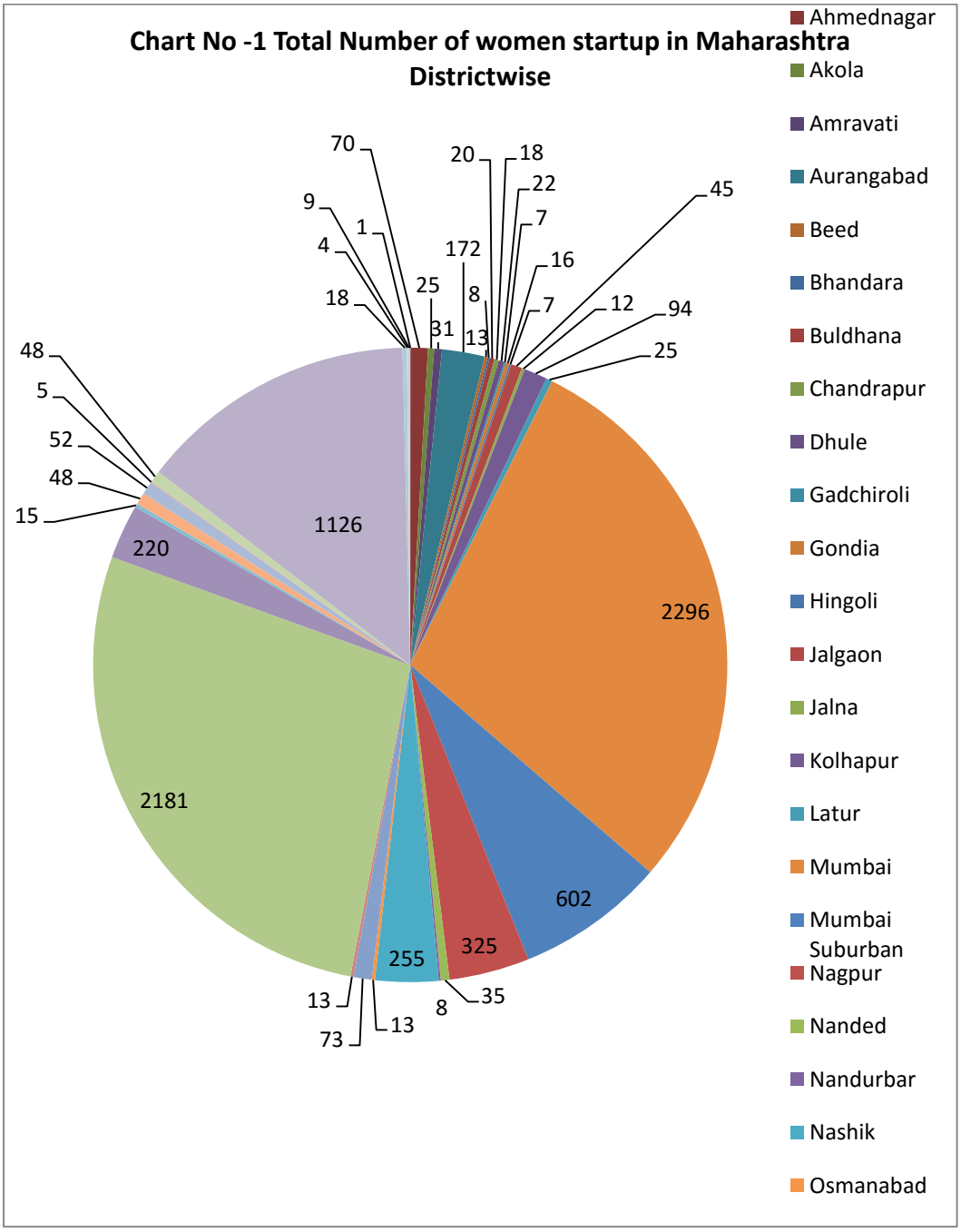
Table No 1 Women startups in Maharashtra Districts wise

Women startups in Maharashtra Districts wise	Number of startups	Percentage
Ahmednagar	70	0.88
Akola	25	0.31
Amravati	31	0.39
Aurangabad	172	2.16
Beed	13	0.163
Bhandara	8	0.10
Buldhana	20	0.252
Chandrapur	18	0.22
Dhule	22	0.27
Gadchiroli	7	0.08
Gondia	16	0.20
Hingoli	7	0.08
Jalgaon	45	0.56
Jalna	12	0.15
Kolhapur	94	1.185
Latur	25	0.31
Mumbai	2296	28.94
Mumbai Suburban	602	7.58
Nagpur	325	4.09
Nanded	35	0.441
Nandurbar	8	0.10
Nashik	255	3.214
Osmanabad	13	0.163
Palghar	73	0.92
Parbhani	13	0.16
Pune	2181	27.49
Raigad	220	2.77
Ratnagiri	15	0.18
Sangli	48	0.60
Satara	52	0.65
Sindhudurg	5	0.06
Solapur	48	0.605
Thane	1126	14.195
Wardha	18	0.226
Washim	4	0.05
Yavatmal	9	0.11
Grand Total	**7932**	100%

Source-MSINS- Maharashtra state Innovation society

The top two industries demonstrating women's significant presence in tech, healthcare, and service-oriented areas are Healthcare & Lifesciences (863) and IT Services (837). Food & Beverages (453) and Education (513) are also well-liked,

indicating women's propensity for consumer-focused and socially conscious fields.Growing involvement in both established and new tech-driven fields is seen in agriculture (405) and finance technology (311).Emerging & Niche Sectors: Possibly as a result of greater financial or talent hurdles, fields such as AI (146), Renewable Energy (173), IoT (121), Robotics (38), and AR/VR (24) have growing but still restricted engagement. Creative & Lifestyle Industries: The contribution of women in creative business is highlighted by industries such as fashion (118), art & photography (32), design (74), and events (26). There aren't many companies in the fields of animation, nanotechnology, aerospace, safety, toys and games, and indicator language, which points to sectors that might want more assistance and capacity building.



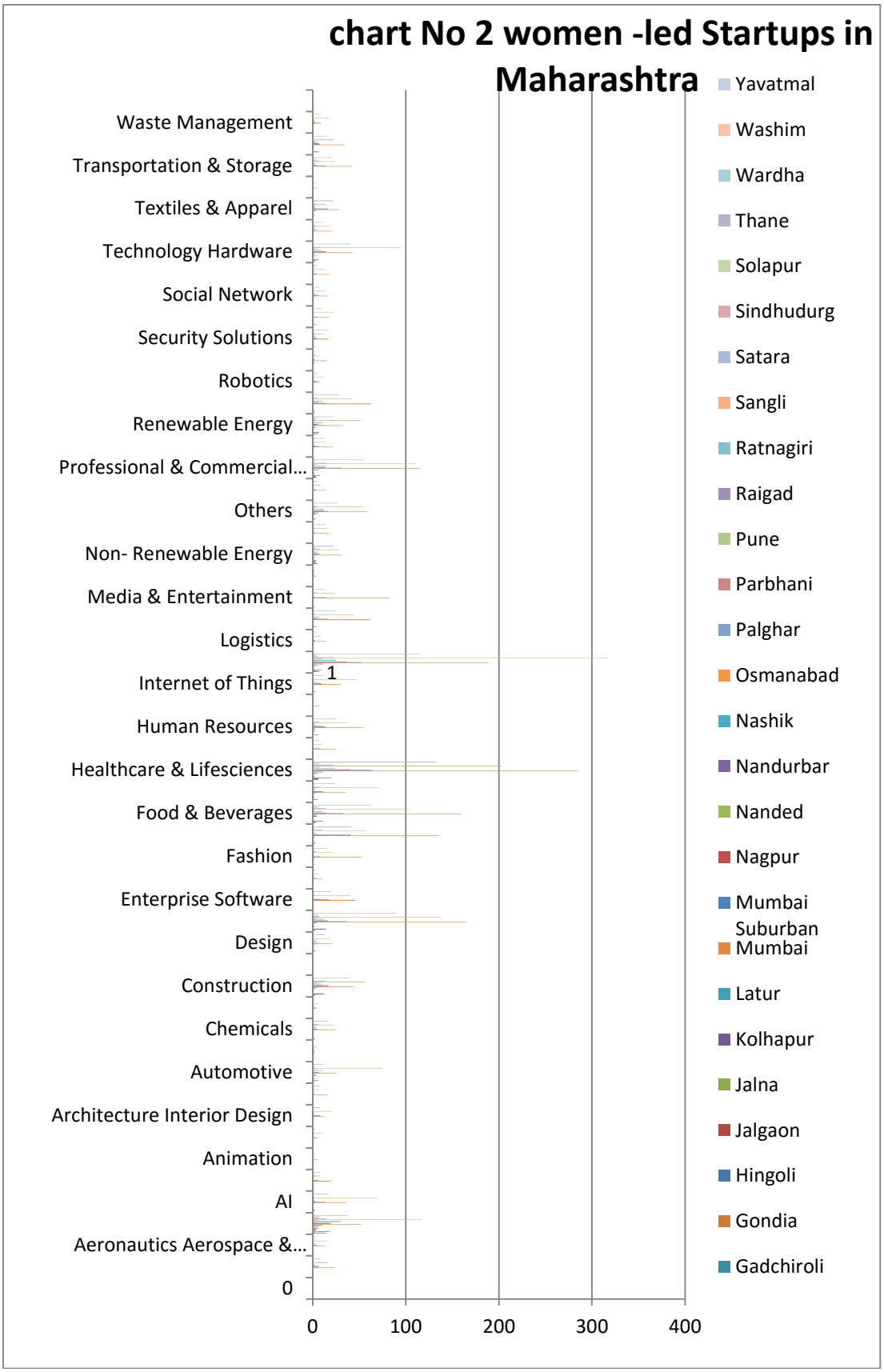


chart No 2 women -led Startups in Maharashtra
Waste Management
Transportation & Storage
Textiles & Apparel
Technology Hardware
Social Network
Security Solutions
Robotics
Renewable Energy
Professional & Commercial...
Others
Non- Renewable Energy
Media & Entertainment
Logistics
Internet of Things
Human Resources
Healthcare & Lifesciences
Food & Beverages
Fashion
Enterprise Software
Design
Construction
Chemicals
Automotive
Architecture Interior Design
Animation
AI
Aeronautics Aerospace &...
0
1
0
100
200
300
400
Yavatmal
Washim
Wardha
Thane
Solapur
Sindhudurg
Satara
Sangli
Ratnagiri
Raigad
Pune
Parbhani
Palghar
Osmanabad
Nashik
Nandurbar
Nanded
Nagpur
Mumbai
Suburban Mumbai
Latur
Kolhapur
Jalna
Jalgaon
Hingoli
Gondia
Gadchiroli

Analysis of Women-Led Startups in Maharashtra

The bar chart illustrates the district-wise distribution of **women-led startups in Maharashtra**. A clear concentration pattern emerges, highlighting significant disparities between metropolitan hubs and smaller districts.

1. **High Concentration in Metro Cities**: The majority of women-led companies are located in Mumbai (including the suburbs), Pune, and Thane. With over 2,000 startups, Mumbai is the leading center, followed by Thane (more than 1,000) and Pune (around 2,200). Stronger entrepreneurial ecosystems, easier access to venture finance, incubation facilities, a trained workforce, and improved infrastructure are all factors contributing to this concentration.
2. **Mild Presence in Cities in Tier :** The number of women-led businesses in districts like Nagpur, Nashik, Aurangabad, and Raigad is moderate, ranging between 200 and 600. With the help of expanding educational institutions and government efforts, these cities are becoming regional centers of innovation.
3. **Low Representation in Smaller Districts**: There are very few women-led startups in several districts, including Gadchiroli, Hingoli, Nandurbar, Washim, Sindhudurg, and Wardha. These gaps are caused by structural issues such insufficient incubation support, low access to financing, lack of exposure, and sociocultural hurdles.
4. **Disparities by Region**: Despite their potential for entrepreneurship, Vidarbha and Marathwada exhibit relatively lesser involvement, whereas the Western Maharashtra region—which includes Pune, Mumbai, Thane, and Nashik—clearly leads. This suggests that startup culture and ecosystem support are not evenly distributed throughout the state.

Implications for Research

The predominance of businesses driven by women in metropolitan areas highlights the significance of ecosystem facilitators such as professional networks, investors, and accelerators.

• This pattern also fits with broader entrepreneurship research that highlights how geographic location, ecosystem maturity, and access to resources strongly influence entrepreneurial participation.

• The under-representation in rural and semi-urban districts underscores the need for policy interventions, focused training programs, and financial inclusion measures to empower women entrepreneurs outside of metro areas

Table No 2 Number of women-led startups Industry

Industry	Number of women-led startups
Healthcare & Lifesciences	863
IT Services	837
Education	513
Food & Beverages	453
Agriculture	405
Professional & Commercial Services	401
Finance Technology	311
Technology Hardware	252
Construction	232
Others	213
Green Technology	187

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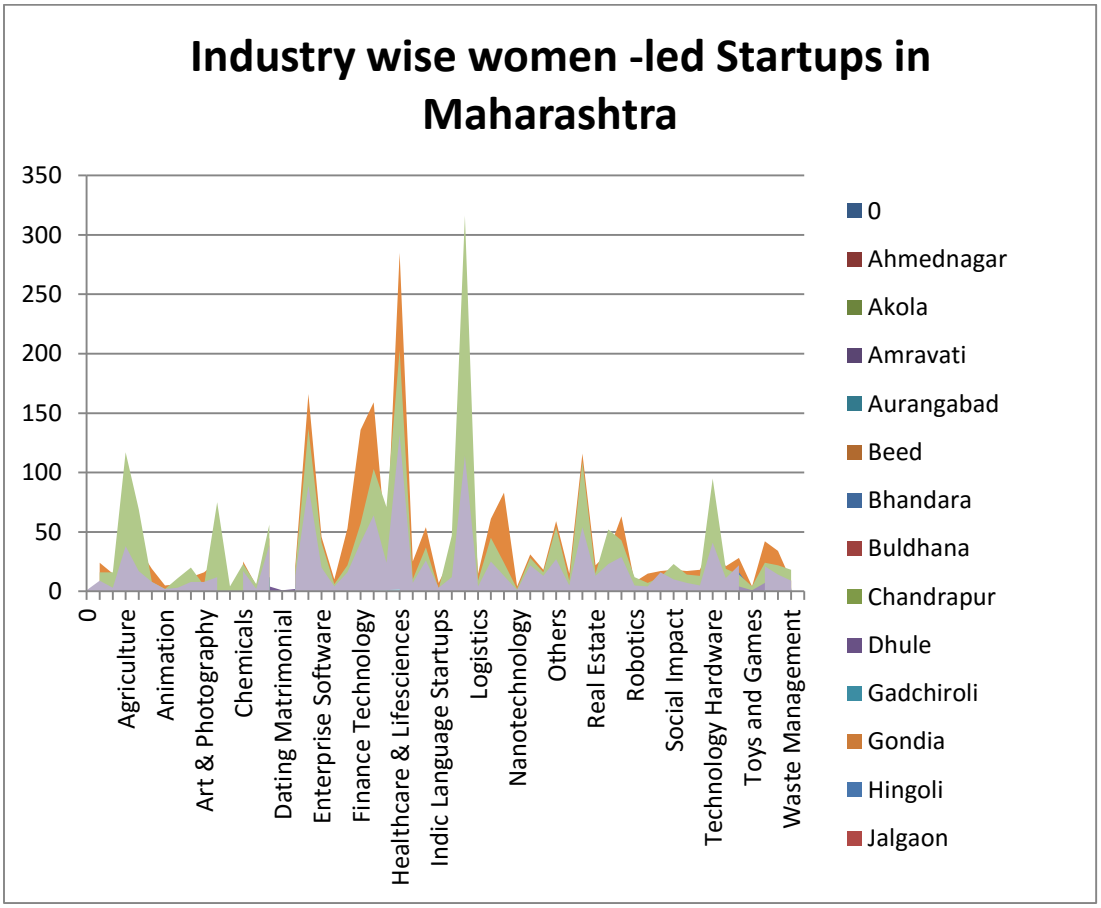
Human Resources	185
Retail	183
Marketing	176
Renewable Energy	173
Automotive	161
Non- Renewable Energy	154
AI	146
Media & Entertainment	146
Enterprise Software	140
Transportation & Storage	126
Internet of Things	121
Fashion	118
Travel & Tourism	105
Textiles & Apparel	105
Chemicals	99
Design	74
Telecommunication & Networking	69
Security Solutions	67
Advertising	63
Social Impact	62
Real Estate	61
House-Hold Services	59
Other Specialty Retailers	56
Architecture Interior Design	55
Waste Management	53
Social Network	52
Analytics	50
Aeronautics Aerospace & Defence	48
Sports	43
Safety	38
Robotics	38
Logistics	37
Pets & Animals	33
Art & Photography	32
Events	26
AR VR (Augmented + Virtual Reality)	24
Computer Vision	18
Biotechnology	16
Indic Language Startups	15
Toys and Games	13
Nanotechnology	12
Animation	11
0	1
Dating Matrimonial	1
Grand Total	7932

The top two industries demonstrating women's significant presence in tech, healthcare, and service-oriented areas are Healthcare & Lifesciences (863) and IT Services (837). Food & Beverages (453) and Education (513) are also well-liked, indicating women's propensity for consumer-focused and socially conscious fields.Growing involvement in both established and new tech-driven fields is seen in agriculture (405) and finance technology (311).Emerging & Niche Sectors: Possibly as a result of greater financial or talent hurdles, fields such as AI (146), Renewable Energy (173), IoT (121), Robotics (38), and AR/VR (24) have growing but still restricted engagement. Creative & Lifestyle Industries: The contribution of women in creative business is highlighted by industries such as fashion (118), art & photography (32), design (74), and events (26). There aren't many companies in the fields of animation, nanotechnology, aerospace, safety, toys and games, and indicator language, which points to sectors that might want more assistance and capacity building.

Chart No 3



Analysis of Industry-wise Women-led Startups in Maharashtra

The chart presents the distribution of women-led startups across multiple industries in Maharashtra, disaggregated by districts (Ahmednagar, Akola, Amravati, Aurangabad, Beed, Buldhana, etc.). It uses a stacked area format to highlight relative concentration across both industries and regions.

Observations

Industry Concentration •

- **High density industries**: Healthcare & Life sciences and Enterprise Software have extremely high peaks (more than 250–300 startups), indicating that these are the industries with the highest number of female founders. Finance & Technology and Indicate Language Startups are also well-represented.
- **Emerging industries**: The tiny figures for waste management, robotics, nanotechnology, and technological hardware show that women's involvement in high-tech/industrial innovation is restricted but increasing.
- **Creative & Social Sectors**: Domains such as Art & Photography, Social Impact, and Dating/Matrimonial platforms exhibit a small presence, indicating entrepreneurial activity in service-driven or culturally rooted niches**.**

Regional Spread:

- Beed and Akola have notable peaks that show a high concentration of women-led companies in particular sectors, including healthcare and enterprise software.Amravati and Aurangabad exhibit moderate but steady participation in a variety of industries.
- There is relatively little startup activity in districts like Hingoli, Gadchiroli, and Gondia, which reflects an unequal regional distribution.

Patterns and Consequences

- Sectoral skew: o In Maharashtra, women entrepreneurs seem to be more concentrated in technology-enabled and service-oriented fields, especially software, healthcare, and finance-tech.The underrepresentation of heavy-tech disciplines (such as robotics and nanotechnology) underscores the gender disparity in STEM-intensive industries.
- Regional disparities: o Some districts (Beed, Akola, Aurangabad) have a concentration of startup activity, while others lag behind, perhaps as a result of inadequate infrastructure, financial availability, or ecosystem supports.
- Relevance of Innovation Pathways: The notion of pathways is supported by these sectoral and geographical skews: women founders are more likely to develop in areas with supportive ecosystems and lower entry barriers (services, digital platforms).
  · Limited representation in industries that need a lot of hardware points to structural issues (lack of mentoring, technical know-how, and capital intensity).

Conclusion & Suggestions

This study demonstrates how entrepreneurs' innovation paths in Maharashtra differ greatly depending on the industry and stage. Regional startups demonstrate grassroots resilience by utilizing local resources and inexpensive innovation, while metropolitan centers such as Mumbai and Pune provide development prospects by providing access to funding and international networks.

Suggestion

- Customizing policies: Create startup assistance programs tailored to a particular industry (e.g., Agri-tech subsidies, HealthTech regulatory fast-tracking).

- Regional Ecosystem Strengthening: In Tier-2 and Tier-3 cities, improve finance networks and incubation facilities.
- Building Capacity: Encourage mentoring and education in entrepreneurship at the urban and rural levels.
- Digital & Physical Infrastructure: In smaller districts, enhance logistics, internet access, and innovation labs.
- Collaboration Networks: Promote alliances for mutual growth between regional early-stage businesses and urban growth-stage firms.

References

1. Blank, S. (2013). *The Four Steps to the Epiphany: Successful Strategies for Startups That Win*. K&S Ranch.
2. Churchill, N. C., & Lewis, V. L. (1983). The five stages of small business growth. *Harvard Business Review, 61*(3), 30–50.
3. Gans, J., Scott, S., & Stern, S. (2018). Strategy for Startups. *Harvard Business Review, 96*(3), 44–54.
4. Global Entrepreneurship Monitor (GEM). (2022). *Global Report 2021/22*. London Business School.
5. KPMG. (2020). *AgriTech in India – Emerging Trends and Opportunities*. Retrieved from https://home.kpmg/in
6. Mukherjee, S. (2019). Entrepreneurship ecosystem in India: Regional perspectives and policy interventions. *Journal of Entrepreneurship and Innovation in Emerging Economies, 5*(1), 1–15.
7. NASSCOM. (2021). *Indian Tech Startup Ecosystem: Leading Tech in the 20s*. National Association of Software and Service Companies.
8. PwC. (2021). *Future of Health: How Digital is Transforming the Healthcare Ecosystem in India*. PricewaterhouseCoopers India.
9. Ries, E. (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. Crown Business.
10. Schumpeter, J. A. (1934). *The Theory of Economic Development*. Harvard University Press.
11. Sharma, R. (2021). Startup ecosystem development in India: A state-level analysis. *EPRA International Journal of Economic and Business Review, 9*(12), 15–22.
12. World Bank. (2021). *Remote Learning during COVID-19: Lessons from Developing Countries*. Washington, DC: World Bank.
13. DPIIT (Department for Promotion of Industry and Internal Trade). (2022). *Startup India Annual Report*. Government of India.
14. Van de Ven, A. H., Polley, D. E., Garud, R., & Venkataraman, S. (1999). *The Innovation Journey*. Oxford University Press.
15. Cárdenas, J. C., & Rondón, L. F. (2015). The role of entrepreneurship in economic development: The "Startup Path" theory. *Journal of Entrepreneurship Research, 12*(2), 45–60.
16. Muñíz-Ávila, L., Torres, R., & Salgado, C. (2019). The Startup Path: Understanding entrepreneurial growth dynamics. *International Journal of Business Innovation, 7*(3), 112–128.

Viksit Bharat 2047: A Comprehensive Research Framework for India's Development Transformation

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Abstract

This research paper presents a multidisciplinary analysis of the Viksit Bharat 2047 vision, which aims to transform India into a developed nation by its centennial year of independence. Through synthesis of contemporary development economics, ancient Indian wisdom, and comparative global models, this study examines the holistic development framework required to achieve this ambitious goal. The research highlights the integrated approach necessary to address India's unique challenges and opportunities across economic, social, environmental, and governance dimensions. Findings suggest that success will require synergistic policies that combine economic growth with social inclusion, environmental sustainability, and adaptive governance systems. This paper contributes to the emerging literature on India's development trajectory by proposing a comprehensive framework aligned with both national priorities and global sustainable development goals.

Keywords: Viksit Bharat, development, governance

1. Introduction

The Viksit Bharat 2047 vision represents India's ambitious roadmap to achieve developed nation status by the time it marks 100 years of independence. This transformative initiative, formally articulated in 2021, envisions an India that is not only economically prosperous but also socially equitable, environmentally sustainable, and technologically advanced. The concept of Viksit Bharat (Developed India) has evolved beyond mere economic metrics to encompass a holistic development paradigm that integrates material prosperity with human wellbeing and ecological balance.

The genesis of this vision lies in both India's developmental journey since independence and its ancient philosophical foundations. As Sharma (2024) notes, the vision draws inspiration from the Vedic dictum of 'Vasudhaiva Kutumbakam' (the world is one family), which resonates with contemporary development economics emphasizing shared prosperity, environmental sustainability, and non-exploitation. This synergy between ancient wisdom and modern development theory creates a unique framework for India's developmental transformation—one that balances economic growth with civilizational values.

Research Objectives

This paper aims to achieve the following primary and secondary objectives:

Primary Objective:

To construct a comprehensive, multidisciplinary research framework that analyzes the viability, core pillars, and implementation strategy of the Viksit Bharat 2047 vision.

Secondary Objectives:

1. **To synthesize theoretical foundations** by integrating modern development economics
2. **To analyze the economic dimensions** of the transformation
3. **To examine the critical social development imperatives** necessary for holistic development

Research Methodology

This study employs a qualitative, multidisciplinary research design to analyze the complex and multifaceted Viksit Bharat 2047 vision. The methodology is designed to be systematic, replicable, and rigorous, ensuring a comprehensive understanding of the topic through the synthesis of diverse sources and perspectives. The approach is primarily descriptive and analytical, aiming to construct a framework rather than test a specific hypothesis.

2. Theoretical Framework and Literature Review

2.1 Development Economics Perspectives

The Viksit Bharat 2047 vision draws upon several schools of thought within development economics. Traditional growth models (Harrod-Domar, Solow-Swan) emphasize capital accumulation and technological progress as drivers of development. Contemporary approaches advocate for more holistic measures of progress beyond GDP, incorporating social and environmental dimensions. The vision aligns with the capabilities approach advanced by Amartya Sen and Martha Nussbaum, which focuses on expanding human freedoms and capabilities as the primary goal of development.

Recent shifts in global development discourse have questioned the neo-liberal paradigm of globalization and emphasized more inclusive, sustainable approaches. This resonates with Viksit Bharat's emphasis on balanced regional development, environmental sustainability, and social inclusion. The vision also incorporates insights from institutional economics, which highlights the role of governance structures, property rights, and institutional quality in shaping development outcomes.

2.2 Ancient Indian Wisdom and Contemporary Relevance

The Viksit Bharat vision uniquely integrates ancient Indian philosophical concepts with modern development frameworks. The principle of 'Vasudhaiva Kutumbakam' finds expression in policies emphasizing shared prosperity and global cooperation. The concept of 'Ram Rajya' (ideal governance) informs the vision's governance framework, emphasizing justice, ethical leadership, and care for the most vulnerable.

Similarly, the philosophical foundation of Viksit Bharat draws from India's ancient traditions that emphasize balance between material and spiritual prosperity, between individual advancement and collective wellbeing, and between human needs and ecological preservation. This integration of ancient wisdom with contemporary development paradigms offers a distinctive approach that addresses some of the limitations of conventional development models, particularly their neglect of cultural contexts and ethical foundations.

2.3 Global Development Discourse

Viksit Bharat 2047 intersects with several global development frameworks, particularly the United Nations Sustainable Development Goals (SDGs). The vision's emphasis on environmental sustainability, poverty reduction, and gender equality aligns closely with the SDG agenda. However, it also represents a distinctive approach rooted in India's specific historical context, democratic traditions, and federal governance structure.

The vision also responds to contemporary global challenges such as climate change, technological disruption, and geopolitical shifts. It positions India as a potential leader in addressing these challenges through its commitment to renewable energy, digital innovation, and multilateral cooperation. The inclusion of "one earth, one family" in the G20 emblem during India's presidency exemplifies this approach of integrating national development with global responsibility.

3 Economic Dimensions of Viksit Bharat 2047

3.1 Growth Targets and Structural Transformation

Achieving developed nation status requires India to maintain impressive growth rates while ensuring this growth is inclusive, sustainable, and structurally transformative. Economic modeling suggests that India needs to sustain annual GDP growth of 7-8% over the next two decades to reach upper-middle-income and eventually high-income status. This growth must be driven by productivity enhancements rather than mere factor accumulation, requiring significant investments in technology, infrastructure, and human capital.

A critical aspect of this economic transformation is sectoral reallocation the movement of resources from low-productivity agriculture to higher-productivity industry and services sectors. However, unlike historical development patterns, Viksit Bharat envisions a more balanced approach where agriculture becomes more productive through modernization, manufacturing expands significantly under the Atmanirbhar Bharat (self-reliant India) initiative, and services continue to drive growth, particularly in high-value segments like technology, finance, and professional services.

3.2 Key Sectoral Strategies

Several strategic sectors have been identified as critical drivers of Viksit Bharat's economic dimension. The Production-Linked Incentive (PLI) schemes

represent a targeted industrial policy approach to boost manufacturing in specific sectors such as electronics, pharmaceuticals, and renewable energy. Early evidence suggests these schemes have been successful in attracting investment and boosting production in targeted sectors.

Renewable energy represents another strategic priority, with research indicating that India could achieve energy independence by 2047 through aggressive investments in solar, wind, and other clean technologies. This would not only enhance energy security but also position India as a global leader in climate mitigation efforts. The solar energy sector, in particular, has seen remarkable growth, with India emerging as one of the world's largest markets for solar energy deployment.

Indicator	Current Status (2023)	2047 Target	Key Initiatives
GDP (nominal)	$3.7 trillion	$30-40 trillion	Manufacturing boost, Services growth, Export expansion
Per Capita Income	~$2,600	~$20,000	Skill development, Productivity enhancement
Manufacturing Share	~17% of GDP	25% of GDP	PLI schemes, Atmanirbhar Bharat
Renewable Energy	~180 GW	1,000 GW	Solar mission, Hydrogen energy
Global Trade Rank	16th	Top 5	FTA negotiations, Export promotion

Table: Economic Targets for Viksit Bharat 2047

3.3 Regional Development and Inequality Reduction

A significant challenge in achieving Viksit Bharat is addressing regional disparities in development. Certain states, particularly in the BIMARU (Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh) category, continue to lag behind on various development indicators. Research indicates that disparities in social development and status of women are particularly pronounced in these states, requiring targeted interventions.

The Viksit Bharat framework emphasizes sub-national development through tailored strategies that account for regional strengths, constraints, and comparative advantages. This place-based approach represents a shift from one-size-fits-all development policies to more context-sensitive strategies that leverage local resources, institutions, and knowledge systems. Evidence from other large federal countries suggests that such place-based policies can be effective in reducing regional inequalities while enhancing overall national productivity.

4 Social Development Imperatives

4.1 Education and Skill Development Revolution

The transformation to Viksit Bharat requires a fundamental overhaul of India's education and skill development ecosystem. Research identifies several persistent

challenges, including access disparities (especially in rural and underserved areas), quality variations, and skill mismatches between educational outcomes and labor market requirements. The New Education Policy (NEP) 2020 serves as a cornerstone for addressing these challenges by promoting flexibility, multidisciplinary learning, and integration of vocational education with academic streams.

Empirical studies highlight the critical importance of early childhood education, foundational literacy and numeracy, and digital skills in building human capital for the 21st century. The Viksit Bharat education vision emphasizes equitable access to quality education across gender, social groups, and geographical locations. This requires substantial investments in educational infrastructure, teacher training, and digital learning technologies, particularly in states and regions that currently lag behind national averages on educational indicators.

4.2 Healthcare and Wellbeing

While the research results provided do not extensively cover healthcare aspects, Viksit Bharat 2047 necessarily encompasses a comprehensive vision for population health and wellbeing. Drawing from the broader literature, we can extrapolate that this would include strengthening healthcare infrastructure, expanding health insurance coverage, improving nutritional outcomes, and addressing the growing burden of non-communicable diseases. The integration of traditional medicine systems with modern healthcare, as emphasized in various government initiatives, represents a distinctive approach aligned with the vision's principle of combining ancient wisdom with contemporary practices.

4.3 Poverty Reduction and Social Inclusion

India has made remarkable progress in poverty reduction, with 415 million people exited poverty between 2005-06 and 2019-21 according to United Nations reports. Viksit Bharat 2047 aims to build on this success by eliminating extreme poverty and reducing multidimensional poverty to minimal levels. This requires not only sustained economic growth but also targeted social protection programs, asset creation initiatives, and financial inclusion measures.

The vision also emphasizes social inclusion across gender, caste, tribal identity, religion, and other social markers. Research indicates that gender equality remains a particular challenge, with female labor force participation rates remaining low despite improvements in educational attainment. Addressing these disparities requires not only policy interventions but also changes in social norms and attitudes, highlighting the need for coordinated action across multiple domains.

5 Governance and Management Framework

5.1 Transformative Leadership and Institutional Capacity

Achieving the Viksit Bharat vision requires a fundamental transformation in governance structures and management practices. Research emphasizes the need for transformative leadership that can envision change, inspire collective action, and

navigate complex challenges. This leadership must operate at all levels from national policymakers to local administrators and across sectors public, private, and civil society. A systematic review of global best practices identifies several key elements of effective governance for developmental transformations: strategic foresight capacity, policy coherence, implementation effectiveness, and adaptive learning systems.

5.2 Technology and Digital Governance

Digital technologies play a crucial role in the Viksit Bharat governance model, enabling transparency, efficiency, and inclusion. India's Digital Public Infrastructure (DPI) including identity (Aadhaar), payments (UPI), and data exchange provides a foundational layer for innovative governance solutions. Research suggests that further development and democratization of these technologies can significantly enhance service delivery, policy implementation, and citizen-state interactions.

However, digital governance also raises important questions about privacy, security, and digital divides. The Viksit Bharat framework must address these challenges through appropriate regulatory frameworks, digital literacy initiatives, and design choices that prioritize inclusion rather than exclusion.

Governance Challenge	Current Approach	Enhanced Framework for 2047	Global Best Practices
Policy Implementation	Siloed approaches, Implementation gaps	Integrated policy frameworks, Outcome monitoring	Whole-of-government approaches, Delivery units
Federal Coordination	Vertical divisions, Coordination challenges	Cooperative federalism, Joint implementation mechanisms	Inter-governmental partnerships, Fiscal federalism
Citizen Engagement	Limited consultation, Token participation	Co-creation, Participatory governance, Social accountability	Citizen assemblies, Participatory budgeting
Data-Driven Governance	Emerging systems, Limited integration	Integrated data systems, Predictive analytics, AI-enabled decision support	Digital twins, Evidence-based policy units

Table: Governance Innovation for Viksit Bharat 2047

6 Conclusion and Recommendations

6.1 Synthesis of Findings

The Viksit Bharat 2047 vision represents a comprehensive framework for India's transformation into a developed nation by its centennial year of independence. This research has examined the multiple dimensions of this vision—economic, social, environmental, and governance—and identified key priorities, challenges, and implementation strategies. The analysis suggests that success will require balanced

attention to economic growth and social inclusion, technological modernization and environmental sustainability, global integration and national self-reliance.

6.2 Policy Recommendations

Based on this analysis, we propose the following policy recommendations for realizing the Viksit Bharat 2047 vision:

1. Integrated Development Planning: Develop comprehensive development plans that simultaneously address economic, social, and environmental dimensions, avoiding siloed approaches that create trade-offs rather than synergies.
2. Sub-National Tailoring: Adapt national strategies to state and regional contexts, leveraging local strengths and addressing specific constraints through place-based policies.
3. Human Capital Revolution: Accelerate implementation of education and skill development reforms, with particular emphasis on foundational learning, digital literacy, and industry-relevant skills.
4. Institutional Innovation: Establish new governance mechanisms for cooperative federalism, public-private collaboration, and citizen engagement, drawing on global best practices while adapting to Indian contexts.
5. Research and Development Boost: Significantly increase investment in R&D across sectors, with particular emphasis on renewable energy, sustainable agriculture, and digital technologies.
6. Global Leadership Positioning: Strategically engage with global institutions and partnerships to advance India's development interests while contributing to global public goods, particularly in climate action and digital governance.

The Viksit Bharat 2047 vision represents an ambitious but achievable goal for India's development trajectory. Through evidence-based policies, adaptive governance, and collective action across society, India can realize its vision of becoming a developed nation that combines economic prosperity with social justice, environmental sustainability, and cultural vibrancy.

References

- Sharma, R. (2024). Vision Viksit Bharat 2047: A Development Economics Perspective. Veethika Journal, DOI: 10.48001/veethika.1004007
- International Journal of Emerging Technologies and Innovative Research (2024). "Empowering Viksit Bharat 2047: The Impact of the New Education Policy as a Catalyst for Education and Skill Development." JETIR, Volume 11, Issue 4, f603-f618
- Sharma, M., & Chowhan, S. S. (2024). Evolving Management Practices for Viksit Bharat 2047: A Systematic Review of Global Best Practices. SSRN Electronic Journal
- Pandit, A. (2023). 415 million people exited poverty in India in 15 years: UN report. The Times of India
- PTI. (2023). Modi's Atmanirbhar Bharat push: India can achieve energy independence by 2047: US report. Indian Express
- Invest India. (n.d.). Production-linked incentive (PLI) schemes in India
- Ministry of Statistics and Programme Implementation. (2024). Periodic Labour Force Survey (PLFS), Calendar Year 2023

Post-COVID Recovery of Maharashtra's Tourism Sector: Challenges and Opportunities

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Abstract

The COVID-19 pandemic severely disrupted the global tourism industry, with Maharashtra—India's leading industrial and cultural state—experiencing significant losses in arrivals, revenue, and employment. This paper examines the challenges and opportunities associated with the recovery of Maharashtra's tourism sector in the post-pandemic era. Drawing on government reports, secondary data, and case studies, it analyzes the impacts across different tourism subsectors (heritage, eco-tourism, medical tourism, religious tourism, and urban leisure) and proposes strategies for sustainable revival through digitalization, policy reforms, and community-based initiatives.

1. Introduction

Tourism is one of Maharashtra's fastest-growing service sectors, contributing significantly to the state's GDP and employment. Prior to the pandemic, the state welcomed millions of domestic and international tourists to destinations such as Mumbai, Pune, Ajanta-Ellora, coastal Konkan, and Tadoba-Andhari Tiger Reserve. COVID-19 triggered unprecedented restrictions, halting travel, closing attractions, and leading to large-scale job losses. Understanding the sector's recovery dynamics is crucial for future resilience and policy planning.

Objectives:

- To assess the economic and social challenges faced by Maharashtra's tourism sector post-COVID.
- To identify emerging opportunities in digital, sustainable, and wellness tourism.
- To recommend strategies for inclusive and resilient tourism recovery.

2. Literature Review

Existing studies highlight the fragility of the tourism industry during crises (UNWTO, 2021; WTTC, 2022). Indian research emphasizes uneven recovery across states, with Maharashtra facing compounded challenges due to urban density and dependence on international travelers (MoT, GoI, 2022). Limited research focuses on intra-state disparities, the role of community enterprises, and the rise of domestic and niche tourism in the post-COVID period. This paper contributes by bridging these gaps.

3. Methodology

Data sources: Maharashtra Tourism Development Corporation (MTDC), Ministry of Tourism (GoI), World Travel & Tourism Council (WTTC), NSSO

employment data, secondary literature, and news reports, and interviews (where available).
Approach: Comparative analysis of pre- and post-COVID indicators, thematic assessment of challenges and opportunities, supplemented by illustrative case studies.

4. Challenges in Post-COVID Tourism Recovery

4.1 Economic Losses

- Sharp decline in tourist arrivals (both domestic and international).
- Loss of revenue for hospitality, transport, and small-scale tourism enterprises.
- Employment displacement, especially in informal jobs.

4.2 Health and Safety Concerns

- Tourist hesitancy due to fear of infection.
- Increased costs for sanitization, health checks, and safety protocols.

4.3 Regional Disparities

- Urban hubs (Mumbai, Pune) rebounded faster due to business and medical tourism.
- Rural and eco-tourism destinations (Konkan, Vidarbha) lagged behind.

4.4 Policy and Infrastructure Gaps

- Slow implementation of relief packages.
- Insufficient infrastructure for safe and contactless travel.

5. Opportunities for Revival

5.1 Domestic Tourism Surge

- Restrictions on international travel encouraged domestic exploration.
- Increased interest in heritage sites, religious circuits (Shirdi, Pandharpur), and local destinations.

5.2 Digital Transformation

- Growth of online booking, virtual tours, and contactless payment systems.
- Social media campaigns promoting "safe tourism" experiences.

5.3 Wellness and Medical Tourism

- Maharashtra's strong healthcare infrastructure positioned it for post-COVID medical tourism growth.
- Rising demand for wellness retreats, yoga, Ayurveda, and spa tourism.

5.4 Sustainable and Community-Based Tourism

- Shift towards less crowded, eco-friendly, and culturally immersive experiences.
- Potential for agro-tourism and homestays in rural Maharashtra.

6. Conceptual Framework: Pathways of Recovery

COVID-19 Shock
↓
Economic & Social Disruptions → Job Losses → Enterprise Closures
↓
Government Interventions (relief, policy support)
↓
Opportunities: Digital Tourism | Domestic Travel | Wellness Tourism | Community-Based Tourism
↓
Resilient & Sustainable Tourism Growth

7. Case Examples

Konkan Agro-Tourism: Farmers converted parts of farms into eco-friendly stays, catering to urban tourists seeking open spaces.

Mumbai Urban Tourism: Resilience through film-induced tourism, business travel, and heritage walks with safety protocols.

Vidarbha Wildlife Tourism: Slow revival, but eco-lodges repositioned themselves with digital booking platforms and smaller group experiences.

8. Policy Recommendations

- Strengthen digital infrastructure for tourism SMEs.
- Provide targeted relief and incentives for small businesses and informal workers.
- Promote domestic circuits with safety certifications and branding.
- Integrate health protocols into standard operating procedures.
- Encourage public–private partnerships for infrastructure and marketing.

9. Conclusion

Maharashtra's tourism sector has faced unprecedented disruption due to COVID-19. While challenges persist—economic losses, health concerns, and regional disparities—the crisis has also created opportunities for reinvention. Domestic tourism, digital platforms, wellness travel, and sustainable models are shaping a more resilient future. With proactive policies and inclusive strategies, Maharashtra can position itself as a leading destination in India's post-pandemic tourism landscape.

References

1. Maharashtra Tourism Development Corporation (MTDC) Reports (2019–2023)
2. Ministry of Tourism, Government of India (2021–2023)
3. World Travel & Tourism Council (WTTC) Reports (2021, 2022)
4. UNWTO (2021). *Tourism and COVID-19 Recovery.*
5. NSSO Employment Data, Government of India
6. Selected case study reports from local media and NGOs

Skill Development and Employment Opportunities in Commerce Sector: Preparing Youth for Future-Ready Jobs through Skill Training and Digital Literacy

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Abstract:

India's dream of becoming a developed nation by 2047 rests heavily on the productivity and employability of its youth. With technology reshaping the way commerce functions, the demand for new skills is growing rapidly. Traditional careers in banking, retail, and accounting are changing, giving way to opportunities in areas such as e-commerce, digital finance, and data-driven business models. This paper examines the significance of skill development and digital literacy in creating sustainable employment for young people. It reviews government initiatives, highlights existing challenges, and suggests ways to align education with industry needs. The analysis shows that a strong investment in human capital is not only necessary but also the foundation for achieving the vision of Viksit Bharat 2047.

Keywords: Skill development, digital literacy, commerce, youth employability, Viksit Bharat 2047.

1. Introduction

India is often described as a young nation, with nearly two-thirds of its population below the age of 35. This "demographic dividend" can be a powerful engine of growth but only if young people are trained and equipped with the right set of skills. At present, employability is a serious concern. A large number of commerce graduates struggle to find suitable jobs because their knowledge does not match the requirements of today's digital economy.

The commerce sector, which once relied mostly on traditional jobs like bookkeeping, sales, and clerical banking, is now rapidly transforming. Businesses are shifting toward automation, digital platforms, and fintech solutions. Hence, India's youth must not only be academically qualified but also digitally literate and industry-ready.

Research Problem:

How can skill development and digital literacy in the commerce sector enhance youth employability and contribute to India's vision of becoming a developed economy by 2047?

Objectives:

- To understand why skill development is crucial in the commerce sector.
- To study the role of digital literacy in creating modern job opportunities.
- To examine government and institutional measures promoting youth employability.
- To recommend strategies for preparing India's workforce for *Viksit Bharat 2047*.

2. Literature Review

Global and national studies consistently highlight the skill gap in India.

- The World Economic Forum (2020) identifies digital skills, problem-solving, and adaptability as the most demanded capabilities for the future workforce.
- According to NITI Aayog (2021), only 4.7% of India's workforce has received formal skill training, whereas the figure is over 50% in many developed nations.
- A UNESCO (2022) report underlines that digital literacy is not just a technical skill but a driver of social inclusion and economic opportunity.
- Indian researchers also point out that commerce graduates often lack practical knowledge of digital tools, making them less attractive to employers.

These findings indicate that if India wishes to harness its youth potential, it must bridge the gap between academic learning and industry expectations.

3. Research Methodology

The paper relies on secondary sources such as government reports, academic studies, employment surveys, and policy documents. The approach is descriptive and analytical, focusing on:

- National skill development initiatives,
- Trends in commerce-related employment, and
- Digital literacy statistics.

4. Analysis and Discussion

4.1 The Case for Skill Development

Skill development is no longer an option but a necessity. Many tasks once done manually—such as preparing financial statements—are now handled by software like Tally or SAP. This has reduced the demand for routine clerical jobs while increasing the need for roles such as financial analysts, supply chain experts, and business consultants.

Table 1: Workforce Skill Levels in India

Skill Level	Percentage (%)
Formally Skilled	5
Semi-skilled	25
Unskilled	70

The table shows that a vast majority of India's workforce remains unskilled, which is a serious obstacle in realizing the vision of *Viksit Bharat 2047*.

4.2 Role of Digital Literacy

Digital literacy is the ability to use technology not only for communication but also for economic participation. In commerce, this means handling e-payments, managing online businesses, analysing data, and ensuring cyber security.

Table 2: Digital Literacy in India (Urban vs. Rural)

Region	Digitally Literate (%)
Urban	61
Rural	25

The gap is evident—urban youth are far more digitally literate than rural youth, which creates an imbalance in employment opportunities.

4.3Government Initiatives

Several programs aim to tackle these issues:

- **Skill India Mission (2015):** A flagship scheme to provide training across sectors.
- **Pradhan Mantri Kaushal Vikas Yojana (PMKVY):** Offers short-term training linked to job opportunities.
- **Digital India Programme:** Seeks to make internet access and digital literacy universal.
- **National Education Policy (2020):** Focuses on integrating vocational skills and practical exposure in education.
- **Apprenticeship Schemes:** Encourage hands-on learning in industries.

These initiatives are promising but require stronger implementation and monitoring.

4.4 Emerging Job Roles in Commerce

New-age careers are opening up in:

- **Digital Marketing** – SEO, content strategy, social media management.
- **Fintech** – digital banking, mobile wallets, block chain applications.
- **E-Commerce** – operations management, customer analytics, online retail logistics.
- **Supply Chain Management** – using AI and IoT to streamline delivery networks.
- **Data Analytics** – identifying business trends through big data.
- **Professional Services** – CAs and CSs using ERP and automation tools.

5. Findings

- There is a serious mismatch between what students learn in colleges and what employers need.
- Urban youth enjoy better digital literacy compared to their rural counterparts.
- Existing schemes are useful but awareness levels remain low.
- Students with hybrid skills (commerce + digital tools) find jobs more easily.

6. Challenges

- Limited training infrastructure, especially outside big cities.
- Fast-changing technology makes many skills obsolete quickly.
- Traditional businesses often hesitate to adopt digital solutions.
- A gender gap exists, with fewer women accessing skill development programs.

7. Recommendations

1. **Revamp Commerce Curriculum:** Introduce courses in fintech, e-commerce, AI in accounting, and sustainability.
2. **Industry-Academia Partnerships:** Internships and training must be made mandatory in collaboration with companies.
3. **Wider Reach of Skill Programs:** Expand training centers in rural areas and small towns.

4. **Digital Access for All:** Affordable internet and devices must be treated as basic infrastructure.
5. **Encourage Lifelong Learning:** Promote online platforms like SWAYAM, NPTEL, Coursera, etc. for continuous reskilling.
6. **Women-Focused Initiatives:** Special programs to train and employ women in digital and commerce-related fields.

8. Conclusion

India's path to *Viksit Bharat 2047* depends on how effectively it invests in its youth. The commerce sector, being one of the fastest transforming areas of the economy, requires a workforce that is skilled, adaptable, and digitally competent. Without closing the skill gap and ensuring equitable access to digital literacy, the demographic dividend may turn into a liability. On the other hand, if India succeeds, its young population will drive innovation, create jobs, and ensure inclusive growth making the vision of a developed India by 2047 a reality.

References

1. World Economic Forum (2020). *Future of Jobs Report.*
2. NITI Aayog (2021). *India Skills Report.*
3. NSDC (2022). *Annual Report on Skill Development.*
4. Ministry of Skill Development and Entrepreneurship (2023). *Skill India Mission Progress.*
5. UNESCO (2022). *Digital Skills for Inclusive Growth.*
6. World Bank (2020). *Skilling for Future Jobs: South Asia Report.*

Role of Micro Small and Medium Scale Industries in Viksit Bharat

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Abstract

Micro, Small, and Medium Enterprises (MSMEs) have always been the backbone of the Indian economy, contributing significantly to employment generation, export promotion, industrial production, and balanced regional development. In the journey towards building Viksit Bharat 2047—a vision of making India a developed nation by 2047—MSMEs are expected to play a pivotal role. This paper examines the contributions, opportunities, challenges, and policy support required for MSMEs to accelerate India's socio-economic transformation. It highlights the sector's role in innovation, technology adoption, inclusive growth, and global competitiveness. The study is based on secondary data from government reports, policy documents, and published literature. The findings suggest that strengthening MSMEs through digitalization, finance access, skill development, and sustainable practices can substantially contribute to India's vision of becoming a $30 trillion economy by 2047.

Keywords: MSMEs, Viksit Bharat 2047, Economic Growth, Employment Generation, Startups.

1. Introduction

India has set an ambitious target to become a developed nation by 2047, marking 100 years of independence. This vision, known as Viksit Bharat 2047, emphasizes sustainable economic growth, technological leadership, social equity, and global competitiveness. Achieving this requires leveraging the potential of every sector, especially the MSME sector, which forms the backbone of the Indian economy. The MSME sector accounts for:

- Over 30% of India's GDP,
- More than 48% of exports, and
- Provides employment to over 110 million people.

With more than 6.3 crore MSMEs operating in India, their role is crucial in fostering inclusive and balanced regional development. As India aspires to transition from a developing to a developed economy, MSMEs must evolve from being traditional and small-scale units to globally competitive, technology-driven enterprises. This paper discusses the contribution, challenges, opportunities, and policy reforms required to enhance the role of MSMEs in achieving the vision of Viksit Bharat 2047.

2. Role of MSMEs in Economic Growth

- **Contribution to GDP and Industrial Output:** MSMEs contribute nearly one-third of India's GDP. They supply essential goods and services to large industries, thereby forming a critical part of the industrial value chain. Their

role is vital in labour-intensive sectors such as textiles, food processing, leather, handicrafts, and engineering goods.

- **Employment Generation:** Being labour-intensive, MSMEs offer large-scale employment at relatively low capital cost. They absorb surplus rural labour, prevent migration to cities, and empower women and marginalized groups, thereby fostering inclusive growth.
- **Export Promotion:** MSMEs contribute nearly half of India's exports, especially in sectors like textiles, gems and jewellery, auto components, engineering goods, and pharmaceuticals. As India targets $2 trillion in exports by 2030, MSMEs will be the key drivers of export-led growth.
- **Regional Development:** MSMEs promote industrialization in rural and backward areas, thereby reducing regional disparities. They help utilize local resources, skills, and traditional knowledge, creating self-reliant local economies.

3. MSMEs as Engines of Innovation and Entrepreneurship

- **Startups and Technological Advancement:** MSMEs and startups are closely linked. Startups often begin as micro or small enterprises, bringing disruptive innovations. Government initiatives like Startup India, Make in India, and Digital India have created an ecosystem that encourages innovation within MSMEs.
- **Digitalization and Industry 4.0:** Digital technologies—AI, IoT, robotics, cloud computing, and data analytics—are reshaping MSMEs. Adoption of Industry 4.0 tools increases productivity, reduces costs, and enables them to compete globally.
- **Skill Development and Human Capital:** MSMEs act as training grounds for entrepreneurship and skill development. Apprenticeship programs, vocational training, and collaboration with academic institutions help create a future-ready workforce.

4. Opportunities for MSMEs in Viksit Bharat 2047

- **Integration with Global Value Chains:** By adopting quality standards, certifications, and advanced technologies, MSMEs can integrate with global supply chains. This will enhance India's share in world trade.
- **Green and Sustainable Manufacturing:** Viksit Bharat emphasizes sustainability. MSMEs can shift towards renewable energy, energy efficiency, waste management, and circular economy practices to contribute to sustainable development.
- **Digital India and E-commerce Platforms:** Digital platforms enable MSMEs to access national and global markets. E-commerce has reduced entry barriers and allowed small producers to directly reach consumers.
- **Public Procurement and Infrastructure:** Government policies now reserve a portion of procurement for MSMEs. Massive infrastructure projects (highways, railways, bullet trains, smart cities) offer new business opportunities for MSMEs.

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- **Financial Inclusion and Fintech:** With fintech innovations and initiatives like Udyam Registration, TReDS, MUDRA loans, and Credit Guarantee Fund Scheme, MSMEs can access affordable and timely credit, which is crucial for expansion.

5. Challenges Faced by MSMEs

Despite their significance, MSMEs face several constraints:

- **Access to Finance:** Collateral-based lending and high interest rates limit credit availability.
- **Technological Obsolescence:** Many units still use outdated machinery, reducing productivity.
- **Lack of Skilled Manpower:** Skill gaps hinder technological adoption.
- **Poor Infrastructure:** Inadequate power, logistics, and internet connectivity affect competitiveness.
- **Regulatory Burden:** Complex compliance requirements discourage entrepreneurship.
- **Limited Market Access:** Lack of marketing networks restricts expansion beyond local markets.

Addressing these challenges is critical to unleash the full potential of MSMEs.

6. Government Initiatives to Support MSMEs

The Government of India has launched several policies to strengthen MSMEs, including:

- **MSME Development Act (2006):** Provides legal framework and definitions.
- **Make in India:** Encourages domestic manufacturing.
- **Startup India:** Supports innovation and entrepreneurship.
- **Digital India:** Promotes digital infrastructure and services.
- **Atmanirbhar Bharat Abhiyan:** Provides financial stimulus, credit guarantees, and equity support.
- **Skill India Mission:** Builds workforce capabilities.
- **ZED (Zero Defect Zero Effect):** Improves quality and environmental standards.
- **Cluster Development Programme:** Enhances competitiveness through cluster-based approach.

These policies aim to enhance credit flow, technology upgradation, marketing support, and ease of doing business.

7. Roadmap for Empowering MSMEs for Viksit Bharat 2047

To transform MSMEs into global champions by 2047, the following strategies are essential:

1. **Access to Affordable Finance**
    - Expand collateral-free credit

- Strengthen fintech-based lending
- Establish dedicated MSME banks

2. **Technology Upgradation and Digital Transformation**
   - Provide subsidies for automation and Industry 4.0 adoption
   - Create digital clusters and innovation hubs
3. **Skill Development and Entrepreneurship Education**
   - Vocational training in emerging sectors
   - Promote women and youth entrepreneurship
4. **Market Linkages and Export Promotion**
   - Provide marketing support and branding assistance
   - Facilitate global certifications and trade fairs
5. **Infrastructure Development**
   - Establish industrial parks, logistics parks, and plug-and-play facilities
6. **Ease of Doing Business**
   - Simplify regulatory compliances and taxation
   - Provide single-window clearances
7. **Sustainability and Green Transition**
   - Promote energy efficiency, renewable energy, and waste recycling
   - Provide incentives for ESG compliance

Implementing these reforms will enable MSMEs to act as engines of innovation, employment, and export-led growth.

8. Conclusion

MSMEs are central to India's aspiration of becoming a developed economy by 2047. They combine entrepreneurial spirit, local resource utilization, and employment potential. Strengthening MSMEs is not just an economic imperative but also a socio-political necessity for inclusive growth. If empowered with finance, technology, skills, infrastructure, and global market access, MSMEs can contribute significantly to achieving a $30 trillion economy, creating millions of jobs, reducing poverty, and positioning India as a global economic powerhouse. Thus, MSMEs will be the cornerstone of Viksit Bharat 2047 fueling innovation, entrepreneurship, and sustainable development for generations to come.

References

1. Ministry of Micro, Small and Medium Enterprises, Government of India. (2024). *MSME Annual Report*.
2. NITI Aayog. (2023). *Viksit Bharat 2047 Vision Document*.
3. Reserve Bank of India. (2024). *Handbook of Statistics on Indian Economy*.
4. Confederation of Indian Industry (CII). (2023). *MSME Competitiveness Report*.
5. World Bank. (2023). *MSME Financing in India*.
6. Ministry of Commerce and Industry. (2024). *Export Promotion Schemes for MSMEs*.
7. OECD (2023). *Enhancing MSME Productivity and Innovation*.
8. UNDP India. (2022). *Sustainable Development Goals and MSMEs*.

Global Economic Trends and India's Position: An Analysis

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Abstract

Geopolitical tensions, changing trade dynamics, technological development, and climate change are all having a big impact on the world economy. Both developed and emerging economies are changing their roles and tactics as a result of these shifts. This essay looks at the main economic trends in the world and assesses how India, a new economic force, is positioned in this changing environment. India's economic development, policy responses, trade initiatives, and international connections are all examined. India's assets, like its sizable domestic market, internet infrastructure, and demographic advantage, are highlighted in the research along with its limitations. In its conclusion, the study assesses India's potential to become a more significant player in the world economy.

Key Words:- Global Economy, Economic Trends, India's Economic Growth, Emerging Market, Digital Transformation, Monetary Policy, Globalization, Sustainable Development, Foreign Direct Investment (FDI), Economic Policy

Introduction

Technology advancement, changing geographical conditions, the demands of climate change, and changing trade and financial systems are all contributing to the fast transformation of the global economy. The economic paths of states are no longer isolated in this linked world; rather, they are increasingly impacted by global occurrences like energy crises, supply chain disruptions, regional wars, and multilateral policy decisions. Assessing the potential and performance of individual economies, especially developing ones like India, requires an understanding of these global economic patterns. India's economy, which ranks third in terms of purchasing power parity (PPP) and fifth in terms of nominal GDP, is becoming more and more important to the global economic order. The nation has seen fast digital development, demographic changes, and major structural reforms over the last 20 years, establishing itself as a major emerging market growth engine. India's economic goals are strongly linked to more general global trends, from taking part in international supply chains to growing its influence in multilateral organizations like the G20 and BRICS. The objective of this study is to examine current global economic developments, including supply chain realignments, energy transitions, inflationary pressures, digitalization, and the move towards a multipolar world, and evaluate how India is adapting to and positioned within this dynamic environment. A thorough picture of India's present and possible future involvement in the global economy is intended to be provided by this research, which looks at macroeconomic data, governmental responses, and strategic efforts.

GLOBAL ECONOMIC TRENDS

1. Slow Growth of the World Economy: - Geopolitical volatility, tight financial conditions, and post-pandemic impacts are all contributing to slower development in the global economy. Regaining their pre-pandemic impetus is proving difficult for many nations.
2. Monetary tightening and persistent inflation: - In both wealthy and emerging nations, inflation is still a problem. High interest rates have been imposed by central banks, such as the European Central Bank and the U.S. Federal Reserve, to combat inflation, which has an impact on investment and credit availability worldwide.
3. Economic Disintegration and Geopolitical Conflicts: - A more divided and polarised global economy is the result of conflicts like the Russia-Ukraine war and the escalating U.S.-China hostilities that are interfering with trade, investment flows, and collaboration in global governance.
4. Change in Favour of Protectionism:- Tariffs, trade restrictions, and incentives for local production are examples of protectionist policies that nations are progressively using to lessen their dependency on international markets and safeguard their own industries.
5. Reforming the Supply Chain:- Global supply chains are being reorganized to lessen reliance on a select group of nations. This includes reshoring, near shoring, and the "China+1" approach to reduce future disruptions in manufacturing.
6. The quickening pace of digital transformation:- AI, block chain, cloud computing, and digital payments are just a few of the technologies that are rapidly being used across industries, changing labour markets, company structures, and global competitiveness.
7. Green and Sustainable Finance's:- Ascent Carbon trading, green energy and sustainability legislation, and ESG (Environmental, Social, and Governance) investing are all on the increase as a result of global pressure to address climate change.

INDIA'S ECONOMIC LANDSCAPE

1. Rapid Economic Growth: - India is one of the biggest and fastest-growing economies in the world. Its strong GDP growth has continued in spite of global problems, driven by domestic consumption, services, and government-led infrastructure development.
2. The Developing Digital Economy: - A digital revolution has occurred in India, with considerable growth in sectors including fintech, e-commerce, and digital payments (like UPI). The Digital India initiative is still encouraging creativity and inclusion in both urban and rural areas.
3. Reforms to the Structure and Policy Initiatives: - Reforms like the GST, Make in India, Atmanirbhar Bharat, and PLI (Production-Linked Incentive) initiatives aim to boost manufacturing, reduce import dependency, and attract foreign investment.
4. Benefits of Demographics: - Because of its large and young population, India has a strong work force and a growing middle class. This

demographic dividend is expected to enhance consumer demand and long-term economic growth.

5. Challenges: Joblessness, Inflation, and Inequality: - Despite its strong growth, India has challenges such as high youth unemployment, disparity between rural and urban areas, and volatile food and energy costs. For development to be inclusive and sustainable, these issues must be resolved.

INDIA'S CURRENT POSITION IN THE GLOBAL ECONOMY

1. First-largest economy (in terms of nominal GDP):- India's economy is the third biggest in the world in terms of purchasing power parity (PPP) and the fifth largest among nominal GDP. It is catching up to bigger economies like Germany and Japan and has surpassed the UK.
2. A Key Aspect of Global Development:- India is a major contributor to the expansion of the world economy. India is predicted by the IMF to rank among the top contributors to global GDP growth over the next ten years, along with the United States and China.
3. Leader in Technology Adoption and Digital Payments:- Worldwide Thanks in great part to developments such as UPI (Unified Payments Interface), India is the world leader in digital payment volumes. Furthermore, it is becoming as a global centre for digital innovation, startups, and IT services.
4. Strategic Function in Worldwide Supply Chains :- Through programs like "Make in India" and PLI schemes, India is becoming a major role in manufacturing and supply chain diversification as international corporations move away from China.
5. Engaging in International Forums: - With the help of organisations like the G20, BRICS, SCO, and QUAD, India is becoming more and more recognised as a voice for the Global South and is influencing international economic and political debates.

IMPACT OF GLOBAL ECONOMIC TRENDS ON INDIA

1. Challenges to Trade and Supply Chain Reorganization:- In addition to disrupting Indian exports and imports, geopolitical tensions (such as the US-China decoupling and the Russia-Ukraine war) have caused global supply chain adjustments that have given India the chance to become a manufacturing alternative to China through programs like "Make in India."
2. Impacts from Monetary Policy and Inflation:- Rising interest rates by central banks, particularly the U.S. Federal Reserve, and high global inflation have put pressure on the RBI to raise interest rates at home. This affects currency volatility, borrowing costs, and investor sentiment.
3. Commodity and Energy Price Volatility:- India is extremely susceptible to changes in the price of commodities and crude oil globally since it is a net

importer of natural gas. Price increases brought on by international hostilities or interruptions in supply raise inflation and the current account imbalance.

4. Exchange rate pressure and capital flows:- In India, foreign portfolio investment (FPI) and foreign direct investment (FDI) are impacted by the volatility of the global financial markets. Capital withdrawals can cause market volatility and currency depreciation during uncertain times worldwide.
5. Prospects in the Green and Digital Economy Worldwide:- Global clean energy trends and digital transformation fit well with India's local objectives (e.g., Digital India, renewable energy targets). New opportunities for innovation, investment, and employment are created by these changes.

STRATEGIES FOR ENHANCING INDIA'S POSITION

- Strengthening the economy: Encourage greater foreign investment and Make in India. Increase exports, assist new businesses, and upgrade infrastructure.
- Technical Progress: Invest in cutting-edge technologies such as artificial intelligence, space exploration, and renewable energy. Promote creativity and aid in research and development (R&D).
- Strong Foreign Policy: - Develop closer relations with both global powers and neighboring nations. Hold a position of leadership in institutions such as the UN, BRICS, and G20.
- Soft and Cultural Power Promote Indian movies, yoga, Ayurveda, and culture across the world as a diplomatic tactic. Involve the Indian diaspora to increase your impact internationally.
- Development of Human Capital: Enhance healthcare, education, and skill development. Priorities inclusive growth in order to improve society as a whole.

CASE STUDIES

1. Indian IT Industry: - With software services, IT outsourcing, and digital solutions for clients all over the world, the Indian IT industry has become a global powerhouse. TCS, Infosys, and Wipro are just a few of the companies that have became market leaders by utilizing India's highly qualified labour pool, cost-effectiveness, and technical prowess. The industry has shown how innovation-driven sectors may advance India's standing in the global economy by making a substantial contribution to the country's economic development, job creation, and export revenue.
2. The Automobile Sector :- With a vast array of automobiles produced for both home and international markets, India has one of the biggest automotive industries globally. Businesses that rule the market include Mahindra & Mahindra, Hyundai, and Maruti Suzuki. the market by manufacturing automobiles, motorbikes, trucks, and electric vehicles. Recent years have seen a dramatic change in the sector, with a move towards shared mobility

solutions, linked cars, and electric mobility. Through the adoption of sustainable practices, technological innovation, and improved product quality, the Indian automobile sector hopes to become more competitive and increase its worldwide presence.

3. Programs for Renewable Energy India, with its high goals for solar, wind, hydro, and biomass energy generation, has made great progress in encouraging the use of renewable energy. The National Solar Mission, wind energy auctions, and other initiatives Economic incentives for renewable energy have decreased dependency on fossil fuels and sped up investments in clean energy infrastructure. India is also committed to international cooperation in promoting the deployment of solar energy, as seen by its leadership in the International Solar Alliance (ISA). The renewable energy industry offers prospects for economic expansion, technological advancement, and job development in addition to enhancing India's energy security and environmental sustainability.
4. Modernity in Agriculture The agricultural industry in India is being modernized and transformed in order to increase production, raise farmer incomes, and guarantee food security. The National Agricultural Market (e-NAM), the Pradhan Mantri Kisan Samman Nidhi (PMKISAN), and the Soil Health Card Scheme are some of the initiatives that seek to empower farmers, encourage sustainable agricultural methods, and make markets more accessible. Additionally, technology advancements like digital platforms, agricultural drones, and precision agriculture are transforming supply chain management and farm management.

CONCLUSION

The global economy is becoming more integrated and dynamic, and both domestic policy changes and foreign developments are reshaping India's place in it. Emerging economies like India now offer unique prospects as a result of significant global economic shifts, including the reorganization of global supply chains, the emergence of digital economies, the shift to green energy, and the increase in geopolitical unpredictability. India has demonstrated adaptation and resilience, especially via strategic programs like the Production Linked Incentive (PLI) schemes, Atmanirbhar Bharat, and Make in India. Foreign investment, manufacturing, and India's competitiveness in the world have all increased as a result of these measures. But there are still difficulties. India's full potential is nevertheless hampered by bureaucratic roadblocks, talent gaps, and inadequate infrastructure. India must make investments in sustainable development, innovation, and education while maintaining institutional changes and policy stability if it is to maintain and improve its standing in the world. India is in a pivotal moment where prompt action and long-term planning may make it a major economic force in the world in the twenty-first century.

REFERENCES

1. Asian Development Bank. (2024). Asian Development Outlook 2024: Growth amidst uncertainties
2. World Bank forecasts global GDP.
3. Reserve Bank of India Report 2025.
4. Economic Division :- The Indian Economy A Review 20024
5. Rajadhyaksha, Niranjan. (2007). The Rise of India Transformasi Dari Kemiskinan Menuju Kemakmuran. Jakarta: Kompas Gramedia.
6. Srinivasan, T. N. (Oktober, 2003). Indian Economic Reforms: A Stocktaking. Stanford Center for International Development, 190.
7. Sarkar, Ranjan. (2018). Made In India History of Post Independence Economic & Industrial Development In India. Chennai: Nation Press.
8. World Trade Organization (WTO). (2024). World Trade Report 2020: Global Trade and Globalization. World Trade Organization.
9. http://mea.gov.in
10. https://www.worldbank.org/en/country/india
11. International Monetary Fund. (2024). Global Financial Stability Report: Building resilience in a time of uncertainty.

Industry 4.0, Artificial Intelligence, Block Chain for Sustainable Nation Building

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Abstract

The rapid evolution and convergence of Industry 4.0, Artificial Intelligence (AI), Block chain technology, and Financial Technology (FinTech) constitute a new era of technological advancements that are fundamentally reshaping the contours of nation-building worldwide. These emerging technologies act as critical enablers of sustainable development by promoting economic growth, enhancing governance frameworks, improving infrastructure, and fostering social inclusion. Industry 4.0 symbolizes the integration of cyber-physical systems, Internet of Things (IoT), big data analytics, and automation, which collectively enhance industrial productivity and operational efficiency. AI plays a transformative role in augmenting decision-making processes, enabling personalized education, and optimizing public service delivery. Block chain technology is revolutionizing trust and transparency mechanisms in both financial systems and public sectors by providing decentralized, immutable ledgers that reduce fraud and administrative inefficiencies. FinTech, through innovations in digital payments, lending platforms, and insurance, is expanding financial access to previously underserved populations and empowering small and medium enterprises (SMEs), thereby acting as a significant catalyst for inclusive economic development.

This paper employs a mixed-methods approach, combining comprehensive literature review with rigorous data analysis and empirical case studies, to explore how these technologies collectively contribute to strengthening national economies and societal structures. Global statistics and trends are analyzed to demonstrate the tangible economic impacts, including GDP growth acceleration, job creation, and improvement in governance efficacy. The findings reveal that while these technologies present substantial opportunities, they also pose challenges in terms of infrastructure readiness, regulatory oversight, cyber security risks, and the need for skilled human capital. By synthesizing these insights, the study offers actionable recommendations for policymakers and stakeholders to harness these technologies to build resilient, technologically advanced, and socially equitable nations.

Key words: Industry 4.0, Artificial Intelligence (AI), Block chain Technology, Financial Technology (FinTech), Nation Building, Add to follow-up, Check sources

Introduction:

In the 21st century, nation building transcends traditional parameters of infrastructure development and economic expansion to embrace the digital revolution as a core enabling factor. The advent of Industry 4.0, AI, Blockchain, and FinTech technologies is changing the dynamics of national development by offering innovative solutions to persistent socioeconomic challenges. Industry 4.0, often referred to as the Fourth Industrial Revolution, integrates advanced automation, cyber-physical systems, and real-time data analytics to create smart factories and connected supply chains. This technological leap is driving manufacturing excellence, boosting economic competitiveness, and reshaping labor markets by demanding advanced skills and fostering innovation ecosystems. Artificial Intelligence, with its capacity to analyze large datasets, automate processes, and predict trends, significantly enhances governance models, improves public service delivery, and promotes personalized learning, thereby accelerating human capital developmentan essential foundation of nation building. Blockchain technology offers unparalleled security and transparency by decentralizing data management, thereby transforming financial services, healthcare records, land registries, and supply chains. This technology builds public trust and combats corruption, a frequent impediment to development in many nations.

FinTech, encompassing mobile banking, digital wallets, peer-to-peer lending, and crowdfunding platforms, democratizes financial services for marginalized groups and small businesses, reducing inequality and stimulating economic participation. Together, these technologies form a synergistic framework that not only accelerates economic growth but also drives inclusive development and institutional trust. This research paper aims to dissect the multidimensional roles of these transformative technologies in the context of nation building. It examines their individual and collective impacts on economic growth, governance, social inclusion, and technological readiness. Furthermore, the paper discusses challenges including digital divides, regulatory constraints, and workforce displacement risks. Through empirical data analysis, literature synthesis, and case studies from both developed and developing countries, the paper outlines strategic pathways for governments and stakeholders to effectively leverage these technologies, ensuring their integration leads to sustainable and equitable national development.

Objectives

The primary objective of this research is to conduct a comprehensive examination of how Industry 4.0, Artificial Intelligence (AI), Block chain, and Financial Technology (FinTech) collectively contribute to the multifaceted process of nation building. Specifically, this study aims to:

- Analyze the economic impact of integrating Industry 4.0 technologies on manufacturing productivity, GDP growth, and employment generation within developing and developed countries.

- Explore how AI applications can enhance governance, public service delivery, education, and social cohesion as critical components of nation-building initiatives.
- Investigate the transformative role of block chain technology in ensuring transparency, reducing corruption, and strengthening security in financial and governmental systems.
- Assess the contribution of FinTech innovations to financial inclusion, SME empowerment, and reduction of economic disparities at the national level.
- Identify the challenges and barriers such as infrastructural constraints, workforce skill gaps, regulatory hurdles, and cyber security risks that hinder the optimal deployment of these technologies for nation building.
- Provide actionable policy recommendations and strategic frameworks that enable governments and stakeholders to harness these technologies effectively to build resilient, sustainable, and inclusive nations.

Through these objectives, this research seeks to bridge the gap between theoretical understanding and practical implementations of these intertwined technologies in accelerating holistic national development.

Research Methodology:

This study adopts a robust mixed-methods research design that blends qualitative and quantitative approaches to deliver a comprehensive analysis of the theme. The research methodology involves:

- **Literature Review:** A systematic review of scholarly articles, white papers, industry reports, government publications, and case studies that discuss the application and impact of Industry 4.0, AI, block chain, and FinTech on nation building. This review synthesizes contemporary academic thought and real-world evidence.
- **Quantitative Data Analysis:** Collection and analysis of relevant datasets including GDP metrics, technology adoption rates, FinTech financial inclusion statistics, and AI-driven productivity indicators from reliable sources such as McKinsey, World Bank, International Monetary Fund, and industry-specific market research firms. Statistical tools and trend analyses are employed to interpret this data.
- **Case Study Analysis:** In-depth examination of selected nations exemplifying best practices and lessons learned in implementing these technologies. Examples include India's Industry 4.0 initiatives, Kenya's mobile money FinTech ecosystem, and block chain's role in public sector transparency in Estonia.
- **Comparative Analysis:** Cross-national comparison to identify commonalities and divergences in technology impacts, adoption barriers, and policy responses, providing nuanced insights for adaptable strategies.

- **Qualitative Synthesis:** Integration of findings from literature and data with expert opinions and think tank recommendations to articulate practical frameworks for effective policy development and technological deployment.

This multi-pronged approach ensures a balanced, evidence-based understanding of the complex interactions between these technologies and the process of nation building.

Literature Review

- **Industry 4.0 in Nation Building**

The concept of Industry 4.0, or the Fourth Industrial Revolution, revolves around the fusion of advanced digital technologies such as cyber-physical systems, IoT, cloud computing, and big data analytics to revolutionize manufacturing and industrial processes. Industry 4.0 facilitates the creation of smart factories that optimize efficiency, enhance product customization, and reduce waste, thereby improving economic competitiveness on a global scale. Studies indicate that countries actively embracing Industry 4.0 are witnessing significant gains in manufacturing output and export capacity. For instance, McKinsey's analysis reveals potential cash flow improvements exceeding 120% for early Industry 4.0 adopters by 2025. However, the transition demands significant investment in digital infrastructure and workforce reskilling challenges, which are critical for sustainable nation building.

- **Artificial Intelligence and Nation Building**

Artificial Intelligence offers substantial potential in transforming key sectors such as education, healthcare, infrastructure planning, and governance. AI-powered systems enable predictive analytics that improve resource allocation and policy-making effectiveness. Personalized learning platforms powered by AI are shown to enhance educational outcomes, fostering the development of human capitala crucial nation-building resource. Additionally, AI-driven smart infrastructure optimizes city management, contributing to sustainable urban development. However, ethical concerns surrounding data privacy and the risk of workforce displacement require careful regulatory and social frameworks.

- **Block chain Technology in FinTech and Public Sectors**

Block chain technology's decentralized ledger system ensures transparent, tamper-proof transactions, fostering trust and reducing corruption in financial systems and governance frameworks. In the FinTech sector, block chain enables secure peer-to-peer payments, smart contracts, and identity verification, facilitating faster, cost-effective financial services. Notably, the FinTech block chain market is forecasted to grow at a CAGR above 35%, potentially reaching over $50 billion by 2032. Besides financial applications, block chain has been adopted in land registry, supply chain transparency, and electoral processes in various countries, enhancing institutional accountability.

- **Financial Technology (FinTech) and Economic Development**

FinTech solutions, particularly mobile money platforms and digital lending, have transformed access to financial services for underserved populations in emerging economies. The case of Kenya's M-Pesa demonstrates how FinTech drives financial inclusion, promoting entrepreneurship and reducing poverty by increasing SME access to credit. Globally, FinTech disrupts traditional banking by introducing agility, efficiency, and lower transaction costs. Its role in nation building is pivotal for fostering inclusive growth, economic empowerment, and reducing the informal economy's dominance. Nonetheless, issues such as cyber security, regulatory uncertainty, and digital literacy remain significant challenges.

Data Analysis

- **Industry 4.0 Economic Impact :**

The adoption of Industry 4.0 technologies is rapidly redefining competitive advantage for nations and enterprises globally. According to McKinsey & Company, early adopters of Industry 4.0 can expect a staggering 122% improvement in cash flow by 2025, driven largely by automation, real-time data analytics, and predictive maintenance that reduce operational costs and downtime. In contrast, organizations that delay adoption risk a 23% decline in cash flow, highlighting the critical importance of timely technological integration. Globally, Industry 4.0 is predicted to add up to $3.7 trillion in value to the manufacturing sector by this period, contributing significantly to GDP growth and job market transformation. For example, in Germany, the birthplace of Industry 4.0, manufacturers investing in smart factories have reported productivity improvements between 20% to 30%. Similarly, China's "Made in China 2025" initiative leverages Industry 4.0 technologies to enhance manufacturing quality and export capacity, which aims to increase the manufacturing sector's contribution to GDP from 27% to 30% by 2025. However, the transition is not without challenges. It requires substantial investment in digital infrastructure, IoT devices, and employee training. Workforce reskilling is critical, as demand shifts toward highly specialized roles such as data scientists, AI specialists, and robotics engineers with estimates suggesting that up to 14% of the global workforce may need to transition to new roles by 2030. Nations must therefore focus on educational reforms and vocational training programs to mitigate potential unemployment spikes associated with automation. Data from the International Labor Organization estimates that automation could displace up to 85 million jobs globally by 2025, but also create 97 million new roles, underscoring the transformative, dual-edged nature of Industry 4.0 adoption.

- **AI in Education and Nation Building**

Artificial Intelligence has emerged as a game-changer in education systems worldwide, directly influencing the development of human capital cornerstone for sustainable nation building. Studies from the National Bureau of Economic Research indicate that AI-driven personalized learning platforms can increase student retention

and comprehension rates by up to 30%, compared to traditional teaching methods. These platforms offer tailored curricula and adaptive assessments, enabling effective skill development aligned with the demands of the digital economy. For instance, countries like Singapore and South Korea have integrated AI-powered learning management systems nationwide, resulting in measurable improvements in STEM-related standardized test scores and enhanced digital literacy among students. AI also supports lifelong learning initiatives by recognizing skills gaps and recommending relevant upskilling courses to adults, thereby helping countries reduce unemployment and boost productivity. Moreover, AI's predictive analytics are being leveraged to optimize educational resource allocation and early identification of students at risk of dropping out, enabling timely interventions. A related benefit lies in governance AI tools assist governments in scenario planning, health management, and infrastructure development by using real-time data to forecast needs. In healthcare, AI applications in diagnostics have improved disease detection accuracy by up to 40% in some pilot programs, which plays into the greater goal of nation building by ensuring a healthier workforce. The combined effect of AI-enhanced education and health systems is projected to boost GDP growth by an average of 1.5% annually in emerging economies.

- **Block chain Technology in FinTech: Market Growth and Adoption**

The block chain market within the financial technology (FinTech) sector is experiencing exponential growth, with forecasts by Fortune Business Insights estimating a compound annual growth rate (CAGR) of over 35% between 2024 and 2032. This rapid expansion is driven by block chain's ability to streamline transactions, reduce fraud, and increase transparency across payments, lending, insurance, and asset management industries. By 2032, the block chain market is projected to be valued at approximately $50.7 billion, up from just around $3.25 billion in 2024. A significant portion of this growth is attributed to block chain's adoption in payment systems, with 55% of payment infrastructures worldwide expected to integrate block chain technologies for enhanced security and speed. Case studies from countries like Estonia and Switzerland highlight block chain's success in government applications, including land registries and digital identities, which reduce administrative costs by up to 30% and improve citizen trust. In the corporate sector, leading financial institutions have reported operational cost reductions of 15-20% after implementing blockchain for clearing and settlement processes. Furthermore, decentralized finance (DeFi), powered by blockchain, is expanding access to credit and investment opportunities outside traditional banking systems, enhancing financial democratization and economic inclusion.

- **FinTech and Financial Inclusion in Emerging Markets :**

FinTech innovations have markedly advanced financial inclusion across emerging markets, particularly in Sub-Saharan Africa and Southeast Asia, where traditional banking services are limited. Mobile money platforms such as Kenya's M-

Pesa have revolutionized access to financial products, with the World Bank reporting that over 70% of Kenyan adults now use digital financial services, a drastic increase from less than 30% a decade ago. This inclusion has empowered small and medium enterprises (SMEs), which constitute over 90% of businesses in many developing countries, by providing easier access to credit and reducing reliance on informal lending mechanisms. Studies indicate that M-Pesa and similar platforms have contributed to a 2% increase in national GDP growth rates in countries with high adoption, by enabling faster and safer transactions among millions of users. Additionally, SME employment in regions with active FinTech adoption grew by an average of 10-15% annually compared to non-adopting regions. Other emerging markets, such as India and the Philippines, have seen FinTech's impact on financial literacy as digital wallets and lending apps incorporate AI-based credit scoring to extend services to underserved communities. Despite substantial progress, challenges remain, including financial literacy gaps, cyber security concerns, and inconsistent regulatory frameworks. Addressing these is critical to sustaining and amplifying FinTech's role in nation building.

- **Findings**

✓ Integrated deployment of Industry 4.0 technologies significantly boosts manufacturing competitiveness and GDP growth.

✓ AI facilitates scalable nation-building efforts, particularly in education and public service delivery, enhancing social integration and governance efficiency.

✓ Block chain ensures secure, transparent financial transactions and automates contractual processes, reducing fraud and operational costs.

✓ FinTech expands financial inclusion, enabling entrepreneurship and economic empowerment in marginalized communities.

✓ Challenges include requisite skill development, infrastructural deficits, cyber security threats, and regulatory frameworks that need modernization.

Conclusion :

The convergence of Industry 4.0, AI, Block chain, and FinTech presents a transformative opportunity for accelerating nation building. Their combined effect enhances economic growth, social inclusion, governance transparency, and infrastructure development. Countries embracing these technologies with appropriate policy frameworks stand to realize substantial competitive advantages and societal benefits. However, success depends on addressing human capital development, infrastructural investments, and regulatory innovations.

Suggestions

- **Policy Support and Regulation:** Governments should craft forward-looking policies encouraging innovation while ensuring data security and consumer protection.

- **Skill Development:** Nations must invest in reskilling and upskilling to prepare workforces for Industry 4.0 and AI-driven ecosystems.
- **Infrastructure:** Strengthen digital and physical infrastructures to support broad adoption, especially in rural and underserved areas.
- **Collaboration:** Foster partnerships among governments, private sector, and academia to drive research, development, and deployment of these technologies.
- **Financial Inclusion Focus:** Encourage FinTech solutions tailored to marginalized populations to maximize economic participation and reduce inequalities.

References

1. "What are Industry 4.0, the Fourth Industrial Revolution, and 4IR?" McKinsey & Company, 2018.
2. Fouka, V. "Nation Building and AI," National Bureau of Economic Research, 2024.
3. "Block chain in Fintech: Revolutionizing Finance with Security," Appinventiv, 2025.
4. Tiony, O.K., “Financial Technology and Its Role in Promoting Economic Growth in Kenya,” 2024.
5. "Block chain Integration in Industry 4.0: Trends and Impacts," Brainvire, 2024.

Economic, Socio-Culture & Environment Impact of Tourism: A Content Analysis of Tourism Industry

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Abstract

A tourism activity majorly includes leisure activities that favour the economic, social, and cultural benefits to a local region. As per the UNWTO 2024 report, the tourism industry contributes to the economy up to 10% of world Gross Domestic Product (GDP). The purpose of this study is to examine the impact of the tourism industry on the local communities, the national economy, and the world as a whole highlighting the aspects of economics, socio-culture, and environment from the review of academic literature. A review analysis examines the articles published in renowned journals from 2005 to 2025. The researcher categorised the articles, papers, and thesis into three categories: Economic impact, Socio-cultural impact & Environment impact. A review of this literature suggested; the impact of the tourism industry on the local communities and regionsmayitbe economic, social, cultural, or environmental. Overall, this analysis gives the foundation of further research areas in this sector. This article can be used by other researchers to evaluate the major impact of the tourism sector.

Keywords : Tourism Industry, Economic, Social, Cultural, Environmental, Impact.

INTRODUCTION

"Tourism is a collection of activities, service, and industries which deliver a travel experience comprising transportation, accommodation, eating and drinking establishments, retail shops, entertainment, business and other hospitality services provided for individual or group traveling away from home.The definition of Tourism according to UNWTO is: Tourism comprises the activities of persons traveling to and staying in place outside their usual environment for not more than one consecutive year for leisure, business, and other purposes. The economic impact of tourism defines as to change in economic inputs which results from the specific activities, occasions, or events that are related to tourism activities. The dynamic changes have three types of impacts: direct impact, indirect impact, and induced impact. To estimate these types of impact this needs the development of the economic model .For the last many years, tourism has substantial growth which can be said as one of the most rapidly developing economic sectors in the overall world economy destinations. As per the UNWTO 2023 report, the tourism industry contributes to the economy 10% of world GDP & employs one employment out of ten employment globally. Similarly, as per UNWTO‟s long time forecast, the international traveler arrival is expected to grow by 3.3% and annum from 2010 to 2030 to grasp 1.8 billion with the aid of 2030.These changing aspects turned tourism into a major factor for social and economic progress and growth Now a day there is the era of modern tourism which leads to exploring new destinations and the development of these. The foremost economic impacts of tourism which are related to foreign exchange earnings, contributions to government revenues, employment generation and income, and

stimulus to local development. The first two effects take place at the domestic level, whereas the other three impacts happen at sub-national levels. These effects are unified but for analytical purposes it useful to distinguish them. Tourism not merely related to economic impact but there is a close relationship between tourism and society. During the 18th century, one of the greatest philosopher Rousseau quotes one slogan „Return to Nature‟ which gives importance to the social customs of the people. Through this Administrative Development: A Journal of HIPA, Shimla. Volume VII tourism, people can connect with other people belongs to other countries which can exchange the lifestyle, different languages and make a friendship with each other. So there is a mingling of cultures which results in a positive impact.

METHODOLOGY

Following the chosen problem, i.e. The subject of the research and the defined goal of the research, qualitative methods were applied in this paper. In the theoretical considerations of the subject of research, the following were used as separate methods: analytical-synthetic, inductive-deductive, the method of abstraction and generalisation, as well as the method of comparison. For this paper were used data from available professional literature, scientific and professional papers, the Internet and other sources.

SUSTAINABLE TOURISM DEVELOPMENT

The concept of sustainable tourism development began to be mentioned in researches during the 2015 Syntagmatic expression sustainable tourism, is actually, referred on tourism that is founded on goals and principals of sustainable development. Under sustainable is considered every shape of tourism that is effectively contributing to the well-being of society and improving the environment, economic prosperity and nurturing of cultural wealth and identity of one location where tourism is represented. The basic thought of sustainable tourism development is properly launching economic development that is by any means not harmful to the local environment and is socially acceptable. Therefore, there is a global growth of the number of governments that are recognising the importance and meaning of sustainable tourism principles into their tourism development strategies. Thus, control use of certain natural recourses is achieved, respect the socio-cultural authenticity of local communities, and economic profit is also insured. Gaining insight into the negative sides of tourism which are reflected in a bad influence on the ecological and socio-cultural environment brought us to organising activity for sustaining sustainable tourism.

THE IMPACTS OF TOURISM

All tourism influences on the destination can be defined into next groups: ecological, socio-cultural and economic. They occur as a consequence of the actions of tourists, but also building and the way of functioning different facilities and services on that destination. It’s very ungrateful to generally assess influences that comes from tourism, since they are expended in all directions, in its scope and structure. According to a time estimate, they can be divided into short-term and long-term. Also, authors of professional literature are dividing them on direct/indirect, then, local, national or global, and the most general division is on positive or

negative. (Hunter & Green, 1995) Some of these basic difficulties for the prognosis of tourism influence on the specific destination are including next facts.

- Tourism is representing a huge number of different related activity which is a directly disabled assessment of influences for individual activity.
- When visiting a destination, tourists often engage in the same activities as the domicile population, which makes it impossible to differentiate between each other.
- Changes in the ecological plan are taking place on their own, which cannot help quantifying the modifications that happened as a direct influence from tourism.
- Tourism often poses indirect and accumulated influences that are difficult to recognise and assess. The range of tourism effects on one location oscillates with aspects of the touristic activity.

The development of tourism not only degrades biodiversity due to the construction of new accommodation units, traffic, electricity, utility, water and housing infrastructure, but it can also visually endanger the natural environment. It must be kept in mind that the impact of tourism on its development does not always have a negative outcome. Since developmental changes are certain on most of the touristic destinations, then tourism and the changes brings with it are much less harmful than other activities. Especially, if tourism development is strategically controlled and based on the postulates of sustainable development. A significantly increased number of tourists in a short period visiting a particular locality can also lead to a progressive disappearance of authenticity in local customs and habits, such as the demand for privacy for cultural activities that are based on community and are not an example of public engagement for a wide audience. In areas known for their important cultural heritage is setting different challenges in front of creators of strategic development of that area: while on one side it can lead to the devastation of cultural heritage, on the other side is the key for economic growth and building capacity in the community. Tourism development is followed by community development with the conservation of natural recourses there are a guaranteed social and economic benefits to these communities. For this, they can use the following guidelines:

1. Guidelines based on positive economic influences:
2. Creating an assessment of the economic influence on tourism development;
3. Maximal increase of local economic use trough connections;
4. Involving the local community and benefiting from tourism revenue;
5. Assisting in the development of marketing of local products and services;
6. Promoting fair business and achieving good prices.
7. Social guidelines:
8. Engaging local communities in planning and decision-making;
9. Assessment of social influents of tourist activity;
10. Respecting social and cultural differences;
11. Usefulness for a host culture.
12. Guidelines for the conservation of the environment and natural recourses:
13. Reducing the negative impacts on the environment in tourism development;
14. Sustainable use of recourses;
15. Maximal conservation of biodiversity.

A particular locality where tourism is developed inevitably undergoes certain changes in the ecological, economic and socio-cultural area. Whether these changes will be negative or positive depends solely on the strategic management of the destination. Some of the changes are noticeable very fast, while others are indirect and often are in conjunction with several other local It is clear that the benefits of tourism to the local population are manifold (especially from an economic point of view), but there may be some side effects and unfavourable effects created because of high tourist traffic on one destination. Negative effects are most likely viewed in the growth of the black market, the emergence of the new types of opiates in the area, misuse of gambling games – hence, the rise of crime rates. From the socio-cultural aspect, there may also be negative phenomena in the domain of accepting some of the habits that are characteristic of tourists from the local population, that are not in sync with existing habits, ethical principles inherent in a particular community.

ECONOMIC IMPACTS

Economically, tourism increases the job opportunities at tourist place. These opportunities generate employment for local people of the destination. They can work in the lodging and catering industry, airport activity, cabin crews among other of which help promote a superior living condition for residents of a tourist place. Besides, this industry differentiates the work idea of the employees, varying from average low pay entry-level to high paying skilful position. The travel industry organisation for programs brings forth the salary and lifts the standard of living of individuals in a tourist place as tourists spend their income during the vacation in the host communities. These proceedings help both urban and rural areas.

SOCIO-CULTURE IMPACT

Tourism has great effects on the cultural lives of the local people. It is one of the most significant issues discussed by tourism research and academics today. It supports to improve the living standard of living in different social backgrounds, and that makes residents learn more about their world, exposing themselves to different perceptions, undergo from the different socio-cultural practices, and increase understanding and appreciation for diverse approaches to living in an area (Tourism in Emerging Economies, 2020). Tourism also offers an opportunity to meet diversified people from different cultures & different countries or states which leads to making new friends, learning a variety of things from their culture. The possible impact could be increased in the living standard of the local people, tourism promotes the cultural and historical exchange which leads to increased demand for it, and they can understand the different communities and culture, conservation of the cultural.

ENVIRONMENTAL IMPACT

Areas that having high-value natural means such as the sea, natural and Non-natural lakes, mountains & mountain range, distinguishing values of flora and fauna which have natural beauty serves as an inspiring aspect which attracts a huge amount of international tourists and travellers. Tourists like to explore this type of natural beauty. Tourists tend to value the original natural resources of tourist destinations that preserve the ecological values of the emerging and commercial nations. Landform portrays distinctive features with lodging, camping, and other facilities that are related to accommodation. The places like parks provide adventures and recreational

facilities to the travellers. Tourism accelerates income for environmental safety and development plans. The several available economic resources and budgets support the conservation of historical and ancient monuments that aid at the traditional landmarks of emerging economies.

CONCLUSION

Finally, from the above discussion and theory framework, it can be suggested that the government can be more focused on training to the tour operator, guide & local people, and arrange the awareness seminar to educate the local people. It is also recommended that Govt. can improve infrastructural facilities like hotel accommodation, natural sites, crowd management, parking problem, and development of beach areas. The mentioned training is going to upbring and uplift the moral discipline among them. It is also suggested that policymakers should give more preference to this booming industry which can result in high economic growth. One of the researchers observed that tourists mostly prefer winter tourism so the government can promote this type of winter and event-based tourism.

REFERENCES

1. Andereck, K. L., & Vog, C. A. (2000). Journal Of Travel Research. The Relationship Between Residents‟ Attitudes Toward Tourism And
2. Tourism Development Options, 39(1), 27-36. Barquet, A., Osti, L., & Brida, J. G. (2010). Residents‟ Attitudes And Perceptions Of Tourism Impacts And Their Policy Implications. Retrieved From Https://Papers.Ssrn.Com/Sol3/Papers.Cfm?Abstract_Id=1559991
3. Bassil, C., Hamadeh, M., & Samara, N. (2015). The Tourism Led Growth Hypothesis: The Lebanese Case. Tourism Review, 70(1), 43 - 55.
4. Bhatacharjee, B. J. (2012). Rural Tourism: A Preventive Weapon Of Sinking Urbanization And Rural Economic Development. Annamalai International Journal Of Business Studies & Research, 4(1), 62-66. 152 Economic, Socio-Culture & Env.……Bhumi D. Bhatt & Dr. Vijay Vyas
5. Dayananda, K. C. (2016). Tourism And Its Impact On Indian Economy. Iosr Journal Of Humanities And Social Science (Iosr-Jhss), 21(6), 24- 28. Retrieved From Doi: 10.9790/0837-2106042428

Assessing India's Global Trade Competitiveness: Opportunities and Challenges in the World Economy

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Abstract:

Commercial competitiveness is steadily increasing in India and it is applied by growing economy, favorable population and strategic commercial policies. However, the country faced challenges to move forward in the complex world trade scene. This paper evaluates India's commercial competitiveness, emphasizing the opportunities and challenges of the global economy.

Keywords: Opportunities, Competitiveness, Economy.

Introduction:

India has emerged as a significant player in global trade, with global export exports increased from 0.9% in 2005 to 1.8% in 2023. Exports of the services of the country have doubled during this period, which has increased from 2% to 4.3%. India's business strategy is focused on elasticity, strategic expansion and selective liberalization, which aims to balance defense and openness. Over the past decade, India has steadily risen in global trade, now ranking 17th among merchandise export. In the 1990s, India's economic liberalization led to a significant change in external commercial policy and promoted exports and investment from a protective role.

Objectives:

- **To analyze India's current position in global trade** by examining export and import trends, trade balance, and share in world trade.
- To explore the opportunities available to India in the global market under changing trade dynamics, digital trade, and shifting supply chains.
- To examine the major challenges India faces in enhancing trade competitiveness, including infrastructure bottlenecks, policy constraints, trade barriers, and global economic uncertainties.
- To suggest policy measures and strategies for strengthening India's global trade position and ensuring sustainable growth in the long run.

Theoretical outline:

The analysis of India's trade competition is based on established business principles, including:

- Theory of Comparative advantage: This principle shows how experts in production and exports can benefit India where its relevant production costs are low, such as information technology (IT) service and pharmaceuticals.

- Porter Diamond Model of the National Compatitiveness: This design helps analyze India's competitive benefits based on four determinants: component status, demand status, associated and assistant industry and strong policies, compositions and competitors.
- New Trade Theory: This theory, which emphasizes rising returns in the scale and network effect, is related to understanding India's competitive mobility, especially IT, which benefits a significant agitation effect.

Assessment of India's Trade Competitiveness: Strengths and Competitive Advantages:

- Skilled Task Force and Demographic Division: In India, there is a large and extended pond of skilled, English-speaking professionals, which benefits workers in the knowledge-concentrated field. The purpose of strategic investment in skill development is to increase the task force.
- Robust Service Area: India is the world leader in digital distributing services with additional exports of IT and Professional Processing Management (BPM). By strengthening its position in the World Service economy, the export of services in 2044 is more than $ 320 billion.
- Market Diversification and Strategic FTA: India is actively diverse in its export market and is pursuing a strategic free trade agreement (FTA) with partners like UK, UAE and Australia. The purpose of this agreement is to secure access to the choice market and reduce the rates and non-tariff obstacles.
- Pharmaceuticals and Medical Equipment: World Generic Drugs in India are a major place in the market, which exports about 20% of the world's total volumes. The government's production-related incentive (PLI) schemes are promoting domestic production in the field of medical technology.

Opportunities:

- Digital transformation: Digital distributed services can be achieved in digital distributed services to expand new areas such as fintech, green technology and digital trade platforms. The planned India Trade Net (BTN) is a digital platform that the purpose of the business process is to facilitate the business process.
- Extension of e-commerce exports: India's new foreign foreign policy (FTP) focuses on promoting 2023 e-commerce exports, especially for MSME and craftsmen. Establishment and simplification process of e-commerce hubs will help these small players reach the global market.
- Increasing Electronics Sector: India's electronics exports from $ 0.14 billion in 2014 to $ 1.91 billion in 2023 and reached 1.40% of the global market. To promote domestic production and innovation, the government has launched initiatives like Production Linked Promotion (PLI) scheme.
- Pharmaceuticals and Biotechnology: India's CE shadow is expected to reach $ 638 billion by 2025, which has been pushed to its strong export base and comfortable health care supply chains in the western countries.
- Renewable Energy: India has been set a target of 500 GW of installed renewable energy capacity by 2030, with the sector growing at 20% annually and expected to generate over 3.5 million jobs

- Strong Service Growth: Service exports are the main next driver with strong digital and IT efficiency.
- Market difference: growing infrastructure in emerging markets like Africa, Latin America, Eastern Europe is based on traditional partners.
- Home Production Pressure: PLI plans have electronics, pharma, solar capabilities and key field exports.
- Convenient Trade Agreement: Deals such as EFTA and Australia Stralia expand the access and investment.

Challenges:

- Tariffs and Business Tension: U.S. on major business exports. 50% tariffs, footwear, jewelry, seafood sector, causes job loss and Billion causes a deficit 45 billion 1% of GDP. Despite liberalization, India's average import duties are higher than the largest economy. It can increase the cost of exporters that depend on imported inputs, while frequent policy adjustment creates uncertainty for businesses.
- Lack of infrastructure: India's competitiveness is a significant obstruction of insufficient material infrastructure with crowded ports and disabled transport networks. Changes on major Indian ports are higher than the global average, increasing logistic costs and delays in shipment.
- Intense World Competition: India has a sharp competition from established players like China. In some labor-intensive fields like textile and electronics, India reflects competing rivals like Vietnam and Bangladesh.
- Global Uncertainty: Record highs in the World Trade Policy Uncertainty Index (Q1 2025) raise costs and risk for the exporters, specially SMEs.
- Non-tariff barriers: EU's upcoming carbon border adaptation mechanism (CBAM) can damage carbon intensive sectors that do not have green compliance.
- Agricultural restrictions: Local export restrictions affect the size, which limits the ability to respond to global demand despite of the efforts of variousization.

Trade Performance (Statistical Overview)

Total Exports & Growth Dynamics:

- FY 2023–24: Combined goods and services exports hit USD 778.2 billion, a marginal 0.23% increase over FY 2022-23.
- Merchandise (goods) exports declined by 3% to USD 437.1 billion, while services exports rose to USD 341.1 billion.
- FY 2024–25: Exports reached a record USD 824.9 billion up 6 % for merchandise (excluding petroleum) at USD 374.1 billion and a notable 13.6% rise in services to USD 387.5 billion.

Trade Deficit Trends:

- The trade deficit fell significantly in FY 2023–24 to USD 75.6 billion, down from USD 121.6 billion.

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- In FY 2025–26 (April–June 2025), a current account deficit of USD 2.4 billion was due to a rising merchandise trade gap, despite increased services receipts (USD 47.9 billion).
- Fastest-growing markets include Russia (+35.4%), Romania (+138.8%) and Albania (+235%).
- Top destinations: UAE (12.7% growth to USD 35.6 billion), Singapore (+20.2% to USD 14.4 billion), UK (+13.3% to USD 13 billion), China (+8.7% to USD 16.7 billion).

Recommendations:

- Invest in infrastructure and logistics: India should prefer infrastructure and logistics to reduce costs and increase its production and export competition.
- Diversity export portfolio : India should diversify its export portfolio to rely on certain areas and increase its flexibility on global trade instability.
- Strengthen global appearance : India should strengthen its global appearance by incorporating strategic trade agreements and partnerships such as the UAE and ASEAN region (CEPA).

Conclusion:

India's commercial competitiveness has risen, due to service growth, production promoting and strategic diversification. However, external definition of shocks, uncertainty in politics, organizational obstacles and internal efficiency (logistical, policy barriers) are still great. The evaluation of India's World Trade Competition reveals a strong service area, a large talent pond and a country with immense capacity carried out by strategic policy intervention. However, it is necessary to solve the deep-related challenges related to infrastructure, regulatory efficiency and deep international competition by 2029.

References:

1. As per WTO world trade is expected to be subdued in the second half of 2022 and growth in 2023 May be as low as 1%. See, "Trade Growth to Slow Sharply in 2023 as Global Economy Faces Strong Headwinds." World Trade Organization, October 5, 2022. https://www.wto.org/english/news_e/ Pres22_e/pr909_e.htm.
2. Aggarwal, A. (2010) , "the trade effects of Anti dumping in India: Who Benefits ? ", The International Trade Journal, Vo l. 25/1, pp. 112-158.
3. Aleksynska, M. and G. Peri (2014), "iolating the Network Effects of Immigrants on trade ", World Economy, Vol . 37, pp. 434-455, http://dx.doi.org/10.1111/twec.12079.
4. .Benz, S. and F. Gonzales (2019), "Intra-EEA STRI Database: Methodology and Results", OECD Trade Policy Papers, No. 223, OECD Publishing, Paris, https://dx.doi.org/10.1787/2aac6d21-en.

FinTech and Nation Building: Paving the Way for Viksit Bharat

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Abstract

Financial Technology, or FinTech, has emerged as one of the most powerful forces reshaping the global economy. In India, FinTech is more than a sector of growth—it is a catalyst for social transformation and inclusive development. The journey toward Viksit Bharat 2047*, which envisions India as a fully developed nation by its centenary of independence, cannot be achieved without the transformative role of FinTech. From digital payments to blockchain, from peer-to-peer lending to neobanking, FinTech innovations are bridging gaps, reducing inefficiencies, and empowering millions. This paper discusses the role of FinTech in strengthening India's financial ecosystem, accelerating economic growth, and ensuring social inclusion. It explores the opportunities, challenges, and strategic directions required for FinTech to become a pillar of nation building.*

Keywords: FinTech, Nation Building, Digital Payments, Viksit Bharat 2047, Financial Inclusion, Blockchain, Neobanking

Introduction

India's financial sector has witnessed an unprecedented transformation over the last decade, driven primarily by technological innovations in finance, commonly referred to as FinTech. FinTech is not just an industry—it is an enabler that connects the formal financial system with citizens who were once excluded. As India looks forward to *Viksit Bharat 2047*, FinTech will play a central role in democratizing finance, increasing transparency, boosting efficiency, and strengthening governance. With the rise of initiatives such as *Digital India*, *Aadhaar-enabled services*, and the *Unified Payments Interface (UPI)*, FinTech has already touched the lives of common citizens. Yet, its role goes beyond transactions. FinTech can drive entrepreneurship, empower micro, small, and medium enterprises (MSMEs), support farmers, and ensure that the benefits of economic growth reach every corner of the country.

The Role of FinTech in Nation Building

1. **Financial Inclusion and Empowerment:** One of the most significant contributions of FinTech is in breaking barriers to access. Traditional banking models often excluded rural and low-income populations due to infrastructure limitations. FinTech, however, through mobile banking apps, digital wallets, and microcredit platforms, provides every citizen with access to financial tools. For example, UPI has enabled even the smallest street vendor to accept digital payments, reducing dependency on cash. Digital KYC (Know Your Customer) processes powered by Aadhaar have simplified account opening,

making financial services affordable and accessible. By 2047, India's vision of universal financial inclusion can only be achieved with FinTech as its backbone.

2. **Digital Payments and Transparent Economy:** Digital payments are not merely about convenience—they are about creating an accountable and transparent economy. Platforms like Paytm, PhonePe, Google Pay, and government-backed BHIM have revolutionized how Indians transact. These systems reduce leakages, curb corruption, and provide real-time transaction trails that strengthen governance. By promoting a cashless economy, FinTech directly supports the formalization of India's economy. For nation building, this is critical because a transparent economy generates higher tax revenues, enables better policy planning, and increases investor confidence in India's growth story.
3. **Supporting MSMEs and Entrepreneurship:** Micro, Small, and Medium Enterprises (MSMEs) are the backbone of India's economy, yet they often struggle with access to credit. FinTech platforms have changed this landscape by introducing innovative lending models such as peer-to-peer (P2P) lending, invoice discounting, and digital credit scoring. These models use real-time data, such as transaction history, to evaluate creditworthiness, rather than relying solely on traditional collateral. By providing MSMEs with easier access to credit, FinTech supports entrepreneurship, generates employment, and promotes innovation. In the larger picture, empowering small businesses directly contributes to the vision of a self-reliant and developed India by 2047.
4. **Agricultural Transformation through FinTech:** The agricultural sector, which employs nearly half of India's workforce, often faces challenges like lack of credit, delayed payments, and market inefficiencies. FinTech has introduced solutions like digital platforms for crop insurance, instant loans for farmers, and mobile-based marketplaces connecting farmers to buyers directly. For example, mobile-based platforms now allow farmers to receive instant payments for their produce or insure their crops against climate risks. This reduces dependence on middlemen, ensures better income stability, and enhances rural prosperity—an essential part of inclusive nation building.
5. **Employment and Skill Development:** FinTech is not just about serving customers—it is also about creating jobs. The rapid growth of FinTech startups in India has generated thousands of direct jobs in technology, compliance, and operations. Indirectly, it has created opportunities for millions of small businesses and service providers. Moreover, as FinTech expands, it fosters digital literacy and financial literacy among citizens. This dual skill development strengthens human capital, preparing India's youth to lead the digital economy of tomorrow.
6. **Innovation and Global Competitiveness:** India is now among the leading FinTech markets globally, attracting investments from around the world. By 2047, FinTech can position India as a hub for global innovation. Startups working in blockchain, artificial intelligence, robo-advisory, and cybersecurity are not only meeting domestic needs but also creating solutions for the world. This strengthens India's global competitiveness, enhances its role in international trade, and increases its soft power as a nation of innovators. Such global leadership in FinTech aligns with the dream of India as a developed and respected nation.

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7. **Challenges and the Road Ahead:** Despite its promise, FinTech also faces challenges. Cybersecurity threats, data privacy concerns, digital illiteracy, and uneven access to technology are significant hurdles. For FinTech to truly drive nation building, policies must focus on building robust regulatory frameworks, ensuring ethical use of AI, and protecting consumer rights.

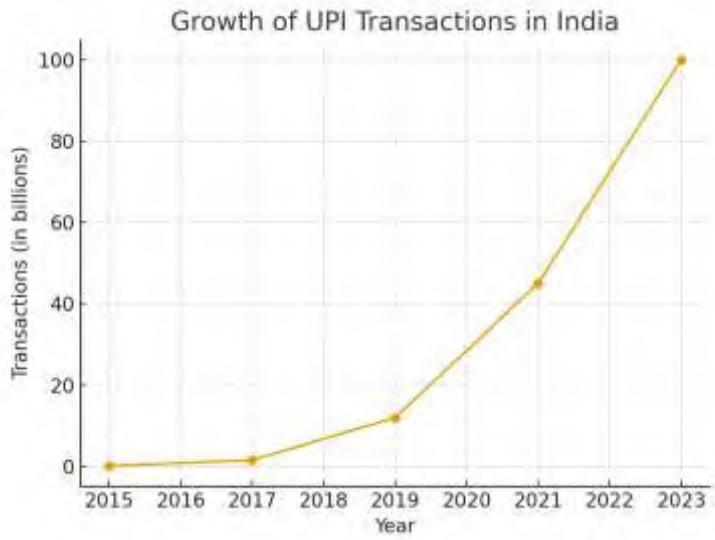
The road ahead requires balancing innovation with responsibility. Public-private partnerships, increased investments in rural digital infrastructure, and strong regulatory oversight will ensure FinTech continues to grow sustainably.

Growth of UPI Transactions in India

The Unified Payments Interface (UPI), launched by the National Payments Corporation of India (NPCI) in 2016, has revolutionized digital payments in India. What started as a simple system to transfer money between bank accounts through mobile devices has now become the backbone of India's digital economy. The ease of use, instant settlement, and interoperability across banks have made UPI the most preferred payment method for millions of Indians. In the early years, UPI witnessed slow adoption due to limited awareness and smartphone penetration. However, with the push from government initiatives like *Digital India* and demonetization in 2016, UPI transactions began to grow rapidly. Major payment platforms such as PhonePe, Google Pay, Paytm, and BHIM have further accelerated its adoption. By 2019, monthly UPI transactions crossed one billion, showcasing its exponential rise.

Today, UPI is used for a wide range of purposes— from small shopkeepers and vegetable vendors to large businesses and e-commerce platforms. In 2023, UPI processed over 100 billion transactions annually, proving its dominance in the digital payment space. The system has not only reduced cash dependency but also strengthened financial transparency, boosted financial inclusion, and set an example globally as one of the most successful real-time payment platforms.

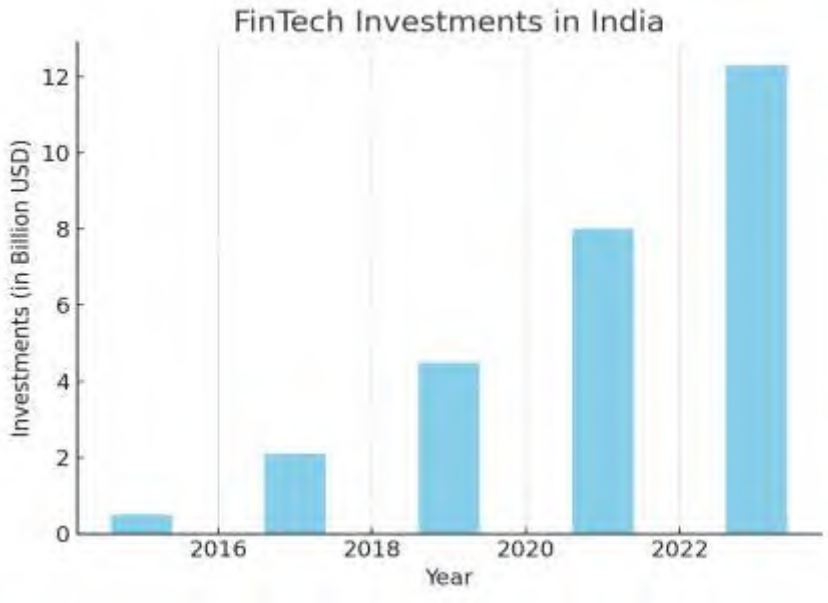
Growth of UPI Transactions in India



FinTech Investments in India

FinTech investments in India have grown at an extraordinary pace over the last decade, making the country one of the world's leading FinTech hubs. With the rise of digital payments, lending platforms, insurance technology, and wealth management apps, investors—both domestic and international—have shown great confidence in India's FinTech ecosystem. In the early years, around 2014–2016, investment levels were modest, with funding primarily directed toward digital wallets and payment startups. However, the turning point came with the rapid adoption of the Unified Payments Interface (UPI) and the government's *Digital India* push, which created a strong digital infrastructure. This attracted global venture capital and private equity firms to invest heavily in Indian FinTech. By 2020, India became the second-largest FinTech hub in terms of funding deals, after the United States. Startups focusing on digital lending, neobanking, wealth tech, and blockchain solutions began receiving large-scale investments. In 2023, FinTech investments crossed USD 12 billion, reflecting investor trust in India's high-growth potential.

This inflow of capital has not only fueled innovation but also created thousands of jobs, enhanced financial inclusion, and strengthened India's global competitiveness. As India moves towards *Viksit Bharat 2047*, FinTech investments will continue to act as a catalyst for economic growth and nation building.



FinTech Impact on MSMEs and Digital Users:

FinTech has emerged as a powerful enabler for Micro, Small, and Medium Enterprises (MSMEs) and digital users in India. Traditionally, MSMEs struggled with limited access to credit, lengthy loan procedures, and dependency on informal financing. FinTech platforms have disrupted this space by introducing innovative lending solutions such as digital credit scoring, invoice discounting, and peer-to-peer lending. These models rely on real-time data like digital transactions, purchase history, and GST records, making it easier for small businesses to prove creditworthiness. As a result, MSMEs are now able to secure loans quickly without

heavy collateral, helping them expand operations and generate employment. For digital users, FinTech has transformed the way financial services are accessed. With the rise of mobile wallets, UPI, and digital banking apps, financial transactions are faster, more secure, and more transparent. Millions of users, including rural populations, now enjoy convenient access to banking, insurance, and investment platforms through their smartphones. This shift has not only improved financial literacy but also encouraged savings and investments among young and first-time users. The combined impact of FinTech on MSMEs and digital users is significant—it boosts entrepreneurship, strengthens financial inclusion, and accelerates India's transition toward a cashless and transparent economy, a crucial step in achieving Viksit Bharat 2047.

FinTech Impact on MSMEs and Digital Users

Year	MSME Loans via FinTech (₹ Crores)	Digital Payment Users (Million)
2018	12000	350
2019	18000	500
2020	25000	650
2021	40000	900
2022	60000	1200

Conclusion

FinTech is more than a technological revolution—it is a nation-building tool. By promoting financial inclusion, empowering MSMEs, transforming agriculture, creating jobs, and enhancing transparency, FinTech strengthens the foundations of India's economy and society. As India marches towards *Viksit Bharat 2047*, FinTech will remain a key driver of growth, inclusivity, and global leadership. Its potential to bridge divides and unlock opportunities makes it indispensable in India's journey of becoming a fully developed nation.

References:

1. Government of India. (2023). *India's Digital Payments Vision 2025*. Ministry of Finance.
2. NITI Aayog. (2022). *Digital Financial Inclusion in India: Opportunities and Challenges*. NITI Aayog.
3. PwC. (2023). *The Future of FinTech in India*. PricewaterhouseCoopers India.
4. World Bank. (2022). *FinTech and Financial Inclusion*. World Bank Group.
5. Accenture. (2023). *Global FinTech Trends: Driving Growth and Transparency*. Accenture Insights.
6. McKinsey & Company. (2023). *India's FinTech Ecosystem: A Growth Opportunity*. McKinsey Global Institute.
7. Reserve Bank of India. (2022). *Report on Trend and Progress of Banking in India*. RBI Publications.
8. Gupta, A. (2023). The role of FinTech in inclusive growth in emerging economies. *Journal of Financial Innovation*, 15(2), 88–106.
9. Sharma, R. (2022). Digital lending and MSME growth in India. *Asian Economic Review*, 47(3), 210–227.

Skill Development: Pathway to Vikasit Bharat

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Abstract -

Skill development has emerged as a cornerstone for economic growth, social inclusion, and sustainable development in the 21st century. In the context of India, with its vast demographic dividend, the importance of equipping the workforce with relevant skills cannot be overstated. This chapter provides a comprehensive examination of the meaning, scope, and features of skill development, while emphasizing its critical role in enhancing employability, entrepreneurship, and national competitiveness. The discussion highlights the multifaceted importance of skill development in bridging the gap between education and employment, reducing poverty, and addressing the challenges of globalization and technological disruption. Furthermore, the chapter explores the government's strategic initiatives, such as Skill India Mission, Pradhan Mantri Kaushal Vikas Yojana, and National Skill Development Corporation, which aim to create an inclusive and demand-driven ecosystem of skilling. By analysing both opportunities and persistent challenges—including inadequate infrastructure, mismatch between skills and industry needs, and regional disparities—the chapter underscores the need for integrated policies and industry-academia partnerships. The overall analysis positions skill development not merely as a policy imperative but as a transformative agenda for realizing India's aspirations of inclusive growth and global leadership.

Keywords – Skill Development, Employability, Workforce Training, Industries etc.

1. Introduction

Skill development has emerged as one of the most critical pillars of economic and social transformation in contemporary India. In an era marked by globalization, rapid technological change, and shifting patterns of production and employment, the ability of a nation to equip its workforce with relevant skills has become a key determinant of its competitiveness and human development. According to the World Economic Forum (2020), the global economy is undergoing a "reskilling revolution," where almost one-third of the skills considered essential today are likely to change within the next five years. For India, a country with a working-age population projected to exceed one billion by 2030, this reality is especially pressing.

India is often described as being at the cusp of a demographic dividend. Nearly 65% of its population is below the age of 35, offering the potential to fuel sustained economic growth if harnessed effectively (United Nations Population Fund, 2023). However, this demographic advantage can turn into a demographic burden if young people are unable to find productive employment. Employability in India is not solely a function of job availability, but equally of whether individuals possess the necessary skills, knowledge, and attitudes demanded by the labour market.

Skill development is thus not a standalone activity; it intersects with multiple domains—education, labour markets, industry, social inclusion, and governance. The **National Education Policy (NEP) 2020** emphasizes that vocational education and skilling must be mainstreamed into the education system, beginning as early as Grade

6. Meanwhile, the **Skill India Mission**, launched in 2015, aims to train over 400 million people in various skills by 2022 and continues to shape India's approach to vocational training and lifelong learning.

From a development perspective, skill development is both an **economic imperative** and a **social necessity**. Economically, it contributes to increased productivity, competitiveness, and innovation. Socially, it enhances employability, reduces poverty, and fosters social mobility. In the Indian context, where a large proportion of the workforce remains employed in the informal sector, skill development is also a mechanism for formalization, recognition of prior learning, and greater labour-market resilience.

The objective of this chapter:

Is to critically examine the evolution, institutional architecture, major policies, and challenges of skill development in India. It begins with a theoretical framework and review of relevant literature, followed by a discussion of the historical trajectory of skill development initiatives in the country.

Meaning and Definition of Skill Development

Skill development refers to the process of enhancing an individual's ability, knowledge, expertise, and employability by acquiring new skills or upgrading existing ones. It is a continuous process aimed at improving productivity, adaptability, and career opportunities in a dynamic labour market. Skill development does not only mean technical or vocational training; it also includes soft skills such as communication, teamwork, problem-solving, and digital literacy, which are equally important for professional growth.

In the Indian context, skill development assumes a dual meaning:

1. As an economic strategy, it provides industries with a workforce capable of meeting evolving demands in sectors such as manufacturing, IT, healthcare, logistics, and green technologies.
2. As a social intervention, it empowers marginalized groups - rural youth, women, and disadvantaged communities - by making them employable and promoting inclusive growth.

Definitions:

- According to the Ministry of Skill Development and Entrepreneurship **(MSDE, 2015)**, skill development is "the process of identification, development and recognition of skills of individuals to enable them to pursue gainful employment or entrepreneurship."
- The **World Bank (2010)** frames it as "the process of equipping individuals with the knowledge, competencies and attitudes necessary to be productive workers and responsible citizens in a knowledge economy."

In essence, skill development can be understood as a lifelong learning process that equips individuals to adapt to technological change, seize economic opportunities, and contribute to national development.

Importance of Skill Development

Skill development is one of the cornerstones of economic growth and social transformation in the 21st century. In the Indian context, it plays a particularly critical role due to the nation's large youth population, fast-changing labour markets, and developmental aspirations. Its importance can be discussed from multiple perspectives:

1. Economic Growth and Productivity

- A skilled workforce enhances productivity across agriculture, manufacturing, and services sector leading to higher output and competitiveness.
- Countries like South Korea and Singapore demonstrate how large-scale investment in skills can transform economies from low-income to high-income within a generation.
- For India, skilling its vast labour force is essential to achieve the goal of becoming a **$5 trillion economy** and to integrate effectively into global value chains.

2. Employment Generation and Employability

- Skill development improves employability by equipping individuals with market-relevant competencies.
- In India, where youth unemployment coexists with skill shortages in industries like IT, construction, and healthcare, skilling bridges this demand–supply gap.
- Training also helps workers transition from low-paying, informal jobs to better-paying, formal-sector employment.

3. Harnessing the Demographic Dividend

- With nearly 65% of its population below the age of 35, India holds a unique demographic advantage (UNFPA, 2023).
- This "demographic dividend" can turn into a liability if young people lack adequate skills. Skill development ensures that the youth population becomes a productive asset rather than a burden.

4. Poverty Reduction and Social Inclusion

- Skill development empowers marginalized communities, women, and rural youth by providing them with opportunities for gainful employment or entrepreneurship.
- By increasing incomes and livelihoods, it reduces poverty and promotes social mobility.
- Initiatives such as the Deen Dayal Upadhyaya Grameen Kaushalya Yojana **(DDU-GKY)** directly target rural poor households, demonstrating the inclusive potential of skilling.

5. Entrepreneurship and Innovation

- Skill development is not limited to wage employment; it also fosters entrepreneurship, enabling individuals to create jobs rather than only seek them.
- Entrepreneurial skills—such as financial literacy, business planning, and innovation—contribute to the growth of **MSMEs**, which form the backbone of India's economy.

6. Global Competitiveness and Mobility

- With globalization, skilled workers are in demand worldwide. Countries like Germany and Japan rely on skilled Indian professionals in IT, healthcare, and engineering.

- Developing globally recognized skill standards (through frameworks like the **NSQF**) enhances India's potential to become a hub for skilled human resources.

7. National Development Goals

- Skill development directly contributes to the achievement of Sustainable Development Goals (SDGs), particularly SDG 4 (quality education), SDG 8 (decent work and economic growth), and SDG 10 (reduced inequalities).
- It aligns with national initiatives such as Make in India, Digital India, and Atmanirbhar Bharat, all of which require a skilled workforce to succeed.

3. Scope of Skill Development -

The scope of skill development in India is vast, encompassing diverse sectors of the economy, multiple layers of society, and a wide range of training and capacity-building opportunities. It extends beyond technical training to include entrepreneurial, digital, and life skills that are essential in the 21st-century knowledge-driven economy.

1. Sectoral Scope

Skill development spans across all three major sectors of the Indian economy:

- **Agriculture**: Training in modern farming techniques, agro-processing, sustainable agriculture, food storage, and value chain management. Skilling in agribusiness and farm mechanization is crucial as India seeks to modernize its agricultural practices.
- **Manufacturing and Industry**: Aligned with Make in India, skill development in machine operations, quality control, electronics, textiles, and automotive manufacturing is vital to increase competitiveness.
- **Services**: Encompasses IT and IT-enabled services, healthcare, hospitality, logistics, financial services, retail, and education. With services contributing over 50% to India's GDP, demand for skilled professionals in this sector is growing exponentially.

2. Geographic Scope

- **Urban India**: Training in emerging areas such as AI, robotics, data science, fintech, and creative industries.
- **Rural India**: Focus on agriculture, handicrafts, small-scale industries, renewable energy, and community-based entrepreneurship. Programs like DDU-GKY and Rural Skill Development Schemes target rural youth for employability.

3. Social Scope

Skill development is designed to cater to all sections of society, including:

- **Youth**: Preparing them for first-time employment and long-term career growth.
- **Women**: Promoting gender equality by empowering women with employable and entrepreneurial skills.
- **Marginalized Groups**: Scheduled Castes (SCs), Scheduled Tribes (STs), differently-abled persons, and minorities are given special focus to ensure inclusivity.
- **Migrants and Informal Workers**: Skill certification and reskilling programs help these groups access better job opportunities.

4. Educational Scope

- Integration of vocational education at the school and higher education levels, as outlined in the NEP 2020.

- Establishment of skill universities and community colleges offering diploma and certificate programs.
- Recognition of Prior Learning (RPL), which formalizes informal skills and integrates them into the educational qualification framework.

5. Global Scope

- With globalization, skill development has a strong international dimension.
- India has the potential to become the "skill capital of the world", supplying trained manpower to regions facing demographic deficits such as Europe, Japan, and the Middle East.
- Skill standards are increasingly being aligned with global competency frameworks to enable international mobility of Indian workers.

6. Technological Scope

- Skilling in Industry 4.0 technologies like artificial intelligence, machine learning, cloud computing, data analytics, blockchain, robotics, and cybersecurity.
- Expansion of digital platforms for online training (e.g., SWAYAM, e-Skill India, Coursera partnerships) broadens access to skill development.
- Focus on green skills related to renewable energy, waste management, sustainable construction, and environmental conservation.

7. Entrepreneurship and Self-Employment

- Skill development extends beyond wage employment to encourage entrepreneurship and self-reliance.
- Training in business planning, financial management, marketing, and digital tools empowers individuals to establish MSMEs and startups.
- Government initiatives like Start-up India and Stand-up India complement skilling programs by providing financial and institutional support.

8. Policy and Institutional Scope

- The scope covers a multi-stakeholder ecosystem involving government ministries, state skill development missions, industry bodies, NGOs, and international organizations.
- It also encompasses research, monitoring, and innovation in skill training.

4. Government Initiatives for Skill Development in India -

The Government of India has taken a proactive role in building a strong ecosystem for skill development to address the challenges of unemployment, low productivity, and skill mismatch. Over the years, multiple ministries, agencies, and schemes have been launched, with a major consolidation of efforts after the formation of the Ministry of Skill Development and Entrepreneurship (MSDE) in 2014. The following are the major initiatives:

1. Ministry of Skill Development and Entrepreneurship (MSDE)

- Established in 2014 as the nodal ministry for skill development.
- Coordinates with over 20 different ministries, state governments, and private players to ensure convergence.
- Oversees flagship schemes such as PMKVY, NAPS, and supervises the National Skill Development Corporation (NSDC).

2. National Skill Development Corporation (NSDC)

- Founded in 2008 as a public–private partnership (PPP).
- Facilitates private sector investment in skill training and establishes Sector Skill Councils (SSCs).

- Works with industry partners to design competency standards and skill gap studies.
- Has trained millions of candidates in collaboration with training providers across India.

3. Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

- Launched in 2015 under the Skill India Mission.
- Offers short-term training (STT), Recognition of Prior Learning (RPL), and special projects.
- Training is provided through accredited training partners with emphasis on industry-relevant skills.
- By 2023, more than 13 million candidates had been trained under PMKVY (MSDE, 2023).

4. National Apprenticeship Promotion Scheme (NAPS)

- Introduced in 2016 to promote apprenticeship as a mode of skill training.
- Provides financial incentives to industries for engaging apprentices.
- Focuses on creating a culture of "earn while you learn**"** among youth.
- Aims to train over 5 million apprentices by 2030.

5. Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)

- Launched in 2014 under the Ministry of Rural Development (MoRD).
- Targets rural poor youth (15–35 years) to enhance their employability.
- Special focus on women and disadvantaged communities.
- Offers placement-linked skill training with a minimum of 3 months duration.

6. Skill India Mission (2015)

- Umbrella program launched by the Government of India to train over 400 million people by 2022.
- Brings together all national and state-level skill initiatives under a single framework.
- Works on convergence, quality assurance, industry linkages, and inclusivity.

7. SANKALP (Skills Acquisition and Knowledge Awareness for Livelihoods Promotion)

- Launched in 2017 with World Bank support.
- Focuses on strengthening institutions, improving quality of training, and promoting equity.
- Encourages decentralized planning and state-level innovations in skilling.

8. STRIVE (Skill Strengthening for Industrial Value Enhancement)

- Launched in 2017 with World Bank assistance.
- Focused on improving the performance of Industrial Training Institutes (ITIs).
- Enhances industry–institution linkages and promotes outcome-based training.

9. National Policy for Skill Development and Entrepreneurship (2015)

- Serves as the guiding document for all skilling initiatives.
- Emphasizes:
    - Quality training aligned with NSQF.
    - Industry partnerships.
    - Inclusivity for women, SC/ST, and rural youth.
    - Entrepreneurship promotion as a complement to wage employment.

10. Other Initiatives

- **Samarth (Scheme for Capacity Building in Textile Sector)** – focuses on skilling in the textile and apparel industry.

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- **Green Skill Development Programme (GSDP)** – launched by the Ministry of Environment, Forest, and Climate Change to build capacities in environmental and green sectors.
- **PM-DAKSH (Pradhan Mantri Dakshta Aur Kushalta Sampann Hitgrahi Yojana)** – implemented by the Ministry of Social Justice and Empowerment to provide skilling opportunities to SCs, OBCs, EBCs, DNTs, and sanitation workers.
- **UDAAN Scheme (2013–2019)** – a special program for the youth of Jammu & Kashmir to integrate them with the mainstream workforce.

11. State Skill Development Missions (SSDMs)

- Each state has its own skill development mission to contextualize training according to local needs.
- Examples: Maharashtra State Skill Development Society (MSSDS), Rajasthan Skill and Livelihood Development Corporation (RSLDC), etc.

5 . Theoretical Framework -

5.1 Human Capital Theory

The foundation of modern discussions on skill development rests on human capital theory, articulated by economists such as Gary Becker (1964) and Theodore Schultz (1961). The theory posits that investments in education, training, and health improve the productivity of individuals, much like investments in physical capital improve the productivity of machines. In this view, skill development is an investment that yields returns in the form of higher earnings for individuals and greater economic growth for societies.

India's policy emphasis on skill development reflects this logic. With rising global competition and technological shifts, human capital is increasingly seen as the comparative advantage of nations. Reports by the International Labour Organization (ILO, 2018) highlight that countries investing in skill development experience faster transitions to higher-value-added industries and better labour-market outcomes.

5.2 Employability and Skills Mismatch

A second theoretical lens is the employability framework, which expands the scope of skill development beyond technical know-how to include soft skills, problem-solving abilities, and adaptability. The employability literature suggests that a gap often exists between what educational institutions supply and what industries demand, leading to skills mismatch. In India, this mismatch is particularly acute, as many graduates lack industry-relevant competencies, leading to the paradox of high youth unemployment despite labour shortages in certain sectors.

5.3 Lifelong Learning and Capability Approach

The lifelong learning paradigm, promoted by UNESCO and the OECD, emphasizes that skills development should not be restricted to one stage of life but must be continuous, given the pace of technological change. Amartya Sen's capability approach adds another layer, arguing that skills are not just economic assets but also expand people's freedoms and choices, contributing to human development. For India, this approach underscores the importance of inclusive skill policies that empower women, rural youth, and marginalized communities.

6. Evolution of Skill Development in India -

6.1 Pre-Independence and Early Efforts

Skill development in India has a long history, deeply rooted in traditional systems of apprenticeship and craft-based learning. During the colonial era, industrialization was

limited, and vocational training was largely informal, transmitted within communities or through artisanal guilds. Formal vocational education was introduced primarily to meet the needs of colonial industries such as railways, plantations, and public works.

6.2 Post-Independence Phase (1947–1980s)

After independence in 1947, India adopted a mixed economic model with a focus on industrialization and planned development. Recognizing the need for technical manpower, the government established Industrial Training Institutes **(ITIs)** under the Craftsmen Training Scheme **(CTS)** in the 1950s. The Apprentices Act of 1961 provided a legal framework for structured apprenticeship training in industry. Polytechnics and engineering colleges were expanded during this period to produce technicians and engineers for large-scale industries.

However, skill development remained supply-driven, with little alignment to labour-market demand. The system primarily catered to organized manufacturing and public-sector enterprises, leaving agriculture, small-scale industries, and the informal sector largely untouched.

6.3 Liberalization and the 1990s–2000s

The economic liberalization of 1991 triggered a shift towards a market-oriented economy, increasing demand for a wide variety of skills in services, IT, and global value chains. This period witnessed the expansion of private training providers and NGOs in the skill ecosystem. The government introduced schemes such as the Vocationalisation of Secondary Education (1988) and later the Skill Development Initiative (SDI) Scheme (2007–08) for school dropouts and workers in the informal sector.

A major policy milestone was the establishment of the National Skill Development Corporation **(NSDC)** in 2008, a public–private partnership designed to catalyse private investment in skill development. Around the same time, the National Policy on Skill Development **(2009)** laid the foundation for a more structured approach to skilling.

6.4 The Skill India Mission (2015 onwards)

A paradigm shift occurred with the launch of the Skill India Mission in 2015, accompanied by the creation of the Ministry of Skill Development and Entrepreneurship (MSDE). The mission set an ambitious target of training over 400 million people by 2022 through flagship initiatives such as:

- **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**
- **Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)**
- **National Apprenticeship Promotion Scheme (NAPS)**

The National Policy for Skill Development and Entrepreneurship (2015) revised earlier frameworks, emphasizing industry linkages, quality assurance through the

National Skill Qualification Framework (NSQF), and inclusivity for marginalized groups. The World Bank–supported projects such as STRIVE and SANKALP further strengthened institutional capacity and accountability.

6.5 Current Landscape

Today, India has one of the largest skill development ecosystems in the world, with more than 14,000 ITIs, hundreds of polytechnics, and a vast network of private training providers. While significant progress has been made in terms of scale, challenges remain in terms of quality, industry relevance, and equitable access. The evolution of skill development in India thus reflects a trajectory from traditional apprenticeship systems to a complex, multi-stakeholder architecture aiming to balance scale with quality and inclusiveness.

7. Institutional Framework for Skill Development in India -

Skill development in India is coordinated through a multi-layered institutional structure involving central ministries, state governments, industry bodies, and private training providers. This framework reflects both the complexity of India's labour market and the necessity of aligning skilling initiatives with diverse economic sectors.

7.1 Ministry of Skill Development and Entrepreneurship (MSDE)

The creation of the Ministry of Skill Development and Entrepreneurship (MSDE) in 2014 marked a turning point in consolidating skill development efforts. Previously, more than 20 different ministries and departments were implementing skill initiatives in isolation, leading to duplication of efforts and inefficiency. MSDE was established to provide a single point of policy direction, coordination, and standard setting. Its key functions include:

- Formulating national skill policies and long-term strategies.
- Overseeing the National Skill Development Corporation **(NSDC)** and other agencies.
- Implementing flagship schemes such as Pradhan Mantri Kaushal Vikas Yojana **(PMKVY)**.
- Promoting entrepreneurship and innovation as integral to skill development.

By creating a dedicated ministry, India signalled its recognition of skills as a strategic national priority.

7.2 National Skill Development Corporation (NSDC)

The **NSDC**, established in 2008 under the Companies Act as a public–private partnership (PPP), is one of the cornerstones of the Indian skilling ecosystem. Its mandate is to catalyse private investment in skill training by:

- Providing funding to training institutions, sector skill councils, and social enterprises.
- Ensuring quality through the National Skill Qualification Framework (NSQF).
- Developing sector-specific standards via Sector Skill Councils (SSCs).
- Facilitating international collaborations for skill recognition and mobility.

NSDC has partnered with thousands of private training providers and corporate entities to expand skill delivery capacity. Its PPP model reflects the growing role of the private sector in bridging the demand–supply gap in skills.

7.3 Sector Skill Councils (SSCs)

The **SSCs** are industry-led bodies under NSDC that define occupational standards, develop qualification packs, and ensure training programs align with market demand. There are currently more than 30 SSCs covering diverse sectors such as IT-ITeS, healthcare, retail, construction, and agriculture. By involving industry in curriculum

design and assessment, SSCs help reduce the skills mismatch between training institutions and employers.

7.4 State Skill Development Missions (SSDMs)

Given India's federal structure, states play a crucial role in skill development. State Skill Development Missions **(SSDMs)** were established to tailor skilling initiatives to local needs and economic priorities. States like Maharashtra, Gujarat, and Kerala have developed robust state-level missions, often in partnership with industry and academia. These decentralized initiatives complement national policies while accommodating regional variations in labour demand.

7.5 Other Key Ministries and Agencies

Besides MSDE, multiple ministries remain engaged in skilling activities:

- **Ministry of Labour and Employment (MOLE)**
- **Ministry of Rural Development (MORD)**
- **Ministry of Human Resource Development (MHRD, now MOE**
- **Ministry of Women and Child Development (MWCD)**

This multi-stakeholder architecture, though sometimes criticized for fragmentation, reflects the wide-ranging importance of skills across all sectors of governance.

8. Major Programs and Initiatives -

Over the years, India has launched a wide array of schemes and programs aimed at enhancing skill development, targeting both the supply and demand sides of the labour market. The following are the most significant initiatives in the contemporary period.

8.1 Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

Launched in 2015, **PMKVY** is the flagship skill certification program under MSDE. Its objectives are to:

- Provide free, short-term training in industry-relevant skills.
- Recognize prior learning (RPL) for workers with informal experience.
- Offer placement assistance and certification under the NSQF.

By 2022, PMKVY had trained over 13 million youth across diverse sectors (MSDE, 2022). However, evaluations have revealed challenges such as high dropout rates, variable quality of training providers, and limited post-training employment opportunities.

8.2 Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY)

Implemented by the Ministry of Rural Development, **DDU-GKY** focuses on rural youth from poor families. It aims to provide skill training linked to wage employment in both domestic and international markets. The program emphasizes:

- Placement-linked training.
- Priority for women and marginalized communities.
- Partnerships with industry and international employers.

As rural distress and migration remain critical issues, DDU-GKY plays a significant role in improving employability in less-developed regions.

8.3 National Apprenticeship Promotion Scheme (NAPS)

The **NAPS**, launched in 2016, seeks to revive and expand India's apprenticeship system by incentivizing employers to hire apprentices. Under the scheme:

- Employers receive financial support to cover a portion of apprentices' stipends.
- Training costs are shared between government and industry.
- Apprenticeship contracts are registered under the Apprentices Act, 1961.

Despite its potential, apprenticeship in India remains underutilized compared to countries like Germany and Japan, where it forms a central pillar of skill ecosystems.

8.4 SANKALP and STRIVE Projects

With support from the World Bank, two major projects were introduced:

- **SANKALP (Skills Acquisition and Knowledge Awareness for Livelihood Promotion):** Aims at strengthening institutions, quality assurance, and convergence across ministries.
- **STRIVE (Skills Strengthening for Industrial Value Enhancement):** Focuses on improving the performance of ITIs and fostering industry–institute partnerships.

Both projects emphasize systemic reforms, capacity-building, and measurable outcomes rather than just training numbers.

8.5 Entrepreneurship Development Programs

Recognizing that not all trainees can be absorbed into wage employment, India has also emphasized entrepreneurship promotion. Initiatives like the Start-up India campaign, Mudra Yojana, and entrepreneurship modules within NSDC training programs encourage self-employment and small business creation.

8.6 Other Targeted Initiatives

- **Skill Development for Women**
- **Skill Development in Infrastructure Sectors**
- **International Collaborations**

Together, these initiatives reflect a dual focus: mass skilling of youth and systemic reforms to ensure quality and sustainability.

9. Convergence of Education and Skill Development -

One of the most pressing challenges in India's skill landscape is the historical separation between general education and vocational training. Traditionally, vocational education was treated as inferior to academic streams, resulting in low enrolment and social stigma. Recent reforms seek to bridge this gap by promoting convergence.

9.1 National Education Policy (NEP) 2020

The **NEP 2020** provides a paradigm shift by mainstreaming vocational education into the school and higher education system. Key provisions include:

- Introducing vocational exposure from Grade 6 onwards, including internships with local industry.
- Targeting at least 50% of learners to have vocational exposure by 2025.
- Establishing Higher Education Institutions **(HEIs)** as hubs for both academic and skill-based courses.
- Facilitating credit transfer and lifelong learning through the National Credit Framework (NCF).

By integrating skills with academic curricula, NEP aims to overcome the perception of vocational training as a "second-class" option.

9.2 National Skill Qualification Framework (NSQF)

The **NSQF**, notified in 2013, provides a competency-based framework that links general and vocational education. Learners can move seamlessly between academic and skill-based streams, ensuring mobility and recognition of diverse learning pathways. For example, a student completing a skill certificate in IT support can later build credits towards a diploma or degree.

9.3 Industry–Academia Linkages

Several universities and colleges are partnering with industry to offer apprenticeship-embedded degree programs, skill labs, and modular short-term courses. The University Grants Commission **(UGC)** has also encouraged community colleges and skill universities to expand the vocational base of higher education.

9.4 Digital and Online Platforms

With the rise of online learning, platforms such as SWAYAM, e-Skill India, and private providers (Coursera, Udemy, etc.) are increasingly integrating digital skills with formal education. COVID-19 accelerated this convergence, highlighting the potential of blended learning models to deliver both academic knowledge and practical skills.

10. Challenges in Skill Development in India -

Despite the ambitious policies and large-scale programs, India's skill development ecosystem continues to face numerous structural and operational challenges. These challenges can be broadly categorized into issues of scale, quality, relevance, inclusion, and governance.

10.1 Quality of Training and Infrastructure

- Many Industrial Training Institutes **(ITIs)** and private training centres suffer from outdated infrastructure, obsolete curricula, and inadequate teaching staff.
- Assessments by the Comptroller and Auditor General (CAG, 2019) highlighted that nearly 30% of ITIs lacked proper equipment, and 40% faced faculty shortages.
- The emphasis has often been on training numbers rather than ensuring quality and employability outcomes.

10.2 Skills Mismatch and Employability

- A recurring concern is the **skills mismatch** between what training institutions provide and what industries demand.
- According to the India Skills Report (2022), only 46% of youth were considered employable by recruiters, indicating significant gaps in industry relevance.
- Rapid technological changes (AI, automation, green technologies) further widen the gap as curricula fail to keep pace with industry needs.

10.3 Informal Sector and Unorganized Workforce

- More than 80% of India's workforce is employed in the **informal sector**, where formal training opportunities are scarce.
- While initiatives like Recognition of Prior Learning (RPL) attempt to certify informal workers, uptake remains limited due to lack of awareness and incentives.
- Migrant workers, gig workers, and contract labourers often fall outside the purview of structured skilling programs.

10.4 Low Social Perception of Vocational Training

- Vocational education continues to be stigmatized as a "second-choice" option compared to mainstream academic education.
- Families often prefer degrees, even if they lead to underemployment, rather than vocational diplomas or certifications.
- Changing this perception requires not only systemic reforms but also cultural shifts.

10.5 Gender and Regional Disparities

- Women's participation in skill programs is often constrained by social norms, safety concerns, and lack of childcare support.

- Certain states (e.g., Kerala, Maharashtra) have robust skill ecosystems, while others (e.g., Bihar, Jharkhand) lag behind, creating regional imbalances in opportunities.
- Rural–urban divides persist, with urban youth accessing higher-quality training and placement opportunities.

10.6 Financing and Sustainability

- Many programs depend heavily on government subsidies and international loans (e.g., World Bank-funded projects).
- Private investment in skill development remains limited due to concerns about profitability and return on investment.
- A sustainable financing model involving employers, trainees, and government contributions is still evolving.

10.7 Monitoring, Evaluation, and Governance

- Weak monitoring and evaluation mechanisms undermine accountability.
- Placement data is often inflated, and there is inadequate tracking of long-term career progression of trained individuals.
- Overlaps among ministries and schemes create coordination challenges, despite efforts to converge through MSDE.

11. Global Perspectives and Best Practices -

Skill development is not unique to India; it is a global priority. Several countries have developed effective skill systems that offer valuable lessons for India.

1. Germany's Dual System of Apprenticeship

- Germany is renowned for its dual system, where vocational education combines classroom learning with on-the-job training in enterprises.
- Apprenticeships are well-integrated into the education system and socially valued.
- Strong partnerships between government, industry, and trade unions ensure relevance and quality.
  Lesson for India: Expand and mainstream apprenticeships under NAPS, ensuring industry takes a more proactive role.

2. Singapore's Skills Future Initiative

- Singapore has built a lifelong learning ecosystem, where citizens are provided with credits to pursue training at any stage of life.
- Training programs are continuously updated to align with global industry needs.
- Skills Future integrates career guidance, industry partnerships, and personalized learning pathways.
  Lesson for India: Encourage lifelong learning beyond short-term skilling programs, with incentives for continuous upskilling and reskilling.

3. Australia and New Zealand's Qualification Frameworks

- Both countries operate robust **National Qualifications Frameworks**, ensuring portability and recognition of skills across institutions and industries.
- Modular training and credit-based systems allow learners to accumulate qualifications over time.
  Lesson for India: Strengthen NSQF implementation to facilitate seamless mobility between vocational and academic streams.

4. China's Large-Scale Vocational Education

- China has invested heavily in vocational education, with specialized vocational schools and colleges linked directly to local industries.

- Policies ensure that vocational training is treated on par with academic education, enhancing its social status.
  Lesson for India: Invest more significantly in vocational schools and improve the social perception of skill-based education.

5. Global Trends in Future Skills

- **Digital and green skills** are increasingly in demand worldwide.
- The **World Economic Forum (2023)** projects that by 2030, 50% of employees globally will need reskilling due to automation and sustainability transitions.
- India must align its skilling ecosystem with these trends to remain competitive in global value chains.

12. Recommendations and Conclusion -

1. Policy Recommendations -

1. **Quality over Quantity:** Shift the focus from training numbers to employability outcomes.
2. **Industry Integration:** Strengthen industry participation in curriculum design, training delivery, and apprenticeships.
3. **Strengthening ITIs:** Upgrade infrastructure, faculty training, and digital readiness of ITIs.
4. **Inclusive Skilling:** Design targeted programs for women, rural youth, differently-abled individuals, and marginalized communities.
5. **Lifelong Learning:** Promote continuous upskilling through online platforms, micro-credentials, and credit-based systems.
6. **Digital and Green Skills:** Prioritize future-ready skills to align with Industry 4.0 and sustainability agendas.
7. **Monitoring and Evaluation:** Introduce transparent data systems to track long-term career outcomes.
8. **Public–Private Partnerships:** Expand PPP models like NSDC, with stronger accountability frameworks.
9. **International Collaboration:** Enhance global mobility of Indian workers through mutual recognition of skills with partner countries.

Conclusion -

Skill development in India stands at a crossroads. On the one hand, the country has made significant strides in building an institutional architecture, launching ambitious programs, and recognizing the strategic importance of skills. On the other hand, persistent challenges of quality, mismatch, inclusivity, and perception hinder the realization of its full potential. As India aspires to become a $5 trillion economy and a global knowledge hub, the centrality of skill development cannot be overstated. It is both an economic imperative—to meet the demands of a rapidly evolving labour market—and a social necessity—to empower millions of youths, reduce inequalities, and ensure inclusive growth. By learning from global best practices, leveraging technology, and fostering stronger partnerships between government, industry, and civil society, India can transform its demographic dividend into a powerful engine of growth and human development. The success of skill development will ultimately determine whether India's young population becomes its greatest asset or its most daunting challenge.

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References –

- Becker, G. (1964). *Human Capital: A Theoretical and Empirical Analysis*. University of Chicago Press.
- Blom, A., & Saeki, H. (2011). *Employability and Skill Development in India*. World Bank.
- CAG. (2019). *Performance Audit of Skill Development Schemes*. Government of India.
- FICCI & Ernst & Young. (2019). *Future of Jobs in India: Enterprises and Livelihoods*.
- ILO. (2018). *Global Employment Trends for Youth 2018*. International Labour Organization.
- Ministry of Skill Development and Entrepreneurship (MSDE). (2022). *Annual Report*. Government of India.
- National Skill Development Corporation (NSDC). (2018). *Sector Skill Gap Reports*.
- United Nations Population Fund (UNFPA). (2023). *State of World Population Report*.
- World Economic Forum (2020, 2023). *The Future of Jobs Reports*. Geneva: WEF.

Financial Inclusion and Digital Payment Ecosystem

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Abstract:

The journey of India towards becoming a developed nation by 2047 is deeply linked with the expansion of financial inclusion and the transformation of the digital payment ecosystem. Over the past decade, innovations like the Unified Payments Interface (UPI), Aadhaar enabled Payment Systems, mobile wallets, and Direct Benefit Transfer (DBT) have significantly reduced financial barriers and brought millions into the formal financial system. However, the vision of Viksit Bharat 2047 requires going beyond mere access to financial services. It demands a holistic framework where digital payments are inclusive, secure, affordable, and capable of empowering every citizen particularly those in rural and marginalized communities.

This chapter explores the role of digital payment infrastructure in accelerating financial inclusion and its potential to drive equitable economic growth. It highlights how fintech innovations, regulatory reforms, and public private partnerships are reshaping India's financial landscape. The study also examines key challenges such as digital literacy, cybersecurity risks, infrastructural gaps, and regional disparities in adoption. Further, the paper proposes strategic policy measures including financial literacy campaigns, robust digital infrastructure in rural areas, affordable micro credit through digital platforms, and enhanced cybersecurity mechanisms to ensure trust in the system.

By integrating innovation with inclusive practices, digital payments can act as a catalyst for sustainable development, women empowerment, entrepreneurship, and poverty reduction. The chapter concludes that financial inclusion powered by a strong digital payment's ecosystem will not only strengthen India's domestic economy but also position it as a global leader in fintech driven inclusive growth by 2047.

Keywords: Digital Payments, Financial Inclusion, FinTech, Viksit Bharat 2047, Empowerment

1. Introduction

The vision of Viksit Bharat 2047 a developed, inclusive, and globally competitive India by its centenary rests on the foundation of financial inclusion. Financial inclusion ensures all individuals and enterprises or Businesses have access to affordable and effective financial services a bedrock for equitable growth. In India, where a large population remains outside traditional banking channels, digital payments have emerged as a transformative lever to bridge this divide. Over the past decade, technologies like the Unified Payments Interface (UPI), Aadhaar based services, and mobile wallets have revolutionized access to finance, fostering both economic empowerment and inclusivity.

This chapter explores the evolution of India's digital payments, their pivotal role in advancing financial inclusion, growth opportunities, challenges, and strategic pathways for a digitally inclusive society by 2047.

2. Evolution of Digital Payments in India

2.1 Early Moves: NEFT, RTGS, Cards

- **NEFT** (National Electronic Funds Transfer) is a nation-wide centralized electronic payment system owned and operated by RBI that allows for quick and secure transfer of money from one bank account to another across the country. It works in baches to settle transaction and is available 24 hours a day, 7 days a week, all year round.
- **RTGS** (Real Time Gross Settlement) is a system for transferring money instantly and individually between bank accounts which means each transaction is processed one by one without any waiting or delay, providing immediate and final payment to the recipient. It is mostly preferred for high value transaction. The transaction once processed it is irrevocable.
- **Debit or Credit Card :** Debit card or prepaid card are ways to spend money you already have. Credit card are ways to borrow money.
  Prior to digital banking expansion, India relied on NEFT (National Electronic Funds Transfer) and RTGS (Real Time Gross Settlement) systems for fund transfers, and debit or credit cards among urban populations, with limited reach into rural or lower income segments.

2.2 JAM Trinity & PMJDY

JAM Trinity refers to the government of India's initiatives to link Jan Dhan accounts, Mobile, and Aadhar for identification to implement direct subsidy transfer and prevent leakages of government's subsidy. Launched in 2014, the Pradhan Mantri Jan Dhan Yojana (PMJDY) opened millions of zero balance accounts key to expanding banking access (Wikipedia, 2025). Together with Aadhaar and mobile connectivity, it formed the JAM Trinity a powerful enabler for direct benefit transfers and financial inclusion.

2.3 UPI (Unified Payment Interface) Revolution

UPI is India's real time payment system, developed by National Payment Corporation of India (NPCI) that allows instant fund transfer between bank accounts by integrating multiple banks account into a single mobile application. Example G-Pay, Paytm, Phonepe etc. that acts as interface for UPI users.

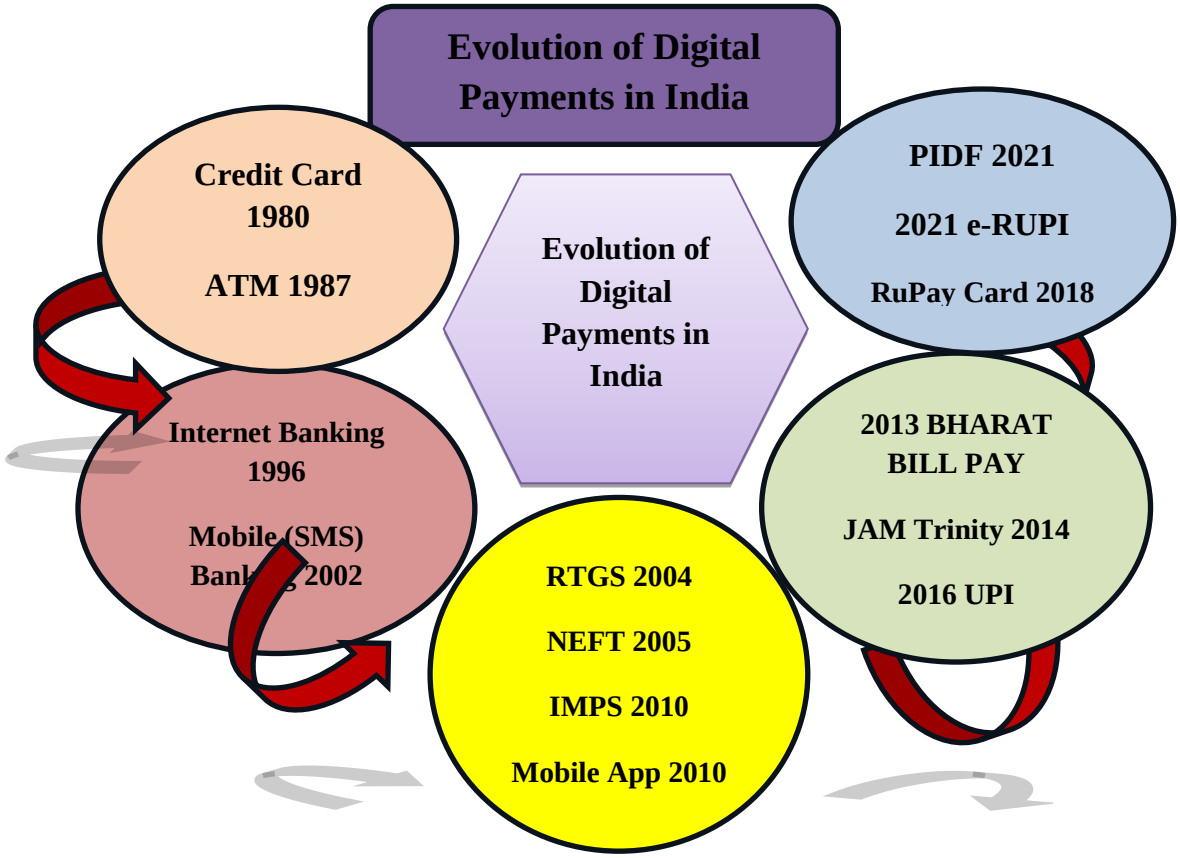
Introduced in 2016, UPI revolutionized Indian payments with instant, low cost, interoperable transfers. In October 2024, UPI processed 16.58 billion transactions amounting to ₹23.49 lakh crore, reflecting remarkable monthly volumes. By FY2023-24, UPI volume had grown from 92 crore to 13,116 crore transactions at a CAGR (Compound annual growth rate) of 129%, with expectations to cross 20,000 crores in FY2024-25. Daily UPI transactions skyrocketed from 40 million to 550 million over five years, dominating India's digital payment landscape.

2.4 Infrastructure Boom: PIDF & Touchpoints

PIDF is Payment Infrastructure Development Fund scheme to boost the acceptance of digital payments by providing subsidies to service providers for setting up payment acceptance devices like POS (Point of sale) terminals and QR codes.

To expand terminals in tier-3 to tier-6 towns and underserved regions, RBI initiated the Payments Infrastructure Development Fund (PIDF) in 2021. By May 2025, it had

established about 4.77 crore digital acceptance points. Over six financial years (2019-20 to 2024-25), India recorded more than 65,000 crore digital transactions, totaling over ₹12,000 lakh crore.



3. Financial Inclusion: Concept and Importance

Financial inclusion is the efforts to make financial service accessible and affordable to all individuals and businesses, particularly those who are underserved or marginalized. Its main purpose is to remove the barriers that exclude people from participating in financial sectors and using these services to improve their lives or standard of living. Also called Inclusive finance.

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Importance of Financial Inclusion: -

- Increasing the saving habit among the individuals.
- Boost the Indian Economic by engaging individual in economic activity by using multiple digital tools to accept and make payments.
- Emphasized on creating financial awareness among citizen who are not interested to use the banking service or financial service.
- Help to offer convenient and cost-effective banking service.
- Focus specially on women and old age population as they were most un-served population for banking service.
- Making banking service easy and less tedious to individual.
- Its help to reduce the poverty and inequality by inculcating the banking or saving habits among population.
- Support small business to get the funds easily for their business activity.

The RBI Financial Inclusion Index (FI Index) reached 67.0 in March 2025, up from 64.2 the previous year highlighting improved access, usage, and quality across banking, investments, insurance, postal services, and pensions. PMJDY alone registered 55.98 crore beneficiaries, with 6.65 lakh accounts opened in a single month under focused financial inclusion drives. India's inclusive growth has also been supported by its Digital Public Infrastructure (DPI) framework including Aadhaar, UPI, and open APIs enabling scalable and interoperable services. As many as 80 percent of Indian adults held bank accounts by 2021, up significantly from 35 percent in 2011.

4. Role of Digital Payments in Advancing Financial Inclusion

Digital payments dismantle traditional barriers to banking by enabling:

- **Easy access to Financial Services:** People across India can use mobile wallet, UPI, Aadhar Linked account to run the payment transaction. Because even a small smart phone and internet help them to get connected to financial services.
- **Lower cost & Convenience:** Digital payment reduces the dependency on cash and eliminate travel cost to bank and ATM. Small Merchant can get the payment instantly by using QR code scanners or UPI id without extra charges.
- **Direct Benefit Transfers (DBT):** Leveraging JAM, DBT reduces leakages and ensures subsidies reach intended recipients. Increasing the Digital transparency and security.
- **Empowering Women and Marginalized groups:** Women and rural household can control their money safely in digital account instead of depending on others. Migrant worker can now send money directly to their family without depending on other to transfer money.
- **Inclusion of Rural Population:** With infrastructure like PIDF backed touchpoints and CSCs, even remote areas are now connected to banking services. The villager now has access to digital methods of payment which make them to manage their expenses easily without vising to bank physically and by avoiding the long and hectic queue for cash withdrawal.

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- **Empowering MSMEs:** Platforms like UPI and Bharat BillPay (now Bharat Connect) enable MSMEs and small merchants to receive instant payments, manage bills, and improve cash flow. It also helps the small businesses to get the fund for managing their business without visiting the bank through DBT by availing the various government scheme such as Pradhan Mantri Mudra Yojana, MSME Loan, Prime Minister Employment Generation Programme, PM SVANidhi (for Street vendors), e-NAM (for farmers)

Some of Graphical Representation of Data

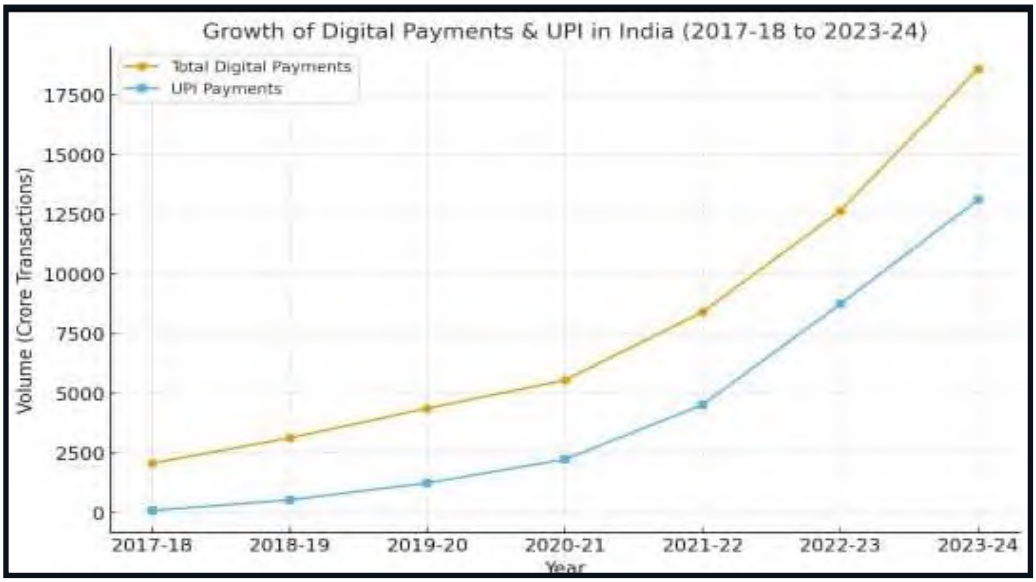

Fig.1. Source: Department of Financial service

Fig.1.Growth of Digital Payment

- In 2017-18 India did around 2000 crore digital transactions.
- In 2023-24, this number became 18500 crores (Almost 9 times growth in just 6 year)
- *Example earlier Tea stall, Pan Shop asked for cash. Now even a small tea stall or Pan Shop or even the Beggers as QR code this is the power of digital payment.*

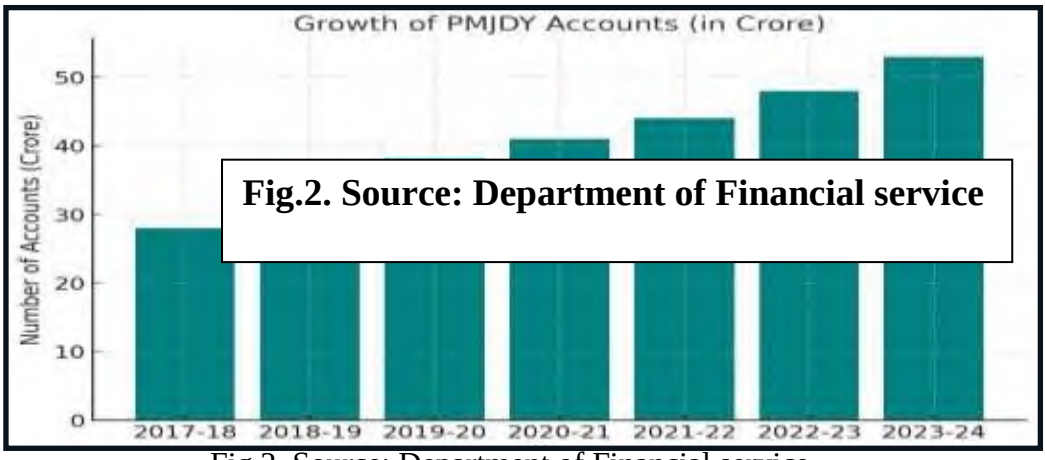

Fig.2. Source: Department of Financial service

Fig.2. Source: Department of Financial service

Fig.2. Growth of PMDJY

- PMJDY bank account increased from 28 crore to 53 crore.
- These accounts gave poor households their first bank account, debit card and access to schemes.
- *Example, earlier government subsides leaked through middle man. Now money directly comes into Jan Dhan Accounts*.

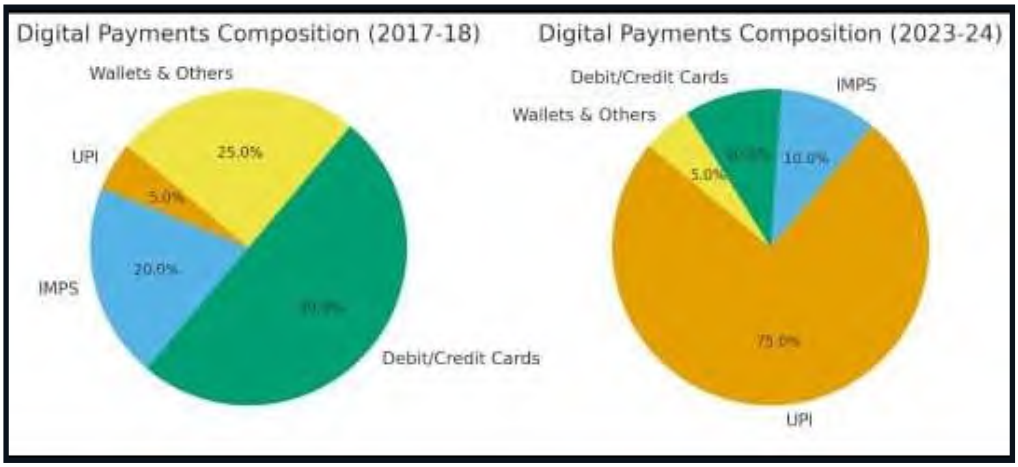

Fig.3. Source: Department of Financial Service

Fig.3.Digital Payment Composition

- In 2017-18, UPI was tiny just 5% of total payments.
- Today, UPI is a super hero doing 75% of all digital transaction.
- Earlier people mostly use debit/credit card and wallets for conducting payment transaction. Now UPI dominate and card and wallets are secondary.
- *Example, "Out of every 4 online payments in India, 3 are UPI." People used wallets for payment for conducting any transaction and now they prefer QR code or UPI id for completing the transaction.*

5. Opportunities for India's Growth

5.1 Global Expansion & Fintech Leadership

India is already a global leader in real time payment transaction. India's indigenous UPI and RuPay systems are being positioned for global adoption. UPI is already functional in UAE, Bhutan, and Singapore, with pilots in countries like Nepal and France.

5.2 Inclusive Innovation

Fintech companies like Paytm, Razorpay, Pine labs, Bharatpe, Bill desk,Phonepe etc driving financial inclusion, with significant growth in digital lending, Saas and payment solutions.

5.3 Local Ecosystems: Case of eSamudaay

Startups like eSamudaay enable local entrepreneurs to create e-commerce platforms using open-source tools and the ONDC network supported by DPI and facilitating access to UPI based credit and services.

5.4 Women's Empowerment

Though digital adoption among women remains low (25%), they tend to be safer and more engaged users. It equips women with the tools to earn, lead, and transform their communities Customized services like UPI 123 can empower women micro-entrepreneurs in less digital savvy contexts. UPI 123 is offline payment system or

service provide by NPCI that enables user to make digital transaction without internet connections or a smartphone.

6. Challenges and Barriers

- **Digital Literacy and Awareness:** Account dormancy 48 percent of accounts saw no activity particularly among rural and low-income users, remains a concern**.** As of 2025 under 33% of Indian youth aged 15-29 are proficient enough to browse the internet or making online transaction, under scoring widespread limitation inn digital literacy that heighten vulnerability to cyber fraud.
- Many rural populations remain hesitant to shift to digital financial services due to language barrier, distrust in digital mode and limited behavioral familiarity or the hectic and tedious registration process for digital transaction.
- Only 33% of women use the internet compared to 57% of men. The accounts they open often for receiving government benefits remain underutilized for regular transaction.
- **Cybersecurity and Fraud:** Incidents such as 'mule accounts' and outdated KYC pose serious risks. In Kerala alone, 57 lakh PMJDY accounts require re KYC to avoid subsidy blockage. Advance fraud detection measure needs to be taken to make the online transaction more secure and safe. With the rise of internet usage, cyber crimes such as phishing, fraud and cyber bullying are also rising, particularly among user with less awareness of safe practices.
- Some recent examples of cyber fraud
    - **Digital Arrest scams**: A retired government employee in Hyderabad lost Rs.72 Lakh after scammer impersonated IPS and supreme court Officials via Whatsapp Video calls.
      (The Times of India)
    - **Job Scam via social media**: In Karnataka a women lost Rs.1.3 Lakh after falling for a fake work from home job recruited via Instagram and Whatsapp. (The Times of India)
    - **Malware via Wedding card:** A Maharashtra government employee clicked a Whatsapp "Wedding invite" link, triggering malware that drained their bank account. (The Economics Times)
- **Infrastructure Gaps:** While digital touchpoints are increasing, rural electricity and network reliability still need strengthening. Some out area of our country is still not blessed with the proper internet or electricity which make them away from the fruit of digitalized financial services.
- As of 2024, India has 82% internet penetration in urban areas, but only about 46% in rural areas **(TRAI Report).**
- Power cut still affects 25-30% of rural India regularly (**Central Electricity Authority data)**
- India crossed 13 billion UPI transactions in July 2024, but NPCI reported around 1-1.2% transactions failure, mostly due to infrastructure and server issues.

7. Policy Measures & Strategic Pathways for 2047

To build a digitally inclusive India, the following multi-pronged strategies are essential:

- **Enhance Infrastructure**: Expand PIDF supported touchpoints, and leverage CSCs for last mile services.
- **Promote Digital Literacy**: Run nationwide campaigns, especially focused on rural areas and women.
- **Support FinTech Startups**: Foster innovations like micro merchant tools, pre-approved credit on UPI, and women centric financial products.
- **Robust Cybersecurity Measures**: Strengthen KYC norms, fraud detection, and data protection frameworks.
- **Encourage Partnerships**: Enable public private collaborations for scale and outreach.
- **Monitor Progress**: Continue using tools like the RBI FI Index to track and guide inclusion efforts.

8. Case Studies and Best Practices supporting the financial inclusion and digital payment.

- **KSRTC (Karnataka State Road Transport Corporation):** Implemented UPI enabled electronic ticketing machines on buses in Chamarajanagar division boosting monthly digital fare collection from ₹7.9 lakh in November 2024 to over ₹1 crore by March 2025, totaling ₹3.2 crore in five months. This reduced cash dependency and simplified operations for both passengers and staff. (The Times of India)
- **Nagpur Railway Division:** Became a leader in QR based payments across Central Railway, enabling quick UPI and mobile transactions at ticket counters streamlining service and reducing congestion. (The Times of India)
- **Nagaland–SBI e-GRAS Integration:** Recently, SBIePay was integrated with the state's e-GRAS system, enabling seamless, transparent digital payments for government receipts like taxes and fees. (The Times of India)
- **India Stack & UPI:** Foundational Digital Infrastructure Unified Payments Interface (UPI) + India Stack India's UPI, built atop the India Stack (Aadhaar, Jan Dhan, etc.), offers frictionless, real time digital payments. By 2025, it processed over 600 million transactions daily. The foundational stack has also enabled innovations like Aadhaar Enabled Payment System (AEPS), which facilitated 100 million+ monthly transactions in rural regions, giving access to banking via biometric authentication. (Financial Times, Finextra Research, IMF)
- **Global Financial Impact:** As reported in The New Yorker, India's digital public infrastructure (DPI) supports approximately 10 billion payments every month about half of global real time digital payments. This digital "stack" saves an estimated $34 billion from 2013 to 2021 by reducing corruption, directly delivering benefits, and empowering local vendors (The New Yorker)

9. Future Vision: Digital Finance in Viksit Bharat 2047

Looking ahead, India's digital finance ecosystem could evolve into:

- Every Indian (100% Population) will have a digital bank account linked with UPI. The Aadhar +Block chain will help to access the banking service from any where and any time without any geographical boundaries or any barriers.
- In the upcoming year's the remotest part of the India will be digitally well connected with the help of satellite internet. The people of such area will have

good option of payment either online or offline with the help of satellite and Mash network connectivity.

- A cashless, paperless, presence less economy featuring seamless user experience and AI driven customer interfaces. This feature will less emphasis on the need of physical cash for performing any transaction which will make the India Economy cashless.
- Integration with CBDCs (Central Bank Digital Currency's), AI, and blockchain for transparent, inclusive, and efficient services. The block chain will be used for land records and smooth functioning of taxation, pension, subsidies, MSME Credit transaction.
- A globally admired fintech hub, exporting DPI (Digital Public Infrastructure) successes and nurturing innovations from Bharat to the world. India will remain the largest real time payment ecosystem in the world, exporting its idea and its model to Africa, Asia and Latin America. *India fintech will be global giants much like today's tech companies.*

10. Conclusion

Digital payments have become the backbone of financial democracy in India driving inclusion, efficiency, and empowerment. Success will hinge on nurturing infrastructure, literacy, innovation, and trust, especially in underserved areas. With strategic investments and inclusive policies, India has the opportunity to fulfill its Viksit Bharat 2047 vision becoming a global leader in fintech driven, inclusive growth. This vision can be achieved successfully by focusing on loopholes to rectify it on timely basis and strengthen the strong point. The role of the Individual and Government will be going to play vital role in transforming the digital payment ecosystem in more inclusive way. India as a good brain in the field of the fintech so an effective utilization of it can create a strong stand of India in the global market. With the growth of the digital environment, India also has to tackle the cyber security issues in more innovative way so that it can help to gain the trust of the Individual.

Digital Finance in Viksit Bharat 2047 is Inclusive, Intelligent, International, and Integrity driven. It will not just be about "Cashless India" but about "Empowered India".

References:

1. Ministry of Finance. (2025, July 28). Indian digital payment landscape witnesses over 65,000 crore digital transactions amounting to more than Rs. 12,000 lakh crores in last 6 Financial years. Press Information Bureau.
2. Economic Times Intelligence. (2025, June 3). India 2025 analysis of payments and ecommerce trends. Payments CMI.
3. Financial Services Dept., India. (2024, July 31). Digital Payments. Ministry of Finance.
4. Press Information Bureau. (2024, December 1). UPI: Revolutionizing Digital Payments in India.
5. Press Information Bureau. (2025, August 6). RBI's Financial Inclusion Index rises to 67 in 2025 indicating Growth for Everyone.

6. FHI 360. (n.d.). India Digital Financial Inclusion | Journey Map Report. mSTAR Project.
7. Atlantic Council. (2024, October 21). How digital public infrastructure can support financial inclusion.
8. Wikipedia. (2025). Pradhan Mantri Jan Dhan Yojana.
9. Wikipedia. (2025). JAM Yojana.
10. Investopedia (2025). Financial Inclusion
11. NPCI. (2025). Unified Payments Interface. Wikipedia.
12. Wikipedia. (2025). Bharat Connect (BBPS).
13. Economic Times. (2025, May). "67 and Rising: India's Financial Inclusion Gains Momentum". PIB.
14. Times of India. (2025, June 5). T Wallet hits 16 lakh users, 4 cr transactions.
15. Times of India. (2025, recently). 4,540 panchayats covered under financial inclusion campaign.
16. Times of India. (2025, recently). Sehwag-backed Getepay targets 2.5 million merchants by 2027.
17. Financial Times. (2025, recently). eSamudaay: powering entrepreneurs in rural towns.
18. Women's World Banking. (2024). Enabling Digital Payments For Women In India.
19. RBI / EY. (2023). How recent changes to UPI are helping fill India's credit gap.
20. Cureus Journals. (2025). The Role of Digital Payment Systems in Advancing Financial Inclusion in India.
21. IJPREMS. (2025). Impact of Digital Payments on Financial Inclusion.
22. DataForIndia. (2025). Retail payments in India.
23. New Yorker. (2024). Can the Internet Be Governed?
24. Reuters. (2025). Mary Ellen Iskenderian's mission to ensure one billion women have bank accounts.

The Role of Artificial Intelligence in the Development of Education in India

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Abstract :

Artificial Intelligence in Education (AI in Education) has evolved from the first *computer-based learning systems in the 1960s to the advanced tools of today. AI is currently transforming education by personalizing learning, supporting teachers in their work, and reducing administrative burdens. It offers new ways to reduce gaps in education, but also raises concerns about fairness, equity, ethics, and equal access. Organizations such as UNESCO emphasize the need for responsible use of AI to achieve the Education 2030 Agenda and the Sustainable Development Goals. In India, the use of AI, as outlined in the National Education Policy 2020, holds promise for modernizing classrooms, ensuring equal opportunities, and supporting student-centered learning. The theme of World Education Day 2025 is "Artificial Intelligence and Human Potential." It explores the benefits and challenges of AI in education, with a special focus on India's unique and diverse education system.*

Keyword : AI in education, Educational technology, Adaptive learning, Digital inclusion, Indigenous education.

Introduction :

AIED began in the 1960s, when educators and researchers recognized computers' potential to improve education. Computer-based learning systems use programmed instructions to make students experience interactive learning outcomes. These systems are designed to provide personalized instruction to students based on their individual needs and learning styles. Artificial Intelligence (AI) has the potential to address some of the biggest challenges in education today, drive innovation in teaching and learning practices and accelerate progress towards Sustainable Development Goal. At the same time, rapid technological development also brings with it a number of risks and challenges. These risks and challenges have so far gone beyond policy debates and regulatory frameworks. UNESCO is committed to harnessing the potential of AI technologies and supporting Member States to achieve the Education 2030 Agenda. It also ensures that its use in the educational context is guided by the fundamental principles of inclusiveness and equity.

Artificial intelligence (AI) in education is the use of computer systems to perform tasks that require human intelligence. It improves learning experiences, simplifies administrative processes, and assists teachers in their educational work. Artificial intelligence technologies include machine learning, natural language processing, and robotics. It personalizes learning by customizing content and pace according to the individual needs of students. This personalized approach helps address different learning styles and pace. It ensures that each student receives the attention and resources needed to succeed.

The primary goal of AI in education is to better understand and meet the specific needs of students. Increase the quality and effectiveness of teaching and learning through the use of technology.

In the 21st century, Artificial Intelligence is emerging as a revolutionary force in transforming the education system across the globe. India is known for its rich cultural heritage and diverse education system. Also using Artificial Intelligence (AI) in education in India can open the door to innovative learning experiences. International Education Day will be celebrated worldwide from 24 January 2025 under the theme *"Artificial Intelligence and Human Capabilities"*. This year, the focus will be on how artificial intelligence (AI) is transforming education, with human capabilities at the centre. Artificial Intelligence (AI) is defining the future of education in India. It is providing unprecedented solutions to bridge the education gap and improve teaching methods. Which will ensure access to quality education for all students. These initiatives are in line with the National Education Policy 2020. Which emphasizes the integration of technology to modernize the educational framework and personalize and facilitate learning across diverse socio-economic backgrounds.

Early Uses of Artificial Intelligence in the Classroom:

In the 1970s and 1980s, artificial intelligence (AI) began to be used in classrooms. One of the big steps was the creation of Intelligent Learning Systems (ILS), which provided students with personalized learning. These systems used AI to change the content and pace of lessons according to the progress of each student, making learning more flexible. Another important development was the application of Natural Language Processing (NLP) to language learning. With NLP, students could speak to computer programs in their own and normal language, helping them improve and refine their language skills in a more fun and interactive way.

Artificial Intelligence (AI):

1. *"Artificial Intelligence (AI) is the ability of computer programs or machines to learn from human behaviour and thinking and act in ways similar to humans."* AI systems can solve complex tasks that are difficult or impossible for humans to handle alone.

2. *"Artificial Intelligence (AI) is a field of computer science that enables machines to perform tasks that typically require human intelligence, such as problem solving, learning, and decision making."*

AI works like the "brain" in voice assistants, YouTube recommendations, and self-driving cars. It means teaching computers to do things that usually need human intelligence. Example - recognizing pictures, understanding language, following directions, and making decisions.

What is Artificial Intelligence in Education?

Artificial intelligence in education is the use of intelligent technology to improve teaching and learning. Many applications of artificial intelligence in education make learning easier and teaching more effective.

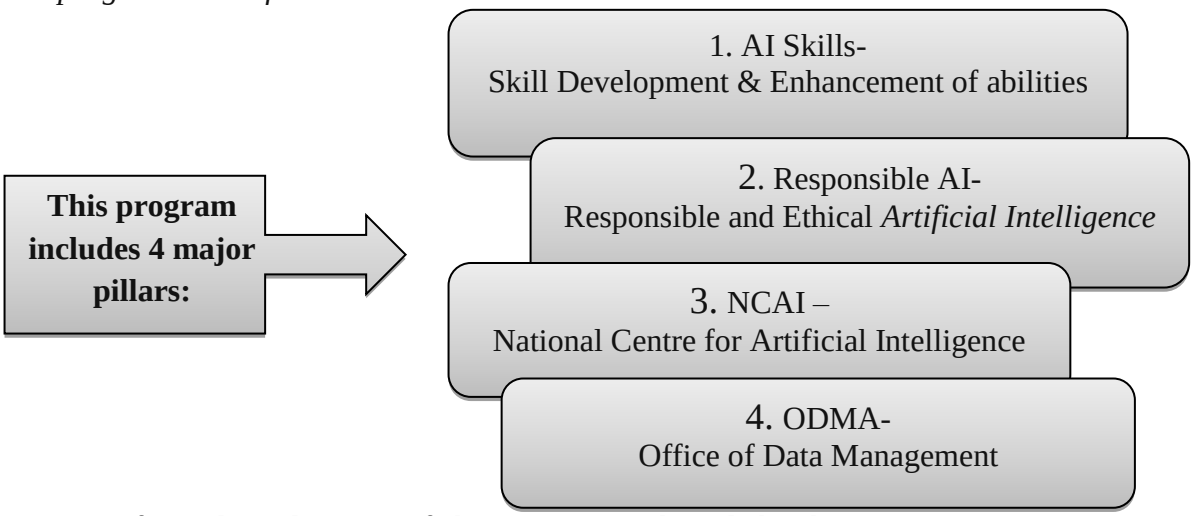
Artificial intelligence can analyse student progress, personalize lessons, and even automate tasks like grading and attendance. These platforms use artificial intelligence tools in education to help both students and teachers. Artificial intelligence can create tests, provide feedback, and adjust the difficulty level of content. Artificial intelligence tools play a central role in educational technology platforms. In short, artificial intelligence brings a data-driven, personalized, and effective approach to education.

Government Initiatives: AI in Education

The National Education Policy (NEP) 2020 has emphasized the inclusion of contemporary subjects such as Artificial Intelligence (AI) in school curriculum. In line with this, NCERT is developing a new National Curriculum Framework that could include AI at the secondary level. AI in education is being used to enhance personalisation, efficiency and administrative ease, allowing teachers to focus more on student engagement.

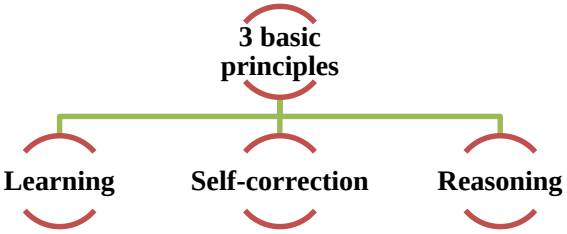
At the higher education level, AICTE has advised institutions to offer AI as an elective in B.Tech. Indian Institutes of Technology (IITs) offer various AI-related courses and also run short-term programs for professionals and students

*The Ministry of Electronics and Information Technology **(MeitY)** in India regards **Artificial Intelligence (AI)** as a transformative technology capable of achieving social impact, innovation, and human empowerment. To achieve this, the Ministry launched the "**National Programme on Artificial Intelligence.**" The main 4 pillars of this program are as follows:*



Apart from this, elements of data, AI research and development, computing infrastructure and AI governance are also important pillars of this initiative. The program aims to make India a leading AI-enabled nation.

AI tools often follow 3 basic principles:



- **Learning –**

AI systems learn from data, patterns, and past experiences. By adapting to new information, they improve their performance over time.

For example, Netflix learns your preferences by watching the movies you select and then recommends similar movies.

- **Self-correction :**

AI systems can adjust and improve when they make mistakes, ensuring accuracy and reliability over the long term.

For example, The more you use a Voice Assistant, such as Alexa or Siri, the better it will understand your accent.

- **Reasoning:**

AI tools use logic and algorithms to make decisions, solve problems, and draw conclusions, often in a similar way to human thinking. *For example, Google Maps determines the best route by taking traffic, distance and time into account before displaying the fastest option.*

Best AI Tools for Educational Purposes

AI Tools For Researchers	
AI Tool	**Main Use**
ChatGPT	Explanations, Drafting and Q&A support
Elicit	Finds & Summarizes research papers
Seeing AI	Accessibility support for research
Grammarly	writing clarity and Grammar checking
Quillbot	Summarizing, paraphrasing & citations

AI Tools For Teachers	
AI Tool	**Main Use**
Khanmigo	Teaching assistant & AI tutor
Explain Everything	Interactive whiteboard for courses/lessons
Otter.ai	Transcribes lectures & discussions

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AI Tools For Students	
AI Tool	**Main Use**
Quizlet	Quizzes, practice tests & AI flashcards
Google Lens	Explain or translate text from images
Socratic (Google)	Explains concepts and Solves homework,
Immersive Reader	Reading help & accessibility
Duolingo	Personalized language learning
Notion AI	Study guides, notes & productivity

Artificial Intelligence (AI) for Universal Access to Education.

According to Bernard Marr "AI tools can improve access to education in many ways":

- AI tools help students learn subjects not offered in their school or at a level they need.
- AI tools make a global classroom where people speaking different languages or those with vision or hearing problems can learn.
- AI tools support students who cannot go to school because of illness.

Current Uses of AI in Education:

1. **Personalized learning/Education**

Artificial intelligence helps identify what a student knows and what they don't know. It creates a personalized learning program for each student, taking into account their weaknesses. In this way, artificial intelligence adapts learning to the specific needs of students and increases their efficiency.

AI in education facilitates personalized learning by customizing learning content to the individual needs of students, benefiting students, teachers, and resource-poor schools. This approach empowers students to progress at their own pace, engage in activities that match their learning style, and gain greater autonomy in their educational journey.

2. **Contribute to task automation :**

Simplification of administrative tasks: Grading, assessing, and providing answers to students is a time-consuming activity that teachers can optimize using AI. The inclusion of AI in the grading process is revolutionizing the traditional way of assessing student performance. AI can increase grading efficiency, accuracy, and fairness by significantly reducing grading time and providing immediate and detailed feedback. This allows teachers to assign more writing tasks and provide timely, constructive feedback, leading to better writing skills in students.

3. **Intelligent tutoring systems :**

AI tutors save teachers a lot of time, as they don't need to spend extra time explaining difficult topics to students.AI tutoring systems can provide adaptive and

accessible learning experiences. Offering immediate feedback and corrective guidance based on student progress.

4. **Automated grading and feedback :**

These tools use artificial intelligence to grade assignments and provide detailed feedback, thereby streamlining the grading process, ensuring consistency and saving teachers time. Artificial intelligence can also evaluate abstract assessments, such as essays, and analyse the content to ensure consistency and relevance.

5. **Administrative applications :**

Artificial intelligence tools can optimize lesson planning and content creation, saving teacher's valuable time. These tools can produce high-quality images, personalized content and targeted research materials in limited time. By using artificial intelligence for effective research and content creation, teachers can improve the quality of lessons without increasing their workload, which will benefit both students and schools with limited resources.

Opportunities/Benefits of AI in Education

1. **Adaptive learning:**

Artificial intelligence-powered platforms assess students' knowledge in real time and tailor learning to their individual needs. These systems dynamically adjust lessons based on student feedback, offering personalized programs that help them learn at their own pace.

2. **Personalized Learning:**

Artificial intelligence-powered learning platforms provide personalized learning experiences by adapting to students' unique ways of understanding concepts. This reduces cognitive load and ensures that each student receives learning tailored to their learning style and pace.

3. **Digital education.**

Artificial intelligence is enhancing digital classrooms by providing engaging videos and interactive simulations. Tools like near pod use artificial intelligence to deliver engaging and effective learning experiences through interactive classes and real-time student feedback.

4. **Easy access:**

Adaptive platforms use voice recognition software, text-to-speech software, and Natural Language Processing to answer students' questions and clarify doubts. This ensures that students clearly understand the material before moving on to the next concept.

5. **Improving skills development:**

AI in education not only helps students learn academic skills but also helps them develop soft skills. Personalized learning promotes critical thinking, problem solving, and creativity. It provides targeted support to help students develop specific skills.

6. Interdisciplinary learning:

Artificial intelligence is breaking down barriers between disciplines, fostering interdisciplinary learning. This helps students understand the interrelationships of different fields of study. Tools like Wolfram Alpha use artificial intelligence to demonstrate real-world applications of various theories.

7. Interactive and Learning Games:

AI improves educational games by providing engaging and adaptive learning experiences. These games use AI to provide tasks and challenges that adapt to student responses, thereby increasing active engagement and understanding of complex topics.

8. Professional Development:

Artificial intelligence provides personalized professional development opportunities for teachers by providing them with curriculum and tools based on their career goals and teaching needs.

9. Data and Learning Analytics:

AI helps analyse data obtained from online learning portals, class attendance, and grades. This data provides information about student performance, helps teachers identify trends, and makes suggestions to address gaps in understanding and performance.

10. Efficient Learning/Cost-effective learning

Artificial intelligence is making education more cost-effective by automating administrative tasks and providing scalable educational solutions.
Furthermore, AI-powered learning platforms can reach a large number of students at a low cost. As a result, a larger number of people will have access to high-quality education. This scalability helps reduce the overall cost of education and ensures access to quality education to more students.

Challenges and Limitations of AI in Education

1. Privacy and Security Concerns:

Privacy risks have been a concern since the advent of AI. What personal data is being collected, how it is being used, and whether there is any control over it. The most important AI-related concerns in education are data privacy and security. To operate effectively, AI systems require large amounts of data, including sensitive information about students' academic performance, background, and even behaviour.

Inadequate security measures can lead to data leaks, the disclosure of sensitive student information to unauthorized persons, and possibly lead to other forms of personal data theft or misuse.

2. Less human contact :

The lack of human touch in education is a serious flaw of AI, which dehumanizes the learning experience. Traditional education relies heavily on human interaction. Teachers don’t just provide academic information and instruction. They

also provide emotional support and guidance. Teachers should keep this in mind and take care to identify and meet students' social and emotional needs.

3. Accessibility and Equity :

AI is making education more accessible. But it has also widened the digital divide. Implementing AI technologies often requires significant investments in infrastructure, such as high-speed internet, modern equipment, and on-going technical support. Schools in developing countries or low-income areas may lack these resources. This can put students at a disadvantage. Ensuring equal access to AI tools and resources is critical to preventing further disparities in education.

4. High Implementation Costs :

The cost of AI in education depends on how schools use it. Teachers can use AI in lesson planning. Such simple generative AI systems cost little. But large adaptive learning systems cost thousands of rupees. Furthermore, keeping the systems up to date and training employees to use them effectively has significant long-term costs.

5. Ethical Concerns:

There are risks to intellectual property when using AI tools. This is because AI content is created from existing material. This creates the risk of plagiarism and copyright infringement.

AI does not have the human skills to interpret blocks of text and understand the big picture. So it can easily copy what it finds and present it as usable content. Such ethical concerns include privacy, security, plagiarism, inequality, and potential disruption of the job market. Therefore, careful consideration is required when integrating AI into education.

6. Dependence On Technology :

The increasing reliance on technology in education is another serious concern due to the development of artificial intelligence. As educational institutions increasingly use AI-based tools for teaching, assessment and administrative tasks, the risk of over-reliance on these technologies increases.

Such reliance can lead to serious disruptions in the event of a technical failure or cyber-attack. Furthermore, the development of critical thinking and problem-solving skills in students is being hampered. Because they can use artificial intelligence to provide answers and solutions.

Conclusion:

Artificial intelligence is emerging as a transformative force in India's education system. Online platforms, with the help of AI, are changing traditional education by making learning more personal, faster, and easier to access. They also help students stay interested and gain the skills needed for the future. By working together-teachers, policymakers, technology experts, and communities-AI can be used to create an education system that is fair, modern, and balances new ideas with responsibility.

References:

1. Bagai, S. and Nundy, N. (2009). Tribal Education: a Fine balance, Dasra, Mumbai,Research
2. Ahmet Gocen, Fatih Aydemir, (2020),Artificial Intelligence in Education and Schools, Education and Media vol.12,
3. Aniella Mihaela Vieriu and Gabriel Petrea (2025), The Impact of Artificial Intelligence (AI) on Students' Academic Development, Education Sciences https://doi.org/10.3390/educsci15030343
4. Milad Shahvaroughi Farahani and Ghazal Ghasmi, (2024), Artificial Intelligence in education: A comprehensive study, Vol. 2 No. 3
5. Adams, J., & Zhang, L. (2024). Artificial intelligence in education: Transforming pedagogy and learning outcomes. Computers & Education, 178,
6. Kandula Neha (2020), Role of Artificial Intelligence in Education, Alochana Chakra Journal.
7. Juan Garzón Eddy Patiño And Camilo Marulanda (2025),Systematic Review of Artificial Intelligence in Education: Trends, Benefits, and Challenges, *Multimodal Technologies Interaction.*
8. Miguel A. Cardona, Ed.D. Roberto J. Rodríguez , Kristina Ishmael (2023), Artificial Intelligence and the Future of Teaching and Learning-Office of Educational Technology.
9. The role of education in AI (and vice versa)'. Retrieved from Mc Kinsey, Kirkland, R. Apr 2018.
10. https://www.ucanwest.ca/blog/education-careers-tips/advantages-and-disadvantages-of-ai-in-education
11. https://drphilippahardman.substack.com/p/a-brief-history-of-ai-in-education
12. https://eicta.iitk.ac.in/knowledge-hub/artificial-intelligence
13. https://nationalskillsnetwork.in/ai-in-education-not-just-a-trend-but-a-necessity/
14. https://www.unesco.org/en/digital-education/artificial-intelligence
15. https://www.digitalindia.gov.in/initiative/national-program-on-artificial-intelligence

Bibliometric Trends of Technology Adoption in Libraries

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Abstract

Libraries have transformed from traditional repositories of books into technology-driven learning spaces, shaped by innovations such as artificial intelligence (AI), Internet of Things (IoT), blockchain, and virtual reality (VR). This paper examines bibliometric trends of technology adoption in libraries from 2000 to 2023, using data from Scopus, Web of Science (WoS), Google Scholar, and leading LIS journals. Bibliometric indicators such as publication output, citation patterns, co-word analysis, and geographical mapping were applied. Findings reveal three phases: early automation and digitization (2000–2010), growth of open access and repositories (2010–2015), and rapid adoption of AI and emerging technologies (2015 onwards). The United States, United Kingdom, and China lead contributions, with increasing outputs from India, Nigeria, and Brazil. Overall, bibliometric evidence shows a shift from book-centric to user-centric models, emphasizing innovation, inclusivity, and sustainable digital access.

Keywords: Technology in Libraries, Bibliometric Trends, Key technologies

Introduction:

The twenty-first century has transformed the nature of libraries, shifting them from traditional custodians of books and manuscripts into vibrant, technology-driven learning environments. Once centered on physical collections, libraries today integrate digital tools, online resources, and smart technologies to meet diverse and evolving user needs. Innovations such as Artificial Intelligence (AI), Internet of Things (IoT), blockchain, big data analytics, and immersive technologies like Virtual Reality (VR) are reshaping how libraries organize, preserve, and disseminate knowledge.

Studying this transformation requires systematic methods. Bibliometric analysis offers a structured framework to evaluate publication patterns, citation frequencies, co-authorship networks, and keyword trends, enabling researchers to trace the intellectual growth of library and information science (LIS). By analyzing bibliographic data, it is possible to identify influential works, leading journals, collaborative networks, and emerging research gaps.

This chapter investigates bibliometric trends of technology adoption in libraries between 2000 and 2023, drawing on data from Scopus, Web of Science (WoS), Google Scholar, and leading LIS journals. The analysis highlights exponential growth in publications after 2015, reflecting global interest in digital repositories, open access publishing, and AI-enabled services. Findings suggest three distinct phases: (1) early emphasis on automation and digitization (2000–2010), (2) expansion of open access and institutional repositories (2010–2015), and (3) the rise of AI, blockchain, IoT, and immersive technologies (2015 onwards).

Geographical mapping shows significant contributions from the United States, United Kingdom, and China, with increasing output from India, Brazil, and Nigeria. Keyword analyses further reveal "AI," "digital transformation," and "smart libraries"

as rapidly growing themes. Overall, bibliometric evidence suggests a clear shift from book-centric to user-centric library models, emphasizing inclusivity, innovation, and sustainable digital access.

By documenting intellectual trends, bibliometrics not only provides insights for scholars and practitioners but also informs strategies for policy development, investment, and sustainable innovation in libraries.

Methodology:

This study relies on bibliometric analysis of publications related to technology adoption in libraries between 2000 and 2023. Data were drawn from academic databases such as Scopus, Web of Science (WoS), and Google Scholar, with supplemental material from Library and Information Science (LIS) journals like College & Research Libraries, Library Hi Tech, Journal of Academic Librarianship, and Scientometrics.

The methodological framework included:

- **Search Strategy:** Keywords included 'library technology,' 'digital library,' 'technology adoption,' 'artificial intelligence in libraries,' 'blockchain,' and 'innovations in LIS.'
- **Data Extraction:** Metrics such as publication count, citation frequency, h-index of top authors, and co-citation networks were examined.
- **Indicators Used:** Citation analysis, co-word analysis, bibliographic coupling, and trend analysis.
- **Bibliometric Laws:** Lotka's Law (author productivity), Bradford's Law (journal productivity), and Zipf's Law (keyword distribution) were applied to highlight research dispersion and concentration patterns.

Historical Perspective of Technology in Libraries

The history of technology adoption in libraries can be traced through several phases:

1. **Pre-Digital Era (before 1980s):** Libraries primarily functioned as print-based repositories with manual catalogs and card indexes.
2. **Automation Era (1980s–1990s):** The introduction of Online Public Access Catalogs (OPACs), barcoding, and integrated library systems revolutionized access and management.
3. **Digitization Phase (2000–2010):** Libraries embraced digital repositories, electronic journals, and early forms of institutional repositories.
4. **Open Access Movement (2010–2015):** Research shifted to digital preservation, scholarly communication, and Open Educational Resources (OER).
5. **AI and Data Analytics (2015–2020):** Libraries began deploying AI chatbots, recommender systems, and data analytics tools for decision-making.
6. **Emerging Technologies (2020 onwards):** Blockchain, IoT, and immersive tools like VR/AR are redefining user experiences and information services.

The methodological framework includes:

1. Search strategy:

- Keywords: library technology, digital library, technology adoption, artificial intelligence in libraries, blockchain, bibliography, innovations in LIS.
- Time period: 2000-2023 (to cover two decades of innovations).

2. Data extraction:

- Publication count, citation frequency, h-index of top authors.
- Co-citation and bibliographic linkage analysis to identify clusters of research.

3. Indicators used:

- Citation analysis: Identifying the most influential papers and journals.
- Co-word analysis: Mapping keyword networks such as AI, digitization, metadata, cloud computing, e-learning.
- Trend analysis: Tracking the rise and fall of research topics over time.

Future Directions:

Looking ahead, the following trends will likely define the next phase of library transformation:

- **Artificial Intelligence:** Predictive analytics, natural language processing, and conversational AI.
- **Blockchain:** Secure copyright management, decentralized authentication of scholarly works.
- **Internet of Things:** Smart library systems integrating RFID, environmental sensors, and personalized services.
- **Metaverse**: Immersive virtual spaces for collaborative learning and research.
- **Sustainability:** Green technologies and eco-friendly library designs to address global challenges.

Conclusions and Discussion:

1. Growth of research output:

- The number of publications on technology adoption in libraries has been increasing steadily since 2005, with an exponential increase after 2015.
- This growth is associated with the growth of digital libraries, institutional repositories, and AI-based services.
- Scopus data shows that the frequency of terms such as “digital transformation” and “smart libraries” has doubled in the last decade.

2. Key technologies studied in the LIS literature:

- Automation and Digitization (2000-2010): Early research focused on library automation, OPAC, barcoding, and digital repositories.
- Open Access and Institutional Repositories (2010-2015): Increased research on digital preservation, Open Educational Resources (OER), and scholarly communication.
- Artificial Intelligence and Data Analytics (2015-2020): Chatbots, recommender systems, and big data analytics became major topics.
- Blockchain, IoT, and VR (2020 onwards): Recent research explores blockchain for copyright management, IoT for smart libraries, and VR/AR for immersive learning.

3. Most Cited Journals and Authors:

- Leading Journals: Library High Tech, The Electronic Library, Scientometrics, Journal of Academic Librarianship.

- Highly cited authors include researchers focusing on digital repositories, knowledge management, and AI in LIS.
- Citation patterns show a dominance of US, UK, and Chinese research output, followed by India and Nigeria as emerging contributors.

4. Geographical Distribution:

- Early literature on library automation and digitization is dominated by developed nations.
- In recent years, developing countries (India, Nigeria, Brazil, South Africa) have demonstrated increasing output, particularly in the adoption of mobile technologies and digital literacy.
- Collaborative studies in Europe and Asia focus on open science and digital preservation.

5. Keyword Trends:

- Early 2000s: automation, digital catalogs, metadata standards.
- 2010s: open access, repositories, scholarly communication, e-resources.
- After 2020: Artificial Intelligence, Machine Learning, Blockchain, Smart Libraries, Knowledge Discovery.
- Co-word analysis shows "AI" and "Digital Transformation" as the fastest growing research keywords in LIS.

6. Implications for Library Practices:

- Bibliometric evidence suggests that libraries are shifting from being book-centric to being user-centric.
- Technology adoption has been linked to improved user experience, resource accessibility, and lifelong learning.
- Makerspaces, innovation labs, and gamification are emerging as innovative practices in libraries that align with bibliometric trends.

Conclusions:

Libraries reveal a dynamic and evolving research landscape on technology adoption in libraries. Over the past two decades, the focus has shifted from automation and digital repositories to AI, blockchain, and immersive technologies. The analysis highlights not only key research themes but also emerging areas such as sustainability, ethics, and cultural implications of technology adoption.

For practitioners, library trends indicate where to focus investments – AI-driven services, digital preservation, and user-centered innovations. For scholars, it provides a roadmap to unexplored areas. For policymakers, it reinforces the need to support technology infrastructure and training in libraries around the world. Ultimately, Bibliometrics demonstrates that adopting technology in libraries is not just about accepting tools – it is about reshaping the identity of libraries as innovative, inclusive, and future-ready learning centers.

References:

1. Aharony, N. (2017). Library and information science research in Israel: A bibliometric study. Journal of Librarianship and Information Science, 49(1), 53–63. https://doi.org/10.1177/0961000616636439.

2. Bornmann, L., & Leydesdorff, L. (2014). Scientometrics in a changing research landscape. Springer Handbook of Science and Technology Indicators, 45–68. https://doi.org/10.1007/978-3-030-02511-3_3.
3. Corrall, S., Kennan, M. A., & Afzal, W. (2013). Bibliometrics and research data management services: Emerging trends in library support for research. Library Trends, 61(3), 636–674. https://doi.org/10.1353/lib.2013.0005
4. Dhanavandan, S. (2019). Bibliometric analysis of research output in library and information science. Library Philosophy and Practice, 2543. Retrieved from https://digitalcommons.unl.edu/libphilprac/2543
5. Hood, W. W., & Wilson, C. S. (2001). The literature of bibliometrics, scientometrics, and informetrics. Scientometrics, 52(2), 291–314. https://doi.org/10.1023/A:1017919924342
6. Kumar, S., & Dora, M. (2011). Research productivity in digital library research: A bibliometric analysis. Electronic Library, 29(5), 629–644. https://doi.org/10.1108/02640471111177080
7. Miah, S. J., Gammack, J., & Hasan, N. (2017). Extending the framework for mobile health information systems research: A bibliometric analysis. Health Information Science and Systems, 5(1), 1–11. https://doi.org/10.1007/s13755-017-0029-0
8. Mishra, S., & Ramesh, D. B. (2020). A bibliometric analysis of global research output on digital libraries. DESIDOC Journal of Library & Information Technology, 40(1), 46–52. https://doi.org/10.14429/djlit.40.1.14764
9. Noh, Y. (2015). Imagining library 4.0: Creating a model for future libraries. Journal of Academic Librarianship, 41(6), 786–797. https://doi.org/10.1016/j.acalib.2015.08.020
10. Patra, S. K., & Chand, P. (2006). Library and information science research in India: A bibliometric study. Annals of Library and Information Studies, 53(4), 219–223.
11. Singh, V. K., & Singh, P. (2015). Scientometric mapping of research on information literacy. Library Hi Tech, 33(3), 449–462. https://doi.org/10.1108/LHT-12-2014-0112
12. Sugimoto, C. R., & Larivière, V. (2018). Measuring research: What everyone needs to know. Oxford University Press.
13. Thanuskodi, S. (2010). Bibliometric analysis of the Indian Journal of Information Science and Technology. Library Philosophy and Practice, 437. Retrieved from https://digitalcommons.unl.edu/libphilprac/437
14. Wani, Z. A., & Jabeen, M. (2020). Scientometric analysis of research on digital library: A study of Scopus database. Library Philosophy and Practice, 4143. Retrieved from https://digitalcommons.unl.edu/libphilprac/4143
15. Zhang, L., Wang, H., & Zhao, S. (2019). Bibliometric analysis of global research on artificial intelligence in libraries. Journal of Information Science, 45(5), 635–650. https://doi.org/10.1177/0165551518801341

A Conceptual Study n Mobile Commerce (M-COMMERCE)

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Abstract:

Digital infrastructure is the foundation of the modern digital world. It is a broad term that encompasses all of the physical and virtual resources that enable digital technologies to function. This includes everything from the physical cables and servers that make up the internet to the software applications that we use to access it. Mobile Commerce has touched in every aspect like Purchasing & selling goods & services, Geographical location based Services, Mobile banking, Mobile Ticketing, Mobile Marketing, Youtube Services and Many more Apps in Playstore, can get downloaded from Playstore & remove obstacles in our life. The future of mobile commerce (m-commerce) is a dynamic and rapidly evolving landscape, driven by technological advancements and shifting consumer behaviors. Projections indicate that m-commerce will continue to grow exponentially, eventually accounting for a significant majority of all e-commerce sales. Small screen size and different device capabilities present a challenge for designers. Businesses must ensure their apps and mobile websites have intuitive navigation, legible fonts, and a clutter-free interface to prevent cart abandonment and user frustration.

.**Keywords:** Mobile, Shopping, Transactions, Banking, Payment

Introduction:

Mobile Commerce, commonly known as M-Commerce, refers to the buying and selling of goods and services through wireless handheld devices such as smartphones and tablets. With the rapid adoption of mobile devices and internet connectivity worldwide, M-Commerce has become a significant part of the global digital economy. M-Commerce is a subset of e-commerce that enables users to conduct commercial transactions via mobile devices. These transactions include a wide range of activities, such as online shopping. banking, payments, ticketing, and accessing digital content. The development of M-Commerce is directly linked to advancements in mobile technologies, including high-speed internet, mobile applications (apps), and secure payment systems. The ability to engage in commerce anytime, anywhere, via mobile devices has transformed consumer behaviour and business strategies alike.

- M-commerce offers flexible, high-quality services anytime, anywhere.
- Aims to help managers understand m-commerce fundamentals and component.

Difference between E-Commerce and M-Commerce:-

While e-commerce refers broadly to the buying and selling of goods and services over the internet using a desktop or laptop computer, M-Commerce focuses specifically on mobile devices.

Key differences between the two include:-

Accessibility:- M-Commerce allows for transactions on the go, anytime and anywhere, providing more flexibility than traditional e-commerce, which often requires a stationary computer.

User Experience:- Mobile commerce is optimized for smaller screens and touch interfaces, leading to unique app designs and interaction styles.
Location-based Services:- Mobile devices offer features like GPS, enabling businesses to provide tailored services such as location-based promotions and personalized recommendations.

Evolution of M-Commerce:-

The concept of M-Commerce has evolved significantly since the early 2000s, driven by technological advancements and the increasing ubiquity of smartphones.

A. **Early Stages:-** In the late 1990s and early 2000s, mobile phones were primarily used for voice communication and basic text messaging. The launch of WAP (Wireless Application Protocol) technology allowed for rudimentary internet access on mobile devices, enabling users to check email or access simple websites. However, the experience was slow, expensive, and limited in functionality.
B. **Rise of Smartphones:-** The advent of smartphones in the mid-2000s, particularly the release of Apple's iPhone in 2007, marked the true beginning of M-Commerce. These devices came equipped with more powerful processors, better internet connectivity (3G, 4G, and now 5G), and a user-friendly touch interface, which drastically improved the user experience. At the same time, the rise of mobile applications opened the door for dedicated shopping apps, mobile banking, and other forms of M-Commerce.
C. **Mobile Payments and Wallets:-** A key driver of M-Commerce has been the rise of mobile payment systems and digital wallets such as PayPal, Google Pay, and Apple Pay. These systems made it easier for users to securely make transactions via their mobile devices, further driving the adoption of M-Commerce. In regions like Africa, where banking infrastructure is limited, mobile payment platforms like M-Pesa have revolutionized commerce, enabling millions of people to engage in digital transactions without a traditional bank account.
D. **The Rise of 5G and AI Integration:-** The integration of artificial intelligence (AI) and the rollout of 5G networks are now taking M-Commerce to new heights. Al-driven personal assistants, chatbots, and machine learning algorithms are being integrated into M-Commerce platforms to enhance customer experiences, while 5G provides faster, more reliable connections, enabling seamless mobile transactions.

Literature Review:-

Overview of current individual digital technology and experiences and some of research journal.

- **Dr. C.A Mala Dani in his Research Paper** on Transformation from T-Commerce To E-Commerce To M- Commerce stated that uses of Mobile Commerce
- Mobile Ticketing.
- Mobile Banking.
- Mobile Wallet.
- Geographical Locations in Mobile.
- Mobile Purchase & Delivery.
- Mobile Marketing & Advertising.

Problems of the Study:

1. **1.Security Concerns:-** One of the major limitations of M-Commerce is the security risk associated with mobile transactions. While most mobile payment solutions offer encryption and secure payment gateways, mobile devices are inherently more vulnerable to cyberattacks than desktop systems. Issues like phishing, malware, and unauthorized access to personal data can create significant risks for both consumers and businesses.
   Data Breaches:- With users storing payment information and personal data on mobile apps, there is a higher risk of data breaches or hacking attempts.
   Identity Theft:- If a mobile device is lost or stolen, the sensitive data stored in the mobile wallets and apps may be accessed by unauthorized users, leading to identity theft or fraud.
2. **Technical Limitations:-** M-Commerce depends heavily on internet connectivity, and the quality of mobile networks can affect the user experience. In areas with poor network coverage or slow internet speeds, M-Commerce platforms may perform poorly, leading to frustrated users and lost sales.
   Unreliable Connectivity:- Users in regions with inconsistent internet access may struggle to complete transactions, especially when using data-heavy apps.
   Limited Mobile Processing Power:- While smartphones have become more powerful, they are still limited in processing power compared to desktop systems, which can result in slower performance for certain apps or websites.
3. **Smaller Screen Size and User Experience Challenges:-** The smaller screen size of mobile devices poses a challenge for M-Commerce, especially for websites or apps that have not been optimized for mobile use. Navigating large product catalogues, reading detailed product descriptions, or comparing multiple items can be more difficult on a small screen, potentially discouraging users from completing purchases.
   Complex Navigation :- Mobile interfaces require simpler designs, but some complex transactions (such as multi-step checkouts) can become cumbersome on small screens.
   Limited Visuals:- Mobile users may not be able to view high-resolution product images or videos as easily as they can on a larger desktop screen.
4. **Fragmented Payment Systems:-** The diversity of mobile payment systems can lead to fragmentation in the M-Commerce market. Different regions and mobile platforms support different payment solutions (such as Apple Pay, Google Pay, Samsung Pay, or local payment systems), making it challenging for businesses to adopt a single solution that caters to all users.
5. **Limited Payment Options :-** Not all mobile wallets are universally accepted, and customers may be restricted by the payment methods available on a given platform.
   Inconsistent Adoption:-Some customers may not trust or understand mobile payment systems, leading to a slower adoption rate in certain regions or demographics.
6. **Privacy Concerns:-** With mobile apps collecting vast amounts of personal data, from location information to browsing habits, users are increasingly concerned about how their data is being used and shared. Businesses must be

transparent about their data collection practices and comply with stringent data protection regulations like GDPR (General Data Protection Regulation) to avoid legal issues and maintain customer trust.

Data Collection:- Users may feel uncomfortable with apps tracking their location, preferences, and personal information, leading to privacy concerns.
Regulatory Compliance:- Businesses must comply with regional data privacy laws, which can be complex and costly to implement.
Battery Drain and Performance Issues:- Mobile devices have limited battery life, and M-Commerce apps that require high processing power or constant internet access can drain a device's battery quickly. This limitation can negatively affect user experience, especially during long shopping or browsing sessions.
Battery Consumption:- Features like GPS tracking, background data syncing, and push notifications can reduce battery life, potentially leading users to abandon the app.
Device Overheating:- Intensive apps may cause smartphones to overheat, further discouraging users from engaging in lengthy M-Commerce sessions.
Objectives:-

1. **To Study Convenience and Accessibility of M-Commerce:-** One of the most significant benefits of M-Commerce is its convenience. Consumers can make purchases, transfer funds, and book services at any time and from any location, as long as they have access to their mobile device. This constant availability makes M-Commerce particularly attractive to busy individuals who prefer the flexibility of mobile transactions over traditional e-commerce.
2. **To Discuss the Personalization of M-Commerce :-** M-Commerce platforms use data analytics and Al to offer a highly personalized shopping experience. Apps can track user preferences, browsing habits, and location to deliver targeted recommendations, discounts, and promotions. This level of customization improves user engagement and increases the likelihood of purchase.
3. **To Find out Process of Faster Transactions:-** The integration of mobile wallets and payment systems allows for faster transactions. Instead of entering lengthy payment details, users can often complete a transaction with a single tap or fingerprint scan, reducing friction at checkout. This ease of use can lead to higher conversion rates for businesses.
4. **To Study Wide Reach :-** With billions of smartphone users worldwide, M-Commerce provides businesses with access to a global audience. This reach extends to regions where traditional banking and e-commerce infrastructure are less developed but where mobile phones are prevalent. As a result, businesses can expand their customer base without the need for a physical presence in multiple markets.
5. **To Study Enhanced Security :-** Mobile payment systems are equipped with advanced security features, such as encryption, tokenization, and biometric authentication (e.g., fingerprint or facial recognition), reducing the risks of fraud and data breaches. These security features give users peace of mind when making transactions.

Research Methodology :-
The data has been collected from the Secondary Sources i.e from the books.
Hypothesis:-

1. The Present Paper based on Multiple use of Mobile
2. The Study focusses on Uses / Applications of Mobile -Commerce.

Analysis of the study :-

M-Commerce spans several categories, each offering distinct services and functions tailored to mobile users' needs.

1. Mobile Shopping:- Mobile shopping allows consumers to browse and purchase products through their mobile devices. This can be done either through mobile-friendly websites or dedicated shopping apps. The convenience of being able to shop from anywhere, combined with personalized recommendations and promotions, has made mobile shopping immensely popular.

Examples:- Amazon, eBay, and Alibaba have embraced M-Commerce by creating optimized mobile apps for shopping, complete with easy payment options, personalized offers, and one-click buying.

2. Mobile Banking:- Mobile banking services allow users to conduct financial transactions, such as transferring money, paying bills, and checking account balances, directly from their smartphones. Most banks now offer mobile apps that provide a secure way to access these services, eliminating the need to visit a bank in person or access a computer.

Examples:- Major banks like Chase, HSBC, and Bank of America offer comprehensive mobile apps that support online transactions, mobile deposits, and even personalized financial advice through Al.

3. Mobile Payments:- Mobile payment systems, or mobile wallets, enable users to make payments via their smartphones. Mobile wallets store users' payment information securely and allow for contactless payments at point-of-sale (POS) systems or online. These systems are a key component of the M-Commerce ecosystem, simplifying the checkout process and enhancing security.

Examples:- Google Pay, Apple Pay, and Samsung Pay are widely used mobile payment systems that allow users to pay for goods in physical stores or online with just a tap of their phone.

4. Mobile Ticketing:- Mobile ticketing allows users to purchase and store tickets for events, travel, or public transportation on their mobile devices. Instead of printing physical tickets, users can simply scan a digital barcode or QR code directly from their phone. This saves time and offers convenience for both consumers and businesses.

Examples:- Airlines like Delta and United, along with entertainment services such as Ticketmaster, offer mobile ticketing services that allow users to manage their bookings and access their tickets on the go.

5. Location-Based Services:- Location-based services in M-Commerce use GPS and mobile networks to provide users with geographically relevant information. This includes offering location-based promotions, local search results, or services that vary based on the user's physical location.

Examples:- Apps like Groupon and Yelp use location-based services to recommend nearby deals and businesses, providing a personalized shopping experience.

6. Mobile Marketing:-

A. Definition and Functionality:- Mobile marketing refers to the use of mobile devices as a platform for delivering advertising and marketing messages. It includes tactics like SMS marketing, in-app advertisements, push notifications, and mobile-optimized email marketing. Mobile marketing allows businesses to reach customers directly on their personal devices, providing highly targeted and timely marketing opportunities.

B. Examples and Platforms:-

Facebook Ads:- Facebook's mobile advertising platform allows businesses to run targeted ads that appear in users' newsfeeds, stories, or in-app.

Google Ads:- Google Ads allows marketers to target mobile users with search ads, display ads, and video ads across Google's vast ad network.

SMS Campaigns:- Many businesses use SMS to send promotional messages, coupons, or event reminders directly to customers' phones.

C. Benefits:-

Targeted Campaigns:- Mobile marketing allows for highly targeted campaigns based on user behaviour, location, and demographics, increasing the likelihood of engagement.

Immediate Impact:- Push notifications or SMS messages can instantly capture users' attention, making mobile marketing ideal for time-sensitive promotions.

Higher Engagement Rates:- Mobile ads often have higher engagement rates compared to traditional online ads, as they are delivered directly to the user's personal device.

7.Mobile Entertainment:-

A. Definition and Functionality:- Mobile entertainment refers to the consumption of media content through mobile devices, including streaming music, videos, games, and other digital media. Mobile entertainment platforms allow users to download or stream content on-demand, providing instant access to entertainment without the need for physical media.

B. Examples and Platforms:-

Spotify:- A popular music streaming app that allows users to stream millions of songs, create playlists, and download music for offline listening.

Netflix:- Offers a mobile app for streaming movies and TV shows, giving users access to a vast library of content on their mobile devices.

YouTube:- The mobile version of YouTube allows users to watch videos, follow channels, and create their own video content, making it a central hub for mobile entertainment.

C. Benefits:-

Portability:- Mobile entertainment apps allow users to access content from anywhere, transforming downtime into entertainment opportunities.

Customization:- Many entertainment platforms offer personalized recommendations based on viewing or listening habits, enhancing user experience.

Monetization for Creators:- Mobile entertainment platforms also enable content creators to monetize their work, through ads, subscriptions, or donations from fans.

Challenges of M-Commerce:-

While M-Commerce offers significant advantages, it also faces several challenges that can impede its growth and adoption.

A. Security Concerns:- Although mobile payments are generally secure, they remain vulnerable to cyberattacks, phishing, and malware. Users may hesitate to adopt M- Commerce fully due to concerns about the safety of their personal and financial information. Businesses must constantly invest in cybersecurity measures to mitigate these risks and build trust among users.

B. Mobile Connectivity:- In many regions, especially in developing countries, mobile internet connectivity may be slow or unreliable. Without stable, high-speed connections, the user experience of mobile shopping and payments can suffer, leading to frustration and cart abandonment.

C. Fragmented Payment Eco-System:- The diverse landscape of mobile payment systems creates challenges for both consumers and businesses. Different platforms (e.g., Google Pay, Apple Pay, Samsung Pay) may not be universally accepted, leading to a fragmented payment ecosystem. For businesses, this fragmentation adds complexity in integrating multiple payment systems into their mobile platforms.

D. Small Screen Size:- While smartphones are convenient, their small screen size can sometimes limit user experience compared to desktop browsing. Users may find it more challenging to view detailed product information, compare items, or navigate complex websites. Businesses must design mobile-friendly interfaces that offer a seamless experience despite these limitations.

Future Prospects /outcomes of the Study :-

The future of M-Commerce looks promising as advancements in technology and changing consumer behaviours continue to drive innovation.

A. 5G and the Internet of Things (IoT):-

The rollout of 5G networks will revolutionize M-Commerce by providing faster, more reliable internet connections, enabling seamless transactions, and reducing latency. The Internet of Things (IoT) will also play a pivotal role by integrating mobile devices with everyday objects (e.g., Smart refrigerators).

As mobile technologies continue to evolve, the future of mobile business services is promising. Advancements in 5G technology, artificial intelligence (AI), and machine learning (ML) will further enhance the capabilities of mobile apps and services. For example, Al-powered chatbots will allow businesses to provide real-time customer support, and machine learning algorithms can offer personalized recommendations to customers based on their behaviour.

B. The rise of augmented reality (AR) and virtual reality (VR) :- The rise of augmented reality (AR) and virtual reality (VR) will also introduce new possibilities for mobile business services, enabling more immersive shopping experiences, virtual meetings, and interactive product demonstrations. As businesses continue to adopt mobile solutions, the integration of these technologies will revolutionize how companies operate, collaborate, and engage with customers.

Mobile business services have transformed the way businesses operate by providing greater flexibility, improving customer engagement, and boosting productivity. From mobile banking and payments to project management and collaboration tools, these services offer cost-effective solutions for businesses of all sizes. However, challenges such as security concerns, connectivity issues, and data privacy need to be addressed to maximize the potential of mobile business services. As technology continues to advance, the integration of new innovations like Al, 5G, and AR will shape the future of mobile business services, making them an integral part of business operations in the digital age.

Conclusions:

Technology has Emerged in our daily life. Artificial Intelligence (AI) and Machine Learning (ML) AI and ML are becoming integral to m-commerce. They are used to create highly personalized shopping experiences by Analysing user data, browsing history, and preferences to offer tailored product recommendations. AI-powered chatbots and virtual assistants are also transforming customer service, providing instant support and guiding users through the purchasing process. Augmented Reality (AR) and Virtual Reality (VR) AR and VR are bridging the gap between online and offline shopping by providing immersive experiences. AR allows customers to visualize products in their own environment, such as trying on makeup or placing furniture in a room before purchasing. This technology enhances customer satisfaction and can help reduce return rates. Voice Commerce Voice-activated shopping is gaining momentum with the widespread use of smart assistants like Siri, Alexa, and Google Assistant. This technology allows users to search for products, add items to their cart, and complete transactions using simple voice commands, making the shopping experience hands-free and more convenient. The future of m-commerce is about creating a seamless experience across all channels, whether it's a mobile app, a website, a physical store, or social media. This allows customers to start their shopping journey on one platform and continue it on another without any friction.

REFERENCES:

1) Books:- Waykole, N. K. H., & Salunkhe, A. H. (2024) . *E-Commerce and M-Commerce*. Prime Publishing House.
2) Dani, C. A. M. (n.d.). *Transformation from T-Commerce to E-Commerce to M-Commerce*.
3) www.mobilebanking.com.
4) www.internetbanking.com.

Role of Seed Industries in Viksit Bharat 2047: Driving the Future of Developing India

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Abstract

Seeds are the foundation of agriculture, and agriculture is the backbone of India's economy. The seed industry is thus a critical driver of agricultural productivity, food security, rural livelihoods, and sustainable growth. As India envisions becoming a developed nation by 2047 under the Viksit Bharat mission, the role of the seed industry becomes even more vital. This paper explores the contribution, potential, challenges, and roadmap for strengthening the seed industry to accelerate India's journey towards agricultural transformation and economic development. It highlights how quality seed production, seed technology innovations, public-private partnerships, and supportive policies can ensure higher crop yields, nutritional security, and climate resilience. Based on secondary data from government reports, agricultural research institutes, and industry sources, this paper concludes that the seed sector must become innovation-driven, globally competitive, and farmer-centric to achieve the goals of Viksit Bharat 2047.

Keywords: Seed Industry, Viksit Bharat 2047, Agricultural Productivity, Food Security,

1. Introduction

Agriculture continues to be the largest source of livelihood in India, engaging nearly 43% of the workforce and contributing about 18% of GDP. With a population expected to reach 1.6 billion by 2047, ensuring food and nutritional security is a top national priority. Seeds are the basic and most critical input in agriculture, determining the productivity and profitability of farming systems. According to FAO, the use of high-quality seeds alone can increase crop yields by 15–25%, even without additional inputs. India has emerged as the fifth largest seed market in the world, with over 900 seed companies, 150+ seed certification agencies, and a robust public research network (ICAR, State Agricultural Universities). However, there remains untapped potential to make India a global seed hub while also ensuring self-reliance and resilience in domestic food systems. This research paper discusses how the seed industry can play a transformative role in realizing the vision of Viksit Bharat 2047 by enhancing productivity, sustainability, and rural prosperity.

2. Role of Seed Industry in Agricultural and Economic Growth

2.1 Enhancing Crop Productivity: High-yielding and hybrid seeds significantly boost farm output. Improved seed varieties ensure better germination, disease resistance, stress tolerance, and uniform maturity — all essential for increasing national foodgrain production.

2.2 Supporting Food and Nutritional Security: With rising population and changing diets, India will need to produce more cereals, pulses, oilseeds, fruits, and vegetables by 2047. Quality seeds of nutrient-rich and biofortified crops can help tackle malnutrition and ensure dietary diversity.

2.3 Employment and Rural Livelihoods: Seed production, processing, and distribution create employment opportunities for rural youth, women's self-help groups, and small farmers. Seed villages and farmer-producer organizations (FPOs) generate local income and reduce migration.

2.4 Contribution to Exports and Global Competitiveness: India exports seeds to over 100 countries. With better quality control, phytosanitary measures, and R&D, the seed industry can increase its export share and position India as a global seed production hub.

2.5 Supporting Allied Industries: The seed industry drives growth in allied sectors like agrochemicals, farm machinery, biotechnology, logistics, and agri-fintech. It has a multiplier effect on the rural economy.

3. Innovations and Technological Advancements in Seed Industry

3.1 Biotechnology and Genomics: Biotech seeds with traits like pest resistance, drought tolerance, and nutrient enhancement improve yields and reduce input costs. Genome editing (CRISPR) offers precision breeding for climate-resilient crops.

3.2 Digital Agriculture: AI, IoT, and remote sensing help track seed performance, predict yields, and optimize supply chains. E-platforms enable direct seed marketing and traceability.

3.3 Seed Treatment and Coating Technologies: Modern seed treatments (biofertilizers, micronutrients, fungicides) enhance germination and plant vigor, ensuring better crop stands and productivity.

3.4 Public-Private Research Collaboration: Partnerships between ICAR institutes, agricultural universities, and private seed firms accelerate the development and release of new seed varieties.

4. Opportunities for Seed Industry in Viksit Bharat 2047

4.1 Doubling Farmers' Income: High-yielding seeds can directly raise farm income by improving productivity and reducing input costs.

4.2 Climate-Resilient Agriculture: As climate change poses new threats, seeds bred for drought, flood, salinity, and heat tolerance will protect national food security.

4.3 Export Promotion and Global Leadership: India's diverse agro-climatic zones allow year-round seed production. By adhering to global quality standards (ISTA, OECD), India can become a leading exporter of hybrid seeds.

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4.4 Promoting Agri-Startups: The seed sector offers opportunities for agri-biotech startups, seed testing labs, and digital seed marketplaces, contributing to innovation and employment.

4.5 Integration with Sustainable Development Goals (SDGs): Seed industries can contribute to SDGs by promoting biodiversity conservation, sustainable agriculture, gender equality, and poverty reduction.

5. Challenges Facing the Indian Seed Industry

Despite its potential, the seed sector faces several constraints:

- **Fragmented and Unorganized Sector:** Many small players lack technical and financial capacity.
- **Quality Control Issues:** Spurious and low-quality seeds reduce farmer trust.
- **Regulatory Hurdles:** Lengthy approval processes delay release of improved varieties.
- **Low R&D Investment:** Private R&D expenditure is limited compared to global competitors.
- **Climate Risks:** Unpredictable weather disrupts seed production cycles.
- **Intellectual Property Concerns:** Weak enforcement discourages innovation.

Addressing these challenges is crucial for realizing the full potential of the seed industry.

6. Government Policies and Initiatives

India has undertaken several measures to strengthen its seed sector:

- **Seeds Act, 1966** and **Seeds Rules, 1968** regulate seed quality.
- **National Seed Policy, 2002** promotes private participation and quality assurance.
- **Seed Village Programme** trains farmers in seed production and quality control.
- **National Seed Corporation (NSC)** and **State Seed Corporations** ensure seed availability.
- **Rashtriya Krishi Vikas Yojana (RKVY)** supports seed infrastructure and research.
- **Digital Seed Traceability System** ensures transparency in seed supply chains.
- **Agri-Innovation and Incubation Centres** support startups in seed biotechnology.

These initiatives aim to ensure timely availability of quality seeds at affordable prices to all farmers.

7. Roadmap for Strengthening Seed Industry for Viksit Bharat 2047

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To transform the seed industry into a world leader by 2047, the following strategies are recommended:

1. **Enhance R&D Investments**
    - Promote public-private research collaboration
    - Establish seed research innovation hubs
2. **Strengthen Quality Assurance**
    - Upgrade seed testing labs
    - Implement blockchain-based seed traceability
3. **Build Human Capital**
    - Skill training in seed technology, breeding, and agribusiness
    - Promote youth and women entrepreneurship
4. **Promote Climate-Resilient Varieties**
    - Fast-track release of stress-tolerant and biofortified seeds
    - Incentivize sustainable seed production practices
5. **Improve Seed Distribution Infrastructure**
    - Expand cold storage, warehousing, and logistics
    - Develop e-marketplaces for seed trade
6. **Facilitate Global Integration**
    - Harmonize seed certification with international standards
    - Promote seed exports and global branding
7. **Enable Policy and Regulatory Reforms**
    - Streamline approval processes
    - Strengthen intellectual property protection for breeders

Implementing these strategies will help the seed industry become the engine of agricultural transformation in Viksit Bharat 2047.

8. Conclusion

Seeds are the starting point of agriculture and the cornerstone of food security. The Indian seed industry holds the key to transforming agriculture from subsistence to sustainable, technology-driven enterprise. By ensuring access to high-quality, climate-resilient, and affordable seeds for all farmers, the seed industry can double farm productivity, raise rural incomes, and contribute significantly to India's GDP. It can also create jobs, reduce poverty, and make India a global leader in agricultural innovation. Thus, the seed industry is not just an input provider but a strategic driver of economic transformation. Strengthening it is essential to realize the vision of Viksit Bharat 2047 a self-reliant, food-secure, and developed India.

References

1. Ministry of Agriculture & Farmers Welfare (2024). *Agricultural Statistics at a Glance*.
2. National Seed Corporation (2023). *Annual Report*.
3. Indian Council of Agricultural Research (ICAR). (2023). *Seed Science and Technology Reports*.
4. Food and Agriculture Organization (FAO). (2023). *Seed Systems and Food Security*.

5. NITI Aayog (2023). *Viksit Bharat 2047: Vision Document*.
6. OECD (2022). *Seed Certification and Trade in India*.
7. Department of Agriculture and Cooperation (2024). *National Seed Policy Review*.
8. World Bank (2023). *Agriculture and Rural Development in India*.

The Role of Farming Sector in Achieving Viksit Bharat 2047

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Abstract

Agriculture is the backbone of the Indian economy, providing livelihoods to nearly half of the population and ensuring food security for 1.4 billion citizens. As India aims to become a developed nation by 2047, the agricultural sector must undergo significant modernization and transformation. This paper explores the crucial role of agriculture in achieving the vision of Viksit Bharat 2047. It examines the current status of Indian agriculture, identifies structural challenges, and highlights opportunities in technology adoption, infrastructure development, and sustainable farming practices. The paper also discusses government initiatives, private sector contributions, and the need for research and innovation to increase productivity, farmer income, and export competitiveness. Finally, it presents a roadmap for making agriculture more resilient, inclusive, and globally competitive by 2047.

Keywords: Agriculture, food security, digital agriculture, climate resilience, agricultural policy.

1. Introduction

Agriculture has historically been the foundation of India's economy and culture. Even today, it contributes around 18% of India's GDP and employs nearly 45% of the workforce. Beyond its economic role, agriculture is central to food security, rural livelihoods, and social stability. As India envisions becoming a developed nation by 2047, agriculture must shift from being a subsistence-based activity to a modern, technology-driven, and globally competitive sector. This transformation is not just desirable but essential for inclusive growth, poverty reduction, and achieving the Sustainable Development Goals (SDGs). A strong and resilient agricultural system will ensure nutritional security, generate rural employment, and drive export growth, making agriculture a key pillar of *Viksit Bharat 2047*.

2. Current Status of Agriculture in India

India is one of the largest producers of cereals, pulses, milk, fruits, and vegetables in the world. The Green Revolution of the 1960s turned India from a food-deficit nation to a food-surplus country. However, despite these achievements, the sector faces several persistent challenges. Farm productivity remains lower compared to global standards, with average yields of crops like wheat and rice still below those of developed nations. Small and fragmented landholdings, dependence on monsoon rains, post-harvest losses, and limited access to markets and credit remain major hurdles. Additionally, climate change is leading to erratic rainfall, droughts, and floods, which increase the vulnerability of farmers.

3. Challenges Faced by Indian Agriculture

- **Low Productivity:** India's average farm productivity is less than half of that in developed countries. Low use of modern technology, outdated irrigation systems, and soil degradation are significant contributors to this gap.
- **Fragmented Landholdings:** Over 85% of farmers in India are small or marginal, owning less than two hectares of land. This makes mechanization difficult and reduces economies of scale.
- **Market Inefficiencies:** Farmers often do not receive fair prices for their produce due to middlemen, inadequate storage facilities, and poor market linkages. As a result, their share in the consumer price remains very low.
- **Post-Harvest Losses:** India loses nearly 10–15% of its agricultural produce after harvest due to poor infrastructure, inadequate cold storage, and inefficient logistics.
- **Climate Change and Water Stress:** Frequent droughts, floods, and rising temperatures are impacting crop yields. Over-dependence on groundwater has also created water scarcity in several states.

4. Opportunities for Transformation

Despite these challenges, agriculture has immense potential to contribute to *Viksit Bharat 2047* through modernization, technology adoption, and better policy support.

- **Adoption of Agri-Tech:** Technologies such as precision farming, remote sensing, drones, and AI-based crop monitoring can significantly improve yields and reduce input costs. Startups are already developing mobile apps that give farmers real-time information on weather, prices, and best practices.
- **Mechanization and Automation:** Affordable machinery and custom hiring centres can enable small farmers to access modern tools, making farming more efficient.
- **Digital Agriculture:** Using digital platforms for direct farmer-to-consumer (F2C) sales can eliminate middlemen, improve price realization, and build farmer collectives. Digital records can also improve access to credit and insurance.
- **Crop Diversification:** Encouraging farmers to grow high-value crops like horticulture, pulses, oilseeds, and medicinal plants can enhance income and reduce dependence on water-intensive crops like paddy and sugarcane.
- **Sustainable Practices:** Promoting organic farming, natural farming, and efficient water use through micro-irrigation can make agriculture more environmentally friendly and climate-resilient.

5. Role of Government and Policy Initiatives

The government plays a vital role in shaping the future of Indian agriculture. Initiatives such as PM-Kisan (income support to farmers), PM Fasal Bima Yojana (crop insurance), e-NAM (electronic National Agricultural Market), and PM Krishi Sinchai Yojana (irrigation) have laid the foundation for a stronger agricultural system.

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The recent push towards forming Farmer Producer Organizations (FPOs) helps farmers gain bargaining power, aggregate produce, and access better markets. Policies encouraging private sector investment in agri-logistics, food processing, and research will further strengthen the sector.

6. Role of Private Sector and Startups

Agri-tech startups are emerging as game-changers in the rural economy. Companies are providing digital advisory services, soil testing, precision agriculture solutions, and supply chain innovations. Private investment in food processing and cold chain infrastructure is creating jobs and reducing post-harvest losses. Partnerships between corporates and farmers through contract farming and direct procurement are providing stable prices and assured markets. This public-private collaboration is critical for modernizing agriculture and increasing farmer incomes.

7. Roadmap for Agriculture in Viksit Bharat 2047

Table 1: Phased Roadmap for Agriculture Modernization

Phase	Key Focus Areas	Expected Outcomes
2025–2030	Infrastructure & Technology Adoption	50% mechanization, improved irrigation
2030–2035	Digital Integration & Farmer Collectives	70% farmers on digital platforms
2035–2040	Sustainable and Climate-Smart Agriculture	Reduced water usage, higher yields
2040–2047	Global Competitiveness & Export Growth	India among top 3 agri-exporters

This roadmap ensures that agriculture becomes more productive, sustainable, and profitable, contributing significantly to India's GDP and rural prosperity.

8. Economic Impact

Graph Idea: Contribution of Agriculture to India's GDP (Projected)

Year	Contribution to GDP (%)
2024	18%
2030	16% (with higher value addition)
2040	14% (but higher absolute value due to growth)
2047	12% (modernized, high-value agriculture)

Even as the share of agriculture in GDP declines with industrialization, the sector will remain a key driver of food security, employment, and export earnings. Modernized agriculture will deliver higher value even with fewer resources.

9. Social and Environmental Impact

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Strengthening agriculture will lead to poverty reduction, better nutrition, and inclusive rural development. Women, who form a significant part of the agricultural workforce, will benefit from access to technology, training, and credit. Environmentally sustainable practices will reduce soil degradation, improve water-use efficiency, and cut greenhouse gas emissions. Thus, agriculture will contribute not just too economic growth but also to India's climate and sustainability goals.

10. Conclusion

Agriculture is central to the vision of *Viksit Bharat 2047*. A modern, technology-driven, and resilient farming system will ensure food security, raise farmer incomes, generate employment, and drive rural development. Through investments in infrastructure, innovation, and human capital, India can transform its agricultural sector into a global leader. The journey to 2047 requires collaborative efforts from government, private sector, research institutions, and farmers themselves. By making agriculture profitable, sustainable, and competitive, India can turn its villages into engines of national growth and truly achieve the dream of a developed nation.

References:

1. Government of India. (2023). *Agriculture Infrastructure Development Report*. Ministry of Agriculture and Farmers' Welfare.
2. Food and Agriculture Organization (FAO). (2023). *State of Food and Agriculture in India*. FAO Publishing.
3. NITI Aayog. (2022). *Doubling Farmers' Income by 2025: Strategy Document*. NITI Aayog.
4. World Bank. (2023). *Transforming Indian Agriculture for Inclusive Growth*. World Bank Group.
5. OECD. (2023). *Agricultural Policy Monitoring and Evaluation: India Country Report*. OECD Publishing.
6. Singh, R., & Mehta, A. (2023). Agricultural transformation in India: Opportunities and challenges. *Journal of Rural Development*, 42(3), 101–120.
7. Gupta, P. (2022). Role of agri-tech in sustainable farming practices. *International Journal of Agronomy and Innovation*, 11(2), 75–90.

The Role of Artificial Intelligence in Building Viksit Bharat 2047

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Abstract

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the 21st century. It is driving innovation, reshaping industries, and redefining the way economies and societies function. For India, which is aiming to become a developed nation by 2047 on the centenary of its independence, AI offers a historic opportunity to leapfrog traditional development stages and move directly into a technology-driven future. This research paper explores the potential role of AI in realizing the vision of Viksit Bharat 2047. It examines the present status of AI adoption in India, its applications across sectors such as governance, education, healthcare, agriculture, industry, and infrastructure, and how it can contribute to inclusive and sustainable economic growth. The paper also highlights the challenges related to AI adoption, including ethical concerns, skill gaps, and policy issues, and suggests a roadmap for harnessing AI effectively and responsibly. By enabling data-driven decision-making, enhancing productivity, and fostering innovation, AI can become a key pillar in building a prosperous, technologically advanced, and equitable India by 2047.

Keywords: AI, Viksit Bharat 2047, innovation, automation, AI policy, future of work.

1. Introduction:

India is at a crucial point in its development journey. With its large and youthful population, expanding digital infrastructure, and rapidly growing economy, the country has the potential to become a global leader in innovation and technology. The Government of India has envisioned *Viksit Bharat 2047* as a roadmap to transform India into a developed nation by its 100th year of independence. Achieving this goal requires building a knowledge-based economy that is driven by research, innovation, and advanced technologies. Artificial Intelligence (AI) can play a central role in this transformation. AI refers to computer systems that can perform tasks that typically require human intelligence, such as understanding language, recognizing images, making decisions, and learning from experience. By integrating AI across sectors, India can improve efficiency, reduce costs, create new industries and jobs, and enhance the quality of life for its citizens. This paper seeks to analyze the multiple ways in which AI can contribute to the vision of Viksit Bharat 2047, and how India can overcome the associated challenges to fully utilize this technology.

2. Understanding Artificial Intelligence and Its Components:

Artificial Intelligence is not a single technology but a collection of interrelated fields that allow machines to mimic human cognitive functions. The major

components of AI include Machine Learning (ML), Natural Language Processing (NLP), Computer Vision, Robotics, and Expert Systems. Machine Learning enables systems to learn from data and improve their performance over time without being explicitly programmed. NLP allows machines to understand and respond to human languages, which is the basis for virtual assistants and chatbots. Computer Vision enables machines to analyze and interpret visual information from the world, which is used in fields like medical imaging, surveillance, and self-driving vehicles. Robotics integrates AI into physical machines, enabling them to perform complex tasks in industries, healthcare, and agriculture. Expert Systems are AI programs that simulate the decision-making ability of human experts to solve complex problems in specialized domains. Together, these AI technologies can automate repetitive tasks, analyze massive amounts of data quickly, and provide real-time insights that were previously impossible. Their combined potential makes AI a powerful tool to accelerate India's development journey.

3. Current Status of AI Development in India:

India has made significant progress in adopting AI in recent years. The country has emerged as one of the top ten nations globally in terms of AI research output and has a rapidly growing ecosystem of AI startups. According to industry reports, India had over 3,000 AI-focused startups by 2024, working in areas such as healthcare, agriculture, fintech, education, and logistics. The AI market in India is valued at over $7 billion and is expected to grow rapidly in the coming decade. The government has launched several initiatives to promote AI adoption. The National Strategy on Artificial Intelligence by NITI Aayog, the IndiaAI Mission, and the Digital India programme are some of the key frameworks driving AI development. India's robust digital public infrastructure—including Aadhaar for identity, UPI for payments, DigiLocker for document storage, and CoWIN for vaccination—has created a strong foundation for deploying AI-driven services at scale. In addition, skill development programmes have trained over 20 lakh professionals in data science, machine learning, and related technologies.

Despite these advances, India still faces challenges in scaling AI use across all sectors. Many industries, especially in rural areas, are yet to fully adopt AI due to lack of awareness, infrastructure, and skilled workforce. Addressing these gaps will be crucial for using AI as a driver of development.

Parameter	**Status (2024)**
AI Startup Ecosystem	3000+ AI-focused startups
AI Market Size	~$7.8 billion
Government AI Missions	National AI Mission (NITI Aayog), IndiaAI 2.0
AI Skill Development	20+ lakh professionals trained
Digital Public Infrastructure	Aadhaar, UPI, DigiLocker, CoWIN
AI in Public Services	e-Courts, e-Sanjeevani, Smart Cities

4. Role of AI in Achieving the Vision of Viksit Bharat 2047:

- **Improving Governance and Public Administration:** AI can transform governance by making it more efficient, transparent, and citizen-centric. AI-

powered systems can analyze vast amounts of data to provide insights for better policymaking. Predictive analytics can help identify regions or sectors that need targeted interventions. AI chatbots can handle routine public queries, freeing government staff for complex tasks and ensuring round-the-clock services. Real-time monitoring systems can track the delivery of welfare schemes, detect irregularities, and prevent leakages of public funds. AI tools can also be used for cyber security, fraud detection, and ensuring compliance with laws and regulations. By reducing human errors and corruption, AI can make public administration more accountable and responsive, which is essential for building a developed India.

- **Revolutionizing Education and Skill Development:** Education is the foundation of national development, and AI can help modernize India's education system. AI-powered personalized learning platforms can adapt to each student's learning speed and style, ensuring better understanding and retention. Virtual classrooms and AI tutors can address the shortage of qualified teachers, especially in rural areas. AI can automate grading and assessment, enabling teachers to focus on creative and analytical aspects of teaching. AI-based analytics can help design better curricula by identifying skill gaps in students and aligning courses with the needs of the future job market. Most importantly, training students in AI, data science, and digital technologies will build a future-ready workforce. By equipping youth with cutting-edge skills, India can convert its demographic dividend into a knowledge-driven growth engine, which is vital for becoming a developed nation by 2047.
- **Transforming Healthcare Services:** AI can revolutionize healthcare delivery in India by making it more accessible, affordable, and accurate. AI-powered diagnostic tools can detect diseases like cancer, diabetes, or tuberculosis at early stages by analyzing medical images and patient data. This can save millions of lives and reduce healthcare costs. Virtual health assistants and telemedicine platforms powered by AI can provide consultations in remote villages where doctors are scarce. AI can also be used in robotic surgeries, drug discovery, and personalized treatment plans. During the COVID-19 pandemic, AI tools were used for tracking the spread of the virus and managing vaccination through platforms like CoWIN. Expanding such AI applications can strengthen India's healthcare system and contribute to better public health outcomes, which is essential for a productive and prosperous society.
- **Empowering Agriculture and Rural Development:** Agriculture employs a large part of India's population and is central to rural livelihoods. AI can significantly improve agricultural productivity and income levels. AI-based systems can predict weather patterns, identify pest infestations, and recommend optimal sowing and harvesting times. Drones and sensors using AI can monitor crop health and soil conditions in real time. AI can also help farmers get better prices by predicting market demand and linking them directly to buyers through digital platforms. By reducing risks and losses, AI can increase farmers' earnings and make agriculture more resilient to climate change. This can accelerate rural development and reduce poverty, which is crucial for achieving inclusive growth in Viksit Bharat 2047.

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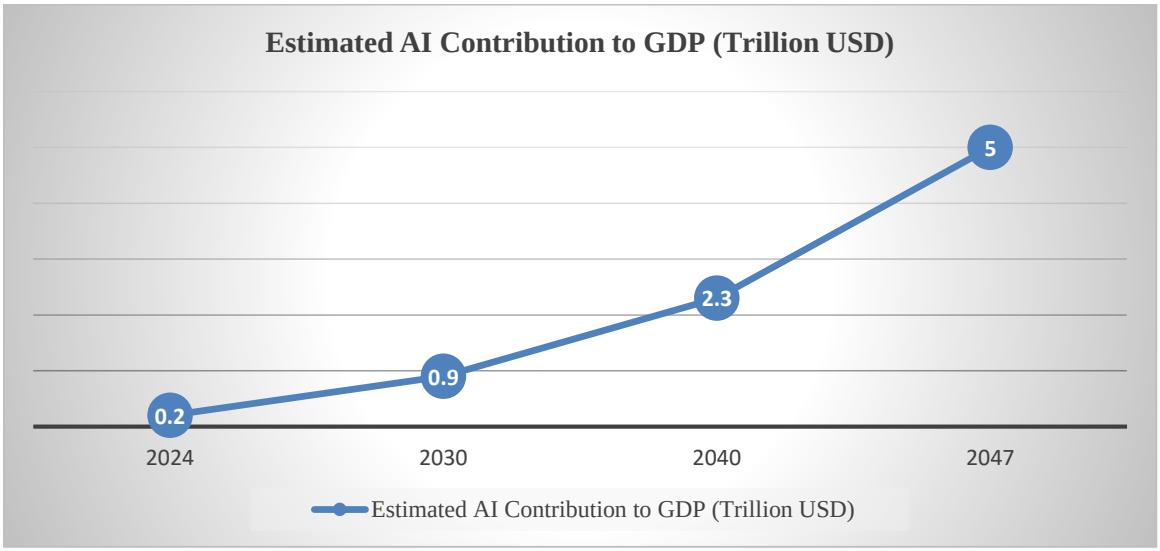
- **Driving Industrial Growth and Manufacturing:** AI is a key component of Industry 4.0 and can greatly enhance industrial productivity. AI-driven automation can speed up production, reduce human errors, and lower costs in manufacturing. Predictive maintenance systems can identify faults in machines before they occur, reducing downtime. AI can help in quality control, supply chain optimization, inventory management, and logistics. AI can especially help micro, small, and medium enterprises (MSMEs) by giving them access to design, marketing, and customer analytics tools at low cost. This will improve their competitiveness and help achieve the goals of Make in India and Atmanirbhar Bharat. A strong industrial base powered by AI will be the backbone of India's economic growth in the coming decades.

4.6 Building Smart Infrastructure and Cities:

AI can help build the smart infrastructure needed for a developed India. AI-based traffic systems can reduce congestion and pollution in cities. Smart grids can manage energy consumption efficiently and integrate renewable energy sources. AI can improve water supply, sanitation, and waste management by predicting demand and optimizing resources. Intelligent surveillance systems can enhance public safety, while digital twins (AI models of real-world infrastructure) can be used for better urban planning. By improving the quality of life and reducing resource wastage, AI-enabled smart cities will play a vital role in realizing the vision of Viksit Bharat 2047.

5. Economic Impact and Future Potential of AI:

AI can contribute massively to India's economy. According to NASSCOM and McKinsey reports, AI could add over $500 billion annually to India's GDP by 2047. This will come from higher productivity, new AI-based industries, and increased exports of digital services. A steady increase in AI adoption could make India one of the top three AI economies in the world by 2047. AI will also create millions of new jobs in sectors such as data analytics, software development, robotics, cybersecurity, and digital marketing. While automation may replace some routine jobs, new and higher-value jobs will emerge, making India's workforce more skilled and globally competitive.



6. Challenges in AI Adoption:

Despite its promise, AI adoption faces several challenges. There are concerns about data privacy and security, as AI systems require access to large amounts of personal data. There is also a shortage of skilled AI professionals, especially in rural and semi-urban regions. High implementation costs can discourage small businesses and public institutions from using AI. Ethical issues such as algorithmic bias, job displacement, and lack of accountability also need to be addressed. Moreover, India lacks comprehensive legal and regulatory frameworks specifically for AI. If these challenges are not resolved, AI could increase inequality rather than reduce it.

7. Policy Measures and Roadmap for the Future:

The government has already taken steps to promote responsible AI. The IndiaAI Mission, Digital India, and Startup India programmes are supporting AI research, infrastructure, and entrepreneurship. The National Data Governance Framework seeks to ensure safe and ethical use of data. NITI Aayog's AI for All strategy focuses on awareness, skilling, and inclusion. Going forward, India should set up a dedicated "AI Development Authority" to coordinate efforts across ministries and industries. It should invest heavily in AI education, research centres, and computing infrastructure. Clear ethical guidelines and legal regulations should be created to ensure transparency, fairness, and accountability in AI systems. A phased roadmap could be followed: building capacity by 2030, scaling AI services nationwide by 2040, and positioning India as a global AI hub by 2047.

Phase	**Focus Areas**	**Key Targets**
2025–2030	Capacity Building & Skilling	Train 1 crore youth in AI and ML
2030–2035	AI Infrastructure & Research Hubs	100 AI research centres across India
2035–2040	Widespread AI in Governance, Education, Health	AI-enabled services in all districts
2040–2047	Global AI Leadership & Export Hub	Make India top 3 global AI economies

8. Ethical and Social Considerations:

AI must be developed and used responsibly to avoid harm. Systems should be transparent and explainable so that people can trust their decisions. AI must be designed to be inclusive, ensuring that rural and marginalized communities also benefit. Human oversight should remain in critical decisions like healthcare, justice, and defense. Reskilling and social safety programmes must be introduced to support workers affected by automation. Ethical AI is not only a moral responsibility but also essential for sustainable development.

9. Conclusion:

Artificial Intelligence can be the driving force behind India's journey to becoming a developed nation by 2047. By transforming governance, education, healthcare, agriculture, industry, and infrastructure, AI can raise productivity, create

new jobs, and improve quality of life. However, this transformation will succeed only if India addresses challenges related to skills, ethics, policies, and infrastructure. With the right vision, planning, and investment, India can build a world-class AI ecosystem that drives innovation-led and inclusive growth. AI can turn the dream of *Viksit Bharat 2047* into reality by empowering citizens, enhancing economic strength, and securing India's place as a global technology leader.

References:

1. Government of India. (2023). *National Strategy for Artificial Intelligence*. NITI Aayog. https://www.niti.gov.in
2. Ministry of Electronics and Information Technology (MeitY). (2024). *AI for All: Roadmap to 2047*. Government of India. https://www.meity.gov.in
3. World Economic Forum. (2023). *Shaping the Future of AI and Machine Learning*. World Economic Forum. https://www.weforum.org
4. PwC India. (2022). *AI and India's Growth Potential*. PricewaterhouseCoopers India. https://www.pwc.in
5. Accenture. (2023). *Artificial Intelligence: Driving Economic Growth in India*. Accenture Insights. https://www.accenture.com
6. OECD. (2022). *Artificial Intelligence in Society: Opportunities and Challenges*. OECD Publishing. https://doi.org/10.1787/eedfee77-en
7. McKinsey & Company. (2023). *The Future of AI: Impact on Jobs and Economy*. McKinsey Global Institute. https://www.mckinsey.com
8. UNESCO. (2023). *AI and Education: Guidance for Policy-makers*. UNESCO Publishing. https://unesdoc.unesco.org
9. Indian Institute of Technology (IIT) Delhi. (2023). *AI Research and Innovation Report 2023*. https://home.iitd.ac.in
10. Singh, R., & Sharma, P. (2023). The role of artificial intelligence in accelerating India's digital economy. *International Journal of Emerging Technologies*, 18(4), 45–60.
11. Gupta, A. (2022). Artificial intelligence and sustainable development goals: A roadmap for India. *Asian Journal of Innovation and Policy*, 11(2), 112–129.
12. Kumar, S. (2024). Artificial Intelligence in India: A Strategic Perspective towards 2047. *Journal of Policy and Development Studies*, 20(1), 33–57.

Entrepreneurship as the Engine of Growth: Building Viksit Bharat 2047 through Innovation and Enterprise

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Abstract

Entrepreneurship is widely recognized as a powerful driver of economic and social transformation. In India, where a large section of the population is young, ambitious, and digitally connected, entrepreneurship has the potential to reshape the nation's developmental trajectory. As India aims to achieve the status of a developed country by 2047, the centenary of its independence, entrepreneurship emerges as a central force in realizing this vision. This paper examines the crucial role entrepreneurship plays in the creation of Viksit Bharat 2047. It discusses how entrepreneurship contributes to employment generation, innovation, inclusivity, and global competitiveness. It also highlights government policies, technological transformations, and social dimensions of entrepreneurship. Finally, it provides a roadmap for how India can foster a dynamic and sustainable entrepreneurial ecosystem that ensures prosperity, equity, and resilience for all.

Keywords: Entrepreneurship, Viksit Bharat 2047, Innovation, Startups, Inclusive Growth, Digital Economy, Sustainable Development

Introduction

Entrepreneurship is more than simply starting a business; it is about solving problems, creating opportunities, and generating value for society. India's history is filled with stories of entrepreneurial spirit, from small traders in villages to industrial pioneers and now, to young innovators launching globally recognized startups. In the past decade, India has emerged as the third-largest startup ecosystem in the world, with thousands of companies spanning diverse fields such as technology, healthcare, agriculture, renewable energy, and education. As India looks toward Viksit Bharat 2047**,** entrepreneurship is expected to play a defining role in achieving development. A robust entrepreneurial ecosystem has the power to tackle unemployment, foster innovation, reduce income inequalities, and strengthen India's global position. This paper explores the multidimensional role of entrepreneurship in building a developed India and suggests strategies to maximize its potential.

Entrepreneurship as a Catalyst for Economic Growth

Entrepreneurship directly fuels economic growth. New ventures generate employment, attract investments, and stimulate demand for goods and services. Unlike large corporations, which are often concentrated in urban areas, entrepreneurs can set up ventures in smaller towns and rural areas, thereby spreading development more evenly.

Entrepreneurs bring new ideas, products, and services to the market, which enhances competition and forces existing businesses to innovate. This cycle of innovation improves productivity and ensures that consumers receive better quality at affordable prices. In the long term, such entrepreneurial dynamism creates a vibrant economy that grows sustainably and inclusively. If India wants to sustain high GDP growth over the coming decades, it needs a strong base of entrepreneurs leading the charge.

The Rise of Startups and Entrepreneurial Culture in India

India's entrepreneurial journey has accelerated significantly since the launch of the Startup India initiative in 2016. Today, the country is home to over 100 unicorns (startups valued at over $1 billion), which is a testament to its growing capacity for innovation and risk-taking. Startups are emerging not only in big cities like Bengaluru, Delhi, and Mumbai but also in smaller towns, bringing opportunities to diverse regions. This rise of entrepreneurship is also a cultural shift. In the past, job security in government or corporate sectors was seen as the ideal career path. Now, more young people aspire to build their own ventures. This mindset change has been supported by easier access to funding, mentorship networks, and incubation centers established in universities and research institutions. Such developments are creating an environment where entrepreneurship is celebrated and encouraged as a respectable career choice.

Technology-Driven Entrepreneurship

Technology is the most powerful enabler of modern entrepreneurship. The rapid spread of the internet, smartphones, and digital tools has opened opportunities for entrepreneurs to reach customers across the globe at minimal cost. For instance, fintech startups have revolutionized financial transactions by promoting cashless payments through platforms like UPI. Healthtech startups are making quality healthcare accessible in rural areas via telemedicine. Agri-tech ventures are empowering farmers by using data analytics, drones, and artificial intelligence to improve crop yields. Even small-scale artisans are benefiting from e-commerce platforms that connect them to international buyers. By 2047, technology-driven entrepreneurship will not only make India's economy more competitive but also ensure that essential services like education, healthcare, and finance reach every citizen, bridging the urban-rural divide.

Social Entrepreneurship and Inclusive Growth

Entrepreneurship is not only about profit but also about creating a positive social impact. Social entrepreneurs focus on solving pressing problems such as poverty, inequality, education gaps, and environmental sustainability. In rural India, many social enterprises are working to empower women by providing them with skills, finance, and market linkages. Renewable energy startups are delivering solar power to remote villages, reducing dependence on non-renewable sources. Educational enterprises are using low-cost digital platforms to reach underprivileged students. By encouraging social entrepreneurship, India can ensure that development is inclusive and that no community is left behind in the journey toward Viksit Bharat.

Such enterprises demonstrate that profit and social responsibility can go hand in hand, creating long-term sustainable solutions.

Empowering Women and Youth through Entrepreneurship

- **Women Entrepreneurs:** Women play a critical role in the entrepreneurial ecosystem. Government schemes like *Stand Up India* and micro-finance support have helped thousands of women start businesses ranging from small shops to manufacturing units. Women-led enterprises not only contribute to the economy but also bring social change by challenging stereotypes and empowering families.
- **Youth Entrepreneurs:** With over 60% of India's population below the age of 35, the youth are the driving force of entrepreneurship. They bring creativity, technological knowledge, and global awareness to their ventures. Many young entrepreneurs are building disruptive businesses in fields like artificial intelligence, clean energy, gaming, and edtech. Encouraging and guiding these entrepreneurs is essential if India is to capitalize on its demographic dividend.

Government Policies and Entrepreneurial Support

The Indian government has played an active role in promoting entrepreneurship. Policies such as Startup India, Digital India, Make in India, and Skill India have created a favorable ecosystem. These initiatives provide tax exemptions, easier regulations, financial assistance, and training for entrepreneurs. Additionally, schemes like MUDRA loans make credit available to small businesses, while Atal Innovation Mission establishes incubators and research labs to support innovation. By combining financial assistance with mentorship and capacity building, these policies are laying the foundation for India's entrepreneurial future.

Challenges Hindering Entrepreneurial Growth

Despite progress, entrepreneurship in India faces several challenges. Access to capital is still limited, especially for entrepreneurs in rural areas. Many startups fail due to lack of mentorship, poor financial planning, or difficulties in scaling up. Regulatory hurdles and compliance burdens often discourage small entrepreneurs. In addition, competition from global players makes survival difficult for young ventures. Another concern is the uneven distribution of opportunities—while metro cities flourish with entrepreneurial activity, smaller towns often lack infrastructure, internet connectivity, and skilled manpower. These challenges must be addressed through structural reforms, better credit access, and stronger support systems to ensure sustained entrepreneurial success.

Entrepreneurship and Global Competitiveness

Entrepreneurs not only serve local markets but also connect India to the global economy. Export-oriented startups, especially in technology and manufacturing, are building India's reputation as an innovation hub. For example, Indian IT startups are providing software solutions worldwide, while e-commerce platforms are selling Indian handicrafts to global customers.

To further strengthen global competitiveness, entrepreneurs need support in branding, intellectual property rights, and access to international markets. By 2047, Indian entrepreneurs should not only be serving domestic needs but also leading industries globally in clean energy, space technology, biotech, and digital platforms.

Entrepreneurship and Sustainable Development

Entrepreneurship is closely linked with the idea of sustainable growth. Green startups working in renewable energy, waste management, and organic farming contribute to both economic progress and environmental protection. Similarly, inclusive businesses that focus on marginalized communities help reduce inequalities. By promoting such models, India can align entrepreneurship with the Sustainable Development Goals (SDGs) and ensure that development is not achieved at the cost of natural resources or social equity. In this way, entrepreneurship can contribute to creating a developed nation that is both prosperous and sustainable.

Roadmap for Entrepreneurship in Viksit Bharat 2047

To ensure entrepreneurship becomes the central pillar of development, India must adopt a multi-pronged strategy:

1. **Expand access to finance:** Encourage venture capital, angel investors, and government-backed funds to support early-stage startups.
2. **Skill development:** Provide training in entrepreneurship, innovation, and global trade to youth and women.
3. **Ease of doing business:** Simplify regulations, reduce paperwork, and create a single-window clearance system for entrepreneurs.
4. **Promote research and innovation:** Strengthen collaboration between universities, industries, and startups.
5. **Encourage inclusive entrepreneurship:** Focus on rural, women, and socially disadvantaged entrepreneurs.
6. **Global integration:** Support entrepreneurs in accessing foreign markets, building global partnerships, and protecting intellectual property rights.

By implementing these measures, India can create a thriving ecosystem where entrepreneurship drives growth, inclusion, and innovation.

Conclusion

Entrepreneurship is the backbone of a progressive economy and a central force for achieving Viksit Bharat 2047**.** It is not just about creating businesses, but about solving societal challenges, empowering communities, and fostering innovation. Entrepreneurs can transform local economies, generate employment, and ensure that India competes globally with pride. By nurturing this spirit of enterprise with supportive policies, access to finance, skill development, and an enabling ecosystem, India can unlock its true potential. In the vision of Viksit Bharat 2047, entrepreneurs will not only create wealth but also shape the destiny of the nation by making it innovative, inclusive, and globally competitive.

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References :

1. Government of India. (2023). *Startup India Action Plan*. Ministry of Commerce and Industry. https://www.startupindia.gov.in
2. NITI Aayog. (2022). *India's Booming Startup Ecosystem*. NITI Aayog Publications.
3. World Bank. (2023). *Entrepreneurship and Economic Development: Insights for India*. World Bank Group.
4. OECD. (2022). *The Future of Entrepreneurship and Innovation*. OECD Publishing.
5. Sharma, R., & Patel, D. (2023). Startups and the Indian economy: A roadmap to 2047. *Journal of Entrepreneurship Research*, 15(2), 101–118.
6. Gupta, V. (2022). Women entrepreneurs and inclusive growth in India. *Indian Journal of Management Studies*, 29(1), 55–73.
7. PwC India. (2023). *India Startup Ecosystem Report*. PwC Publications.
8. BCG. (2022). *Digital Entrepreneurship in Emerging Economies*. Boston Consulting Group.
9. Kumar, S. (2024). Building entrepreneurial ecosystems for a developed India. *Journal of Policy and Development Studies*, 21(1), 78–95.

Understanding E-Commerce in India: Present Scenario, Challenges, and Future Potential

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Abstract

The e-commerce sector in India has witnessed significant growth over the past decade, driven by rapid digitalization, improved internet accessibility, and evolving consumer behavior. This study aims to explore the current scenario of e-commerce in India, highlighting its market size, major players, and usage trends. It also seeks to assess the key obstacles hindering its progress, such as digital illiteracy, logistical challenges in remote areas, cyber security concerns, and regulatory bottlenecks. Furthermore, the research investigates the factors contributing to the expansion of e-commerce, including government initiatives like Digital India, the proliferation of smart phones, secure payment gateways, and improved delivery networks. By understanding these dimensions, the study provides insights into the opportunities and challenges that shape the future of e-commerce in India.

Key words: E-Commerce, Market, e-logistic, B2B, C2C, C2B, Digitalization, GDP.

1. Introduction:

In recent years India has experienced a boom in internet and Smartphone penetration. As of November 2024, India has around 944.7 million wireless internet subscribers, which is increased from 941.5 from October 2024. The Smartphone base has also increased significantly and is expected to reach 1.1 billion by FY25. This has helped India's digital sector, and it is expected to reach US$ 1 trillion by 2030. This rapid rise in internet users and Smartphone penetration coupled with rising incomes has assisted the growth of India's e-commerce sector. India's e-commerce sector has transformed the way business is done in India and has opened various segments of commerce ranging from Business-to-Business (B2B), direct-to-consumer (D2C), Consumer-to-Consumer (C2C) and Consumer-to-Business (C2B).

2. Objectives of Study:

The objectives of present study are:

1. To know the current scenario of e-commerce in India.
2. To assess the obstacles to e-commerce in India.
3. To examine the factors contributing to the expansion of e-commerce in India.

3. Research Methodology:

This study is based on secondary data collected from a range of sources, including books, national and international journals, and various websites focusing on different aspects of e-commerce.

4. Why is E-Commerce Important to India?

In 2018, India earned the distinction of being the world's fastest-growing economy. The country's retail sector plays a substantial role, contributing 10% to the

GDP and providing employment to 8% of the workforce. Comparatively, the e-commerce industry accounts for only about 2% of GDP though it's projected to climb to 12% by 2026. Although its current market share is modest, India's e-commerce industry ranks among the top 10 fastest-growing globally. Studies indicate that the sector could potentially generate over one million new jobs by 2022. Beyond creating typical corporate positions, e-commerce is poised to stimulate job growth in complementary sectors like logistics and warehousing. For every position created within the e-commerce domain, an estimated 3 to 4 additional jobs may emerge in supporting industries.

What's particularly noteworthy isn't just the number of jobs being created, but also the kinds of roles emerging. Around 100,000 core positions are expected to center on technological functions such as algorithm design and interface development. In supporting areas, e-logistics is set to lead the way, with projections of over 300,000 new roles. As e-commerce reaches beyond India's major cities, last-mile delivery alone could represent nearly two-thirds of the overall employment growth in this sector. This shift is set to reshape the labor market in profound ways. As technology continues to evolve, many traditional job categories may become obsolete. For example, the rise of electric vehicles is likely to reduce job opportunities in the conventional auto sector, while rapid advancements in artificial intelligence may dampen employment growth in areas like human resources and finance.

5. Significance of E-Commerce Market to Foreign Investors:

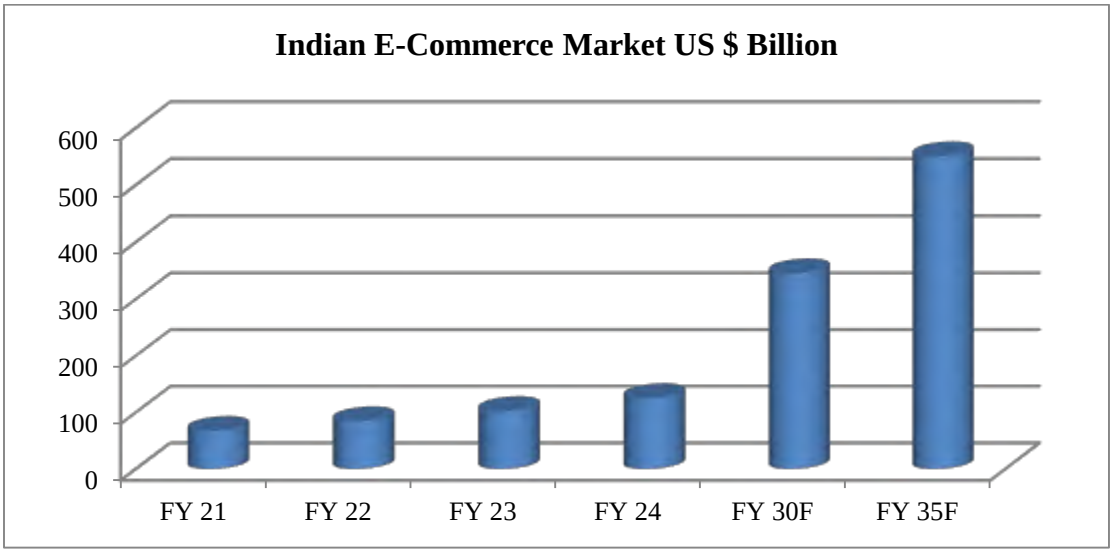
Foreign investors are well aware of the vast potential of India's E-Commerce market. India is projected to overtake the United States to become the world's second-largest E-Commerce market. The market, valued at $38.5 billion in 2017, is expected to grow to $100 billion by 2022 and further to $200 billion by 2026. Driven by rising internet penetration, E-Commerce has emerged as the fastest-growing and most dynamic avenue for commercial activity in the country.

6. Indian E-Commerce Market Scenario:

According to a recent report by EY India, generative artificial intelligence (Gen AI) could enhance productivity in India's retail industry by 35–37% over the next five years. The report, titled *"The A Idea of India: 2025,"* reveals that 48% of Indian businesses have already initiated proof of concept (PoC) projects for Gen AI solutions, while another 32% are planning to invest or have already allocated budgets for AI adoption. In January 2025, the Unified Payments Interface (UPI) facilitated a total of 16,996 crore transactions, processing over Rs. 23.48 lakh crore (US$ 270.3 billion) in value. From April to June 2024, UPI recorded 2,762 crore transactions, with a total transaction value of Rs. 44 lakh crore (US$ 525.5 billion), indicating rapid growth in digital payments.

According to Counterpoint Research, India's Smartphone market became the second-largest in the world by unit volume and the third-largest by value in the third quarter of calendar year 2024 (CY24). During this period, India accounted for 15.5% of global Smartphone shipments. Furthermore, as per the International Data Corporation's (IDC) *Worldwide Quarterly Mobile Phone Tracker*, India's Smartphone market experienced a year-over-year (YoY) growth of 4%, with total shipments reaching 151 million units. The strong performance in the first half of the

year with a growth rate of 7% helped offset the slower 2% growth observed in the second half.



Source: News Article, F-Forecasted.

Above chart elaborate the growth trend and future projections of the Indian e-commerce industry from fiscal year (FY) 2021 to FY 2035. The data reveals a steady increase in market size during the initial years, followed by a sharp rise in the long-term forecast. Between FY21 and FY24, the market shows gradual growth. In FY21, the market was valued at approximately $80 billion. This figure increases consistently, reaching around $150 billion by FY24. This moderate growth reflects the ongoing digital adoption in India, supported by improving internet access, increasing Smartphone usage, and rising consumer confidence in online shopping.

However, from FY24 onwards, the market is projected to grow at a significantly faster pace. By FY30F, the e-commerce market is expected to more than double, reaching around $380 billion. This dramatic increase suggests a phase of accelerated expansion driven by deeper digital penetration, growing trust in e-commerce platforms, and enhancements in logistics and digital payment systems. The most remarkable growth is projected between FY30F and FY35F, where the market is expected to hit approximately $600 billion. This sharp rise indicates an exponential trend, signaling India's emergence as one of the world's largest e-commerce markets. Contributing factors likely include increasing rural internet access, expansion of digital infrastructure, favorable government policies, and broader adoption of online shopping across various demographic segments.

In summary, the chart demonstrates that India's e-commerce sector is not only growing steadily but is also expected to undergo rapid and transformational growth over the next decade, making it a key driver of the country's digital economy.

7. Key Enablers of E-Commerce Growth in India

7.1. Digital India Initiatives

The Government of India's flagship program, *Digital India*, has played a pivotal role in boosting internet accessibility across rural and urban regions alike. With increased affordability of smart phones and data packs, internet penetration has surged, leading to a corresponding rise in e-commerce users. These developments

indicate that the Digital India campaign is effectively paving the way for a connected and digital-first economy.

7.2. Secure Payment Options

The evolution of digital payment methods has significantly enhanced the convenience and security of online transactions. Innovations such as UPI (Unified Payments Interface), digital wallets, one-tap payments, and instant transfers have replaced traditional methods like card entry and internet banking credentials. Collaborations between fintech companies and banks have further ensured that these modern payment solutions remain safe, fast, and user-friendly.

7.3. Enhanced Logistics Infrastructure

India's logistics landscape has seen considerable improvement, enabling faster and more reliable delivery services. Courier companies have adopted technologies like real-time GPS tracking, allowing customers to monitor their orders and receive accurate delivery timelines. These advancements not only improve customer satisfaction but also reduce operational inefficiencies for e-commerce businesses.

7.4. Hassle-Free Return and Exchange Policies

Concerns over product fit, quality, or accuracy once deterred many from online shopping. Today, customer-friendly return and exchange policies have addressed these issues, offering shoppers the confidence to make purchases online. Many platforms now provide seamless returns and full refunds or exchanges at no additional cost, which enhances trust and encourages repeat purchases.

8. Prospects and Prediction:

The future of e-commerce in India appears highly promising, with projections indicating an annual growth rate of 18% through 2025. By 2030, India is expected to become the world's third-largest consumer market, highlighting the immense opportunities and potential within the country's e-commerce sector. The adoption of emerging technologies such as augmented reality, artificial intelligence, and machine learning is set to transform how consumers engage with e-commerce platforms, offering more personalized and immersive shopping experiences. Furthermore, with continued economic growth, rising consumer spending power, and the allowance of 100% FDI in B2B e-commerce and marketplace models, India's e-commerce ecosystem is well-positioned for sustained expansion and innovation.

9. Conclusion:

E-commerce in India is more than just a digital marketplace it's a driving force for economic growth, innovation, and social inclusion. Several key factors are fueling its rapid expansion. The widespread growth of internet connectivity, particularly in rural regions, is significantly expanding the customer base. At the same time, the rising use of smart phones and the availability of low-cost data plans have made online shopping more accessible than ever. The adoption of digital payment systems like the Unified Payments Interface (UPI) has streamlined transactions, enhancing user trust and convenience. Additionally, the rise of diverse e-commerce platforms offering competitive pricing, wide product ranges, and frequent discounts has drawn consumers from all walks of life. By overcoming challenges, encouraging innovation, and seizing emerging opportunities, India is well-positioned to unlock the full potential of e-commerce as a tool for nationwide prosperity and empowerment.

References:

1. https://www.ibef.org/industry/ecommerce
2. https://www.investindia.gov.in/team-india-blogs/golden-bird-electric-eagle-story-e-commerce-india
3. https://wizzy.ai/blog/present-future-of-ecommerce-industry-in-india/
4. https://www.ibef.org/industry/ecommerce-presentation

Exploring the Role of Micro, Small and Medium Enterprises in India's Development Agenda of Vision Viksit Bharat @ 2047

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ABSTRACT

Micro, Small and Medium Enterprises (MSMEs) are a vital component of India's economy as they create employment, promote innovation and contribute to industrial output. With India's vision of becoming a developed nation by 2047 under Vision Viksit Bharat @2047, the MSME sector is expected to play a transformative role in shaping the country's economic future. This study examines the opportunities and challenges that will influence the growth and competitiveness of MSMEs in the coming decades. On the opportunity side, digital transformation offers new ways for enterprises to expand their operations, improve efficiency and reach wider markets. Financial inclusion initiatives are also creating better access to credit and investment for small businesses. Furthermore, integration into global supply chains and the increasing demand for sustainable and environmentally friendly practices open new avenues for growth. However, the sector also faces persistent challenges. Regulatory complexities often make it difficult for smaller enterprises to function smoothly. Limited access to finance continues to restrict expansion while gaps in skills and training hinder productivity. Additionally, barriers to adopting advanced technologies slow down innovation and competitiveness. The study explores how supportive government policies, targeted schemes and strategic interventions can strengthen MSMEs and help them overcome these challenges. By embracing innovation, digitalization and sustainable business models, MSMEs can contribute significantly to India's economic progress. Ultimately, the sector's growth will be central to achieving India's long-term vision of becoming a developed economy by 2047, making it essential for policymakers, industry stakeholders and entrepreneurs to work together in shaping its future.

Keywords: MSMEs, Vision Viksit Bharat @ 2047, Digital Transformation, Economic Growth, Sustainability etc.

1. INTRODUCTION

Micro, Small and Medium Enterprises (MSMEs) are a crucial part of India's economy contributing approximately 30% to the country's GDP, 40% to exports and providing employment to over 110 million people. With India's goal of becoming a developed nation by 2047 under the *Vision Viksit Bharat @2047* initiative, MSMEs are expected to play a central role in driving economic growth. The sector is presented with significant opportunities yet it also faces ongoing challenges on its path toward global competitiveness and sustainable development. This study focuses on examining the future prospects of MSMEs in India by identifying the major opportunities and challenges likely to shape the sector over the next twenty years. It

also evaluates how government policies, technological innovations and strategic interventions can support MSMEs in adapting to a rapidly changing economic environment and achieving long term growth.

1.1 Evolution of the MSME Sectors in India

Micro, Small and Medium Enterprises (MSMEs) are a key pillar of India's economy playing a major role in generating employment, supporting industrial production and boosting exports. Over time, the sector has developed through a series of policy reforms, technological progress and shifts in the economic environment. This section examines the historical development of MSMEs in India and provides an overview of their present condition.

1.1.1 Pre-Independence Era (Before 1947)

Before India gained independence, traditional small-scale industries (SSIs) such as handicrafts, textiles and metalwork were widespread and formed an important part of the economy. However, British colonial policies led to the decline of many indigenous industries adversely affecting local businesses and artisans.

1.1.2 Post-Independence and Early Industrialization (1947–1991)

- ***1948****:* The Industrial Policy Resolution highlighted the importance of SSIs in India's economic development.
- ***1951****:* The Industries (Development and Regulation) Act classified Industries and provided protection to Small-Scale Enterprises.
- ***1956****:* The Second Five-Year Plan emphasized the promotion of Small-Scale Industries within India's mixed economy model.
- ***1970s–1980s****:* Various support measures were introduced including the establishment of the Small Industries Development Bank of India (SIDBI) and priority sector lending to strengthen small businesses.

1.1.3 Liberalization and Economic Reforms (1991–2006)

Economic liberalization in 1991 reduced government control over industries, encouraged competition and attracted foreign investment. The Micro, Small and Medium Enterprises Development (MSMED) Act of 2006 provided legal recognition to MSMEs by defining them based on investment and turnover. During this period, technology adoption and export-oriented policies helped integrate MSMEs into global markets.

1.1.4 Digital and Startup Revolution (2006–2020)

From 2015 onwards, initiatives such as *Startup India* and *Make in India* encouraged innovation and entrepreneurship. By 2018, the *Digital India* program accelerated the digital transformation of MSMEs. The growth of fintech solutions and e-commerce platforms further expanded market opportunities for small businesses.

1.1.5 Post-Pandemic Revival and Vision 2047 (2020–Present)

The COVID-19 pandemic in 2020 caused significant disruption to MSMEs prompting the government to introduce relief measures under the *Atmanirbhar Bharat* (Self-Reliant India) initiative. In 2022, MSMEs were reclassified based on turnover to improve access to credit and enhance scalability. Currently, the sector is focused on aligning with *Vision Viksit Bharat @2047*, emphasizing digitalization, sustainability and global competitiveness.

1.2 MSMEs and Their Role in the Indian Economy

Micro, Small and Medium Enterprises (MSMEs) are a fundamental part of India's economy contributing significantly to GDP, employment, industrial output and exports. The government considers MSMEs a major driver of economic growth, promoting entrepreneurship, innovation and inclusive development.

1.2.1 Contributions of MSMEs to the Indian Economy

- **GDP Contribution:** MSMEs account for roughly 30% of India's GDP supporting domestic manufacturing and service sectors.
- **Employment Generation:** The sector employs over 110 million people making it the second-largest employer after agriculture. It is particularly important for labor-intensive industries such as handicrafts, textiles, food processing and IT services.
- **Industrial Output:** MSMEs contribute nearly 45% of total manufacturing output and serve as key suppliers to large industries including automotive, pharmaceuticals and electronics.
- **Exports:** The sector contributes 40-45% to India's exports especially in gems and jewellery, leather, textiles and engineering goods.
- **Innovation and Entrepreneurship:** MSMEs promote grassroots entrepreneurship and have seen rapid growth in startups through programs like *Startup India* and *Atmanirbhar Bharat*.
- **Rural and Inclusive Development:** MSMEs help reduce regional disparities by supporting rural industries and providing opportunities for women and marginalized communities.

1.2.2 Government Support and Policy Initiatives

- **Financial Assistance & Credit Access:** *MUDRA Yojana* offers collateral-free loans to micro-enterprises, the *Credit Guarantee Fund Scheme (CGTMSE)* provides loan guarantees and the *Emergency Credit Line Guarantee Scheme (ECLGS)* aids post-pandemic recovery.
- **Digitalization Programs:** Initiatives like *Digital India* and the *Open Network for Digital Commerce (ONDC)* support MSMEs in adopting digital tools and expanding into e-commerce.
- **Skill Development & Entrepreneurship:** Programs such as *Skill India* and the *Cluster Development Programme (CDP)* train workers and improve infrastructure and competitiveness.

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- **Export Promotion:** Initiatives like *Zero Defect Zero Effect (ZED) Certification* ensure quality standards while trade agreements and MSME export hubs facilitate global market access.

2. LITERATURE REVIEW

The development and long-term sustainability of Micro, Small and Medium Enterprises (MSMEs) in India have been examined from multiple perspectives including their economic significance, policy frameworks, technological adoption, financial inclusion and integration into global markets. This review synthesizes existing research to assess the opportunities and challenges for MSMEs in the context of *Vision Viksit Bharat @2047*.

2.1 Contribution of MSMEs to Economic Development

MSMEs are widely acknowledged as a critical pillar of India's economic growth. As noted by the Ministry of MSME (2023), the sector contributes about 30% to GDP, 40% to exports and provides employment to over 110 million people. Studies show that MSMEs play a central role in generating jobs especially in rural and semi-urban regions thereby reducing economic disparities (Agarwal & Sharma, 2022). Further, NITI Aayog's *Strategy for New India @75* (2021) highlights MSMEs as drivers of entrepreneurship and inclusive development.

2.2 Policy Interventions and Government Initiatives

Over the years, India's policy ecosystem has continuously adapted to strengthen MSMEs. The *Atmanirbhar Bharat Abhiyan* introduced measures such as collateral-free loans, credit guarantees and incentives for domestic production (Government of India, 2023). Research by Kumar and Gupta (2021) indicates that these schemes improved financing opportunities but also brought challenges such as regulatory hurdles and procedural delays. The Production-Linked Incentive (PLI) scheme has further boosted domestic manufacturing and supported MSME participation in global supply chains (CII, 2023). However, Mishra (2023) observes that limited awareness and bureaucratic inefficiencies prevent MSMEs from fully benefiting from these initiatives.

2.3 Digital Transformation and Technology Adoption

Digitalization has emerged as a transformative force for MSMEs. Industry 4.0 technologies such as Artificial Intelligence (AI), Internet of Things (IoT) and automation have improved efficiency and expanded market reach. Agarwal and Sharma (2022) note that MSMEs adopting digital practices report higher productivity and cost savings. Government programs like *Digital India* and the *Open Network for Digital Commerce (ONDC)* are designed to accelerate digital integration (Government of India, 2023). Still, limited digital literacy, resource constraints and resistance to change remain significant barriers (KPMG India, 2023).

2.4 Financial Inclusion and Credit Access

Despite progress, access to formal finance continues to be a challenge for MSMEs. The Reserve Bank of India (2023) reports that more than 80% of MSMEs rely on informal borrowing leading to higher costs. Initiatives such as MUDRA loans, Stand-Up India and CGTMSE have expanded access to formal credit (World Bank, 2022). Nevertheless, stringent collateral requirements in traditional banking remain problematic (Kumar & Gupta, 2021). Emerging alternatives such as fintech-based

lending, peer-to-peer financing and digital credit platforms offer new avenues for financial inclusion (KPMG India, 2023).

2.5 Sustainability and Green Growth

With global emphasis on sustainable development, MSMEs are increasingly encouraged to adopt eco-friendly practices. Mishra (2023) highlights the potential of green manufacturing, waste management and renewable energy adoption to improve competitiveness. However, high costs, lack of awareness and limited access to green technologies create barriers (CII, 2023). To address these issues, government initiatives promoting a circular economy and carbon-neutral growth are gaining importance (Government of India, 2023).

2.6 Global Competitiveness and Export Potential

Given their 40% share in India's exports, MSMEs are an essential part of international trade (Ministry of MSME, 2023). Trade agreements such as the India-UAE CEPA, India-Australia ECTA and ongoing negotiations with the European Union present significant opportunities for MSME expansion into global markets (World Bank, 2022). Yet, logistical challenges, inconsistent adherence to global quality standards and limited market knowledge restrict MSMEs from realizing their full export potential (Kumar & Gupta, 2021).

3. OPPORTUNITIES FOR MSMES IN VISION VIKSIT BHARAT @2047

The Government of India's *Vision Viksit Bharat @2047* sets the ambition of building a self-reliant, technologically advanced and globally competitive economy by the centenary of independence. Within this vision, Micro, Small and Medium Enterprises (MSMEs) are expected to serve as a cornerstone of economic transformation. Rapid advancements in digitalization, finance, sustainability and international trade create unprecedented opportunities for MSMEs to expand, innovate and strengthen their role in national growth.

3.1 Digital Transformation and Industry 4.0

The adoption of Industry 4.0 tools such as Artificial Intelligence (AI), Internet of Things (IoT), blockchain and automation offers MSMEs opportunities to modernize operations, improve quality and reduce costs. Programs like *Digital India* and the *Open Network for Digital Commerce (ONDC)* are helping MSMEs embrace digital platforms, expand through e-commerce and transition to cloud-based and AI-driven business models. These initiatives will support better supply chain management, customer engagement and production efficiency.

3.2 Financial Inclusion and Access to Credit

Access to affordable finance remains a key growth enabler. Under *Vision Viksit Bharat @2047*, financial reforms are expected to expand digital lending, fintech solutions and blockchain-enabled transactions. Strengthened government schemes such as *MUDRA*, *CGTMSE* and *ECLGS* will simplify access to credit. Emerging models like peer-to-peer lending, venture capital and crowdfunding are also expected to open alternative funding channels for MSMEs.

3.3 Global Market Expansion and Export Promotion

With trade liberalization and new agreements such as the India-UAE CEPA and India-Australia ECTA, MSMEs have vast potential to expand internationally. Export hubs, promotion councils and subsidies for international certifications (ISO, CE, FDA) are being introduced to help firms meet global standards. Digital platforms such as *e-Sanchit* and *ICEGATE* further streamline customs processes while e-commerce export platforms connect small businesses directly with global buyers.

3.4 Green and Sustainable Manufacturing

The transition towards sustainability offers fresh opportunities for MSMEs. Initiatives like the *Zero Defect Zero Effect (ZED) Certification*, subsidies for renewable energy adoption and incentives for eco-friendly packaging and recycling are encouraging firms to adopt greener practices. Beyond reducing costs, these efforts can also make MSMEs eligible for green financing and environmentally conscious consumer markets.

3.5 Infrastructure Development and Industrial Clusters

Enhanced infrastructure will be central to MSME competitiveness. Industrial clusters, smart hubs and special economic zones are being developed to provide access to advanced machinery, R&D labs and logistics support. Projects like *Bharatmala* and *Sagarmala* will improve connectivity, lower transportation costs and expanding market reach. Participation in such ecosystems will enable MSMEs to collaborate with larger industries and scale efficiently.

3.6 Skill Development and Workforce Training

A skilled workforce is critical to MSME growth. Programs under *Skill India* and sector-specific training will help workers adapt to automation and digital technologies. Expansion of technical institutes and partnerships with universities will create innovation-oriented skill ecosystems. These efforts will enhance productivity, innovation and long-term competitiveness.

3.7 Innovation, Research, and Development (R&D)

Innovation and R&D will play a defining role in the growth of MSMEs. Government support through schemes such as the *MSME Innovative Scheme* and establishment of Technology Business Incubators (TBIs) will encourage startups and product innovation. Public-private partnerships will further strengthen R&D efforts enabling MSMEs to develop niche products, protect intellectual property and capture specialized global markets.

3.8 Women Entrepreneurship and Inclusive Growth

Women entrepreneurs are poised to become key contributors to India's economic future. Schemes like *Stand-Up India*, business training and networking programs are designed to promote women-led enterprises. Encouraging greater female participation in MSMEs not only enhances economic growth but also supports inclusive and equitable development.

4. CHALLENGES CONSTRAINING MSME GROWTH IN INDIA

Micro, Small and Medium Enterprises (MSMEs) represent a cornerstone of India's economic system contributing notably to GDP, exports and employment generation. Yet, despite their immense potential, these enterprises encounter persistent barriers that restrict their expansion and global competitiveness. These hurdles range from financing gaps and complex regulations to inadequate infrastructure, limited digital adoption and vulnerability to global shocks. Addressing these challenges is essential to strengthen their role in achieving the goals of Vision Viksit Bharat @2047.

4.1 Restricted Access to Finance

Access to credit remains a major concern for MSMEs. While several government-backed schemes exist, many enterprises continue to face difficulties such as:

- **Collateral Requirements:** Banks often demand heavy collateral which small firms are unable to provide.

- **High Borrowing Costs:** Interest rates for MSMEs tend to be higher compared to large corporations.
- **Delayed Payments:** Outstanding dues from corporate and government entities strain working capital.
- **Low Awareness of Credit Schemes:** Many entrepreneurs are unfamiliar with support programs like MUDRA loans or CGTMSE.

4.2 Complicated Regulations and Compliance Burden

MSMEs operate within a multilayered regulatory framework that creates both cost and compliance pressures:

- **GST Complexities:** Frequent changes in GST rules add confusion and increase compliance expenses.
- **Rigid Labor Laws:** Employment regulations often discourage flexibility in hiring and workforce management.
- **Environmental and Safety Norms:** Complying with sustainability and safety standards is costly for smaller firms.
- **Bureaucratic Delays:** Multiple licenses and approvals are required to establish or expand businesses.

4.3 Slow Adoption of Technology and Digital Practices

A large share of MSMEs still follow traditional business processes, limiting their efficiency:

- **Low Awareness:** Many small business owners remain unaware of the potential of AI, cloud systems and automation.
- **High Costs of Digital Tools:** Investing in IT infrastructure and advanced equipment is often unaffordable.
- **Cybersecurity Risks:** Limited security measures expose businesses to digital frauds and data theft.
- **Reluctance Toward Digital Payments:** Despite growth in digital transactions, cash continues to dominate in many MSMEs.

4.4 Market Access Limitations and Competition from Big Firms

Market penetration remains a significant challenge, both domestically and globally:

- **Weak Branding and Marketing:** Smaller firms lack resources to establish strong brands.
- **Quality Standards Gap:** Inability to meet international certifications (ISO, CE, etc.) hampers exports.
- **Competition from Corporates:** Larger companies with stronger supply chains and resources overshadow MSMEs.
- **Dependence on Intermediaries:** Reliance on middlemen reduces profits and market visibility.

4.5 Infrastructure Gaps and Supply Chain Inefficiencies

Inadequate infrastructure continues to hinder MSME productivity especially in rural areas:

- **Transport and Logistics Issues:** Poor Road connectivity and high logistics costs raise production expenses.
- **Unreliable Power Supply:** Frequent power cuts disrupt operations and reduce efficiency.
- **Absence of Industrial Clusters:** Operating in isolation prevents collaboration and resource-sharing.

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- **Raw Material Challenges:** Price fluctuations and supply shortages impact profitability.

4.6 Shortage of Skilled Workforce and Training Opportunities

Human capital development remains a critical barrier:

- **Limited Skilled Labor:** Particularly in rural regions, finding trained workers is difficult.
- **Training Gaps:** Despite programs like Skill India, many MSMEs are unable to benefit due to weak implementation.
- **High Turnover:** Skilled workers often migrate to larger firms for better pay.
- **Reluctance to Invest in Training:** Many businesses avoid training due to associated costs.

4.7 Weak R&D and Innovation Capabilities

Research and innovation remain underdeveloped among MSMEs:

- **High R&D Costs:** Funding constraints prevent investment in innovation and patenting.
- **Limited Collaboration:** Partnerships with universities and R&D bodies are rare compared to large corporations.
- **Low Awareness of Incentives:** Many firms fail to utilize government schemes supporting innovation.

4.8 Vulnerability to Economic and Global Shocks

MSMEs are highly sensitive to external disruptions:

- **Supply Chain Interruptions:** Events such as COVID-19 or geopolitical conflicts have exposed vulnerabilities.
- **Demand Volatility:** Market slowdowns reduce sales and revenues.
- **Currency and Inflation Pressures:** Rising inflation and rupee depreciation inflate raw material costs.
- **Trade Barriers:** Tariffs and non-tariff restrictions limit international expansion.

5. POLICY RECOMMENDATIONS AND STRATEGIC INTERVENTIONS FOR MSME GROWTH

Micro, Small and Medium Enterprises (MSMEs) are often described as the foundation of India's economic strength given their contributions to GDP, exports and employment generation. However, persistent challenges such as limited access to finance, cumbersome regulations, low technology penetration and stiff competition continue to restrict their growth potential. To unlock opportunities in line with Vision Viksit Bharat @2047, a well-rounded policy framework coupled with strategic interventions is necessary to provide MSMEs with a more enabling ecosystem.

5.1 Expanding Access to Finance and Credit

A reliable and inclusive financial system is essential for MSMEs to sustain and expand their operations. Key measures include:

- **Strengthening Credit Guarantee Mechanisms:** Enhance the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) to lower risks for lenders and increase MSME credit flow.
- **Subsidized Credit Facilities:** Introduce concessional interest rates, particularly for enterprises in rural and semi-urban regions.
- **Diversified Funding Sources:** Encourage equity funding, venture capital, crowdfunding and peer-to-peer lending as alternatives to traditional bank loans.
- **Timely Payments Enforcement:** Mandate strict penalties for delayed payments through platforms like MSME Samadhan.

- **FinTech-Driven Credit Access:** Leverage AI-powered assessment tools for loans based on performance indicators rather than collateral requirements.

5.2 Streamlining Regulatory and Compliance Framework

Regulatory complexities often impose high compliance costs on small businesses. To address this, the government should:

- **Single-Window Compliance System:** Launch an integrated portal for tax filings, licensing, labour laws and registrations.
- **Simplified GST Processes:** Introduce user-friendly filing mechanisms and higher exemption thresholds.
- **Tailored Labor Laws for MSMEs:** Ensure flexible workforce management policies suitable for small enterprises.
- **Faster Approvals:** Reduce timelines for setting up operations, securing land and obtaining environmental clearances.
- **Digital Compliance Tracking:** Incorporate AI and blockchain for automated monitoring, reducing manual paperwork.

5.3 Driving Digital Transformation and Industry 4.0

Technological adoption is critical for MSMEs to remain competitive in a globalized economy. Suggested measures include:

- **Subsidies for Technology Adoption:** Provide incentives for automation, cloud-based systems and AI-driven tools.
- **Digital Skilling Programs:** Establish digital training centres for MSME owners and workers to build competence in e-commerce, AI and cybersecurity.
- **E-Commerce Integration:** Facilitate participation in platforms like ONDC to expand domestic and international reach.
- **Affordable Smart Manufacturing:** Promote cost-effective AI, IoT and automation tools for small manufacturers.
- **Strengthened Cybersecurity Support:** Offer grants and technical aid to safeguard MSMEs from digital vulnerabilities.

5.4 Expanding Market Reach and Trade Participation

For MSMEs to scale up, enhanced domestic and global market access is crucial. Policies should focus on:

- **Boosting Export Capabilities:** Provide subsidies for international certifications and strengthen Export Hubs and Councils.
- **MSME-Oriented Trade Agreements:** Negotiate favourable FTAs and offer targeted facilitation for global supply chain participation.
- **Government Procurement Support:** Enforce a 25% procurement mandate for MSMEs and improve access to GeM (Government e-Marketplace).

5.5 Building Infrastructure and Cluster Development

Infrastructure is a key determinant of MSME competitiveness. Policy priorities include:

- **Smart Industrial Clusters:** Establish MSME-focused parks with shared facilities, testing labs and logistics support.
- **Logistics and Transport Networks:** Develop specialized logistics hubs and integrate MSMEs with projects like Bharatmala and Sagarmala.
- **Reliable Utilities and Connectivity:** Ensure consistent electricity at concessional rates and expand high-speed internet in semi-urban and rural business zones.

5.6 Workforce Development and Skills Training

A future-ready workforce is vital for MSME expansion. Recommendations include:

- **Tailored Vocational Training:** Align Skill India with MSME-specific needs and encourage apprenticeships.
- **Public-Private Partnerships in Training:** Foster collaborations between MSMEs, universities and technical institutes.
- **Support for Inclusive Entrepreneurship:** Expand funding and mentoring for women-led MSMEs and promote rural enterprises through microfinance and SHGs.

5.7 Strengthening Research, Development and Innovation

Long-term competitiveness relies on innovation and intellectual property creation. Suggested interventions are:

1. **Innovation Grants and Tax Incentives:** Scale up funding under MSME Innovation Schemes and provide fiscal incentives for R&D spending.
2. **MSME Innovation Hubs:** Expand Technology Business Incubators (TBIs) and provide support for patents and IP protection.
3. **Collaborative Research:** Encourage joint R&D programs with academic and private sector partners.

6. CONCLUSION

The Micro, Small and Medium Enterprise (MSME) sector remains a cornerstone of India's economy contributing significantly to GDP, employment and exports. Yet, despite its immense potential, the sector continues to grapple with barriers such as inadequate access to finance, regulatory complexities, technological limitations and intense market competition. To unlock its full potential in alignment with Vision Viksit Bharat @2047, a comprehensive and multi-dimensional strategy is required. Strengthening financial mechanisms, simplifying compliance, accelerating digital adoption, improving infrastructure and expanding domestic as well as international market access are essential to building a more competitive and resilient MSME ecosystem. A future-ready MSME sector will depend on collaborative efforts between the government, industry stakeholders and financial institutions. Strategic investments in skill development, entrepreneurship and innovation can drive inclusive growth while ensuring sustainability. Furthermore, fostering research and development, alongside promoting women-led and rural enterprises, will enhance the sector's role in bridging economic disparities. With the right mix of policy reforms, technology integration and institutional support, India's MSMEs can evolve into engines of economic transformation. Their empowerment will not only accelerate job creation and boost exports but also position India as a global leader in sustainable and inclusive industrial development. By enabling MSMEs to thrive, India can move closer to achieving the vision of becoming a fully developed, self-reliant and globally competitive economy by 2047.

REFERENCES

1. Agarwal, P., & Sharma, R. (2022). Digital transformation of MSMEs in India: Challenges and opportunities. *Journal of Business and Innovation, 12*(3), 45–60.
2. Confederation of Indian Industry. (2023). *Future of MSMEs in India: Policy and growth roadmap*. https://www.cii.in
3. Government of India. (2023). *Vision Viksit Bharat @2047: Roadmap for economic growth*. Ministry of Finance.
4. KPMG India. (2023). *The role of MSMEs in achieving India's economic vision 2047*. https://home.kpmg/in

5. Kumar, S., & Gupta, V. (2021). Financial inclusion and MSMEs: The role of Fintech in India's growth. *Indian Journal of Finance and Banking, 9*(2), 25–39.
6. Ministry of Micro, Small & Medium Enterprises. (2023). *Annual report 2022–23*. Government of India. https://msme.gov.in
7. Mishra, A. (2023). Sustainable growth of MSMEs in India: A path towards green economy. *International Journal of Business Sustainability, 15*(1), 78–95.
8. NITI Aayog. (2021). *Strategy for New India @75*. Government of India. https://www.niti.gov.in
9. Reserve Bank of India. (2023). *Report on trend and progress of banking in India 2022–23*. https://www.rbi.org.in
10. World Bank. (2022). *MSME financing in India: Challenges and solutions for sustainable growth*. https://www.worldbank.org

Sustainable Development: Water, Waste, and Resource Management for 2047

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ABSTRACT

Sustainable development in the domains of water, waste, and resource management is central to realizing India's vision of becoming a developed nation by 2047. This study aligns with India's "Water Vision @ 2047," government documents, and global frameworks such as the United Nations' Sustainable Development Goals (SDGs). It emphasizes integrated urban development, circular economy principles, sustainable agriculture, and smart technology adoption. Key themes include designing out waste, promoting closed-loop systems for water and materials, developing climate-resilient infrastructure, and leveraging digital tools for efficiency and transparency. Government initiatives like the Jal Jeevan Mission, Swachh Bharat Mission, and Jal Shakti Abhiyan serve as foundational policies. This paper highlights strategic frameworks, technologies, and practices that India must adopt to secure water, manage waste effectively, and use resources sustainably by 2047.

Keywords: Viksit Bharat @2047, Sustainable Development, Resource Management, Water, Waste, Circular Economy.

INTRODUCTION

Sustainable development has become one of the most pressing priorities for nations worldwide due to the growing challenges of climate change, urbanization, and environmental degradation. Water, waste, and resource management are at the center of this discourse because they directly affect public health, food security, and ecosystem stability. In India, water scarcity, inefficient waste management, and unsustainable resource use remain significant concerns. By 2047 when India envisions itself as a developed nation these challenges must be addressed through innovative and inclusive approaches. Effective management strategies must balance environmental, social, and economic factors. Rational use of wastewater, adoption of circular economy practices, decentralized waste management, and technology-driven water monitoring are crucial. This paper examines India's ongoing initiatives, policy frameworks, and best practices while offering recommendations for achieving long-term sustainability in resource use.

Resource Management

Micro, Small and Medium Enterprises (MSMEs) are a key pillar of India's economy playing a major role in generating employment, supporting industrial production and boosting exports. Over time, the sector has developed through a series of policy reforms, technological progress and shifts in the economic environment. This section examines the historical development of MSMEs in India and provides an overview of their present condition. A holistic approach to resource management should consider technical, environmental, social, and economic aspects. Integrated

water resources management (IWRM) is essential for ensuring equitable access and efficient usage. Key strategies include:

- **Water conservation and demand management** through rainwater harvesting, greywater reuse, and agricultural water efficiency.
- **Wastewater as a resource**—treated wastewater can be reused in industries, agriculture, and urban landscaping, thereby reducing freshwater stress.
- **Circular economy** approaches where waste is redesigned as input for new processes, reducing pressure on natural resources.

Smart Technologies in Water and Waste Management: Technological innovation plays a central role in achieving sustainability. Examples include:

- **Smart Water Treatment Systems**: Membrane filtration, reverse osmosis, and Zero Liquid Discharge (ZLD) systems to reduce freshwater dependency.
- **Digital Monitoring Tools**: GIS-based mapping and IoT-enabled devices for real-time monitoring of water quality, groundwater levels, and waste management systems.
- **Artificial Intelligence (AI) Applications**: Predictive analytics for drought management, flood forecasting, and efficient urban water supply planning.

Sustainable Resource Use in Agriculture and Industry

Agriculture remains the largest consumer of water in India. Sustainable practices such as micro-irrigation (drip and sprinkler systems), organic farming, and precision agriculture can significantly reduce water use. Industries must adopt cleaner production techniques, closed-loop manufacturing, and recycling mechanisms. Municipalities, too, should move towards decentralized waste management, composting, and biogas generation to reduce landfill dependency.

Government Initiatives and Policy Frameworks: India has launched several flagship initiatives that align with sustainable development goals:

1. **Viksit Bharat @2047** – The overarching framework for India's development journey.
2. **National Water Mission (NWM)** – Focused on increasing water-use efficiency by 20%.
3. **Jal Jeevan Mission** – Aims to provide tap water to every rural household using digital monitoring.
4. **Swachh Bharat Mission** – Promotes sanitation and solid waste management with technology-based monitoring.
5. **Jal Shakti Abhiyan: Catch the Rain** – Promotes rainwater harvesting and groundwater recharge.
6. **NITI Aayog's Compendium of Best Practices in Water Management** – Provides a repository of scalable models.

International Frameworks and Best Practices

India's policies must also be benchmarked against international frameworks for long-term success. The UN Sustainable Development Goals (SDGs**)**, especially Goal 6 (Clean Water and Sanitation), provide global targets. Organizations such as the World Meteorological Organization (WMO) and the World Bank provide

technical resources for water resources assessment, climate resilience, and infrastructure planning.

Key strategies include:

- **Water Resources Assessment (WRA):** Studying the availability, dependability, and quality of water resources to support integrated planning.
- **Circular Economy in Waste Management:** Converting waste into energy, fertilizers, or reusable materials.
- **Climate-Resilient Infrastructure:** Designing urban systems to withstand extreme weather events such as floods and droughts.

Recommendations for 2047

1. Establish national-level data integration platforms for real-time water and waste monitoring.
2. Scale up public-private partnerships for wastewater reuse and recycling plants.
3. Mandate sustainable agricultural practices through subsidies and incentives.
4. Promote community-driven water and waste management for local empowerment.
5. Strengthen climate adaptation strategies in infrastructure planning.

Conclusion

Sustainable development in water, waste, and resource management is not just a necessity but a foundation for India's journey towards becoming a developed nation by 2047. Aligning national policies with international frameworks, adopting smart technologies, and embedding circular economy practices will ensure long-term environmental security and economic growth. Achieving this vision requires collective action from governments, industries, communities, and individuals.

References:

1. Ministry of Jal Shakti. (2022). *Water Vision @ 2047*. Government of India.
2. NITI Aayog. (2021). *Compendium of Best Practices in Water Management*. New Delhi.
3. Ministry of Education. (2023). *Viksit Bharat @2047 Portal*. Government of India.
4. National Water Mission (NWM). (2021). *Jal Shakti Abhiyan: Catch the Rain*. Government Report.
5. Confederation of Indian Industry (CII). (2022). *Circular Economy in India: Opportunities and Challenges*.
6. World Bank. (2020). *Water Resources Management in South Asia: Policy and Practice*. Washington, D.C.
7. World Meteorological Organization (WMO). (2019). *Water Resources Assessment Guidelines*. Geneva.
8. Council on Energy, Environment and Water (CEEW). (2022). *Sustainable Resource Management in India*.
9. United Nations. (2015). *Sustainable Development Goals*. United Nations Development Programme.
10. Shah, K. (2021). *Sustainability and Resource Management: Indian Perspectives*. Journal of Environmental Studies.

शांततेची दूत: मलाला युसुफझाई

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जिल्हा जळगाव.

प्रस्तावना :-

आधुनिक काळात मानवाने चंद्रापर्यंत झेप घेतली आहे. मानवी शक्ती आणि तंत्रज्ञाना पुढे आज काहीच अशक्य नाही. जगातील सगळ्या मुलांना चांगलं शिक्षण देण्याचा आपण निर्धार केला पाहिजे. जगातील एकी मूल शाळे शिवाय राहणार नाही. बालकामगार म्हणून त्याचे शोषण होणार नाही. मुलांना शिकवणे हा गुन्हा ठरणार नाही. या उज्वल भविष्याची ज्योत आत्ताच पटवली पाहिजे. या विचाराने प्रेरित झालेली मलाला शिक्षणापासून वंचित असलेल्यांच्या हक्कासाठी लढा देत आहे. ज्यांना शिक्षण मिळत नाही त्यांचा आवाज जगापर्यंत पोहोचवण्याचे काम करीत आहे. शांततेची दूध असलेली मलाला मुलींच्या शिक्षणासाठी मशाल हाती घेऊन निर्भयपणे काम करीत आहे. शस्त्रास्त्राने नाही तर शिक्षणाने जगात शांतता नांदेल असा तिचा विश्वास आहे. मानवी कल्याणाचा मलालाने ध्यास घेतला आहे. उद्दिष्टे किंवा हेतू कथन _ १) मुस्लिम धर्मातील रूढी परंपरा चालली तिचा अभ्यास करणे २) मुस्लिम शरी या लॉ चा अभ्यास करणे.३) तालिबानी आतंकवादी संघटनांची माहिती घेणे.४) आतंकवादाबद्दल जगभरात असलेल्यां प्रतिक्रिया समजून घेणे.५) जगभरातील वंचितांना शिक्षण मिळावे त्यासाठी प्रयत्न करणे. ६) मुस्लिम समाजातील स्त्री शिक्षणाची माहिती घेणे.७) मुस्लिम बुर्का किंवा हिजाब पद्धती विषयी माहिती घेणे.८) मुस्लिम स्त्रियांना अनेक क्षेत्रात स्वातंत्र्य मिळावे म्हणून मुसलमानांची मानसिकता समजावून घेणे. संशोधन आराखडा _ अफगाणिस्तान आणि पाकिस्तान यांच्या मधल्या वायव्य सरहद्द प्रांतातील निसर्ग सुंदर स्वात जिल्ह्यामध्ये मिंगोरा हे मोठे शहर आहे. अतिशय दुर्गम आणि डोंगराळ भूभाग असलेला या ठिकाणी अनेक आदि वासी जमाती रहात होत्या. त्यातील युसुफझाई ही एक जमात आहे. हातावर पोट भरत असलेली ही माणसं वर्षानुवर्षे गरिबी अन्याय आणि अत्याचार सहन करणारी आहेत. इथला निसर्ग मात्र संपन्न आहे. प्राचीन काळात स्वात ही गौतम बुद्धांची पवित्र भूमी मानली जाई.

मलाला युसुफझाईचा जीवन परिचय :-

मलालाच्या वडिलांचे नाव जिया उद्दीन युसुफझाई व आईचे नाव तुर्पेकई हे आहे. तुरपेकई ही शिक्षण न घेतलेली अशिक्षित स्त्री आहे. परंतु स्वतःच्या मुला मुलींनी शिक्षण घ्यावे ही तिची इच्छा होती. मलाला चा जन्म इसवी सन 1998 मध्ये झाला. मलालाचे वडील जिया उद्दीन युसुफझाई हे कवी होते. त्यांनी मंगोरा या गावी खुशाल पब्लिक स्कूल ची स्थापना केली आहे. या शाळेत सर्व मुली शिकत असत. जिया उद्दीन शाळेच्या प्रगतीसाठी झपाटल्यासारखे काम करत होते. मुलांना शिकवून शहाणे करणे हाच गरिबी आणि अस्थिर परिस्थिती दूर करण्याचा मार्ग आहे

असे त्यांना मनापासून वाटत होते. जरी जियाउद्दीन मंगोरा या गावी राहत असले तरी संधी मिळताच किंवा कामानिमित्त आपल्या कुटुंबासह आपल्या मूळ गावी खेड्यात जात असत गावातील नाते वाईक मंडळींना भेटत असत सगळे मलालाचे कौतुक करायचे. अफगाणिस्तानच्या कंदहार शहराजवळ मेवाद नावाचे शहर होतं. इसवी सन 1880 इंग्रजांच्या फौज्यांनी मैदान शहरावर हल्ला केला त्याच काळात मेहमान गावात धनगराच्या मुलीचे लग्न होतं. तिचं नाव मला लाई होतं. तिच्या लग्नाच्या दिवशी युद्ध सुरू झाल्याने मला नाही व तिचा नवरदेव तिचे आई-वडील सर्वांनी युद्धात भाग घेतला. इंग्रजांविरुद्ध युद्धात मला लाईने सैनिकांसाठी उत्स्फूर्त गाणी रचली. ती गाणी म्हणायची. मला नाही उत्तम गायिका होती. तिच्या गाण्यांमध्ये राष्ट्रवादी होता. या युद्धात ब्रिटिशांचा पराभव झाला. व अफगाणींचा विजय झाला. मात्र या युद्धात मलाला वीरमरण आले. तिच्या स्मृती प्रित्यर्थ स्वात खो़्यात तिचा पुतळा उभारण्यात आला. तिच्या नावावरूनच तिच्यासारखीच उत्तम गुणी मुलगी मलाला व्हावे अशी जिया उद्दीन ची इच्छा होती. म्हणून तिच्या नावावरूनच आपल्या मुलीचे नाव जियाउद्दीने मलाला असे ठेवले होते.

मलाला युसुफझाईवर तालिबानी आतंकवाद्यांचा हल्ला :-

स्वात खोरे अफगाणिस्तान एरियात तालिबाने आतंकवाद्यांची दहशत होती. मुस्लिम मुलींना शिक्षणासाठी त्यांचा विरोध होता. अफगान आतंकवादी मौलाना यांचे एम एम रेडिओवर प्रमाण किंवा आदेश येत असत. महिलांना शिक्षण द्यायचे नाही मुलींना सुद्धा शाळेत पाठविणे बंद करा मुलींसाठी सुरू केलेल्या मदर्से बंद करा असे फर्मान येत असत. आणि ज्या मुली शाळेत जात त्यांना मारून टाकले जाईल त्यांच्यावर हल्ले केले जात .असा प्रकार मलाला युसुफझाई च्या बाबतीत घडून आला होता. एक दिवस मलाला शाळेत जात असताना अफगाणी आतंकवाद्यांनी घेराव टाकला व मला लाला शाळेत जाऊ नको म्हणून धमकी दिली. मला लहाने त्यांची धमकी मानली नाही. म्हणून अफगाणी आतंकवाद्यांनी मलालावर हल्ला केला. याच काळात अफगाणिस्तान व पाकिस्तान सरकारमध्ये संघर्ष सुरू झाला होता. कारण जागतिक आतंकवादी ओसमा बिन लादेनचे साथीदार मारले गेले होते. त्याचा राग येऊन पाकिस्तान विरुद्ध युद्ध छेडले गेले. निंभोरा शहरात संचारबंदी लागू झाली. आत्मघाती तालिबानी बॉम्ब सैनिकांवर पाकिस्तानी सैनिक यांच्या चकमक होऊ लागली. गोळीबार होत असत. रंगीबेरंगी कपडे वापरायचे नाही शाळेत जायचं नाही असे फतवे येत असत. कारण मुलींच्या शाळा बंद करण्याचा फतवा निघाला. बुरखा घातला पाहिजे. पाचशे मध्ये लोकांसारखा पोशाख नको. त्यामुळे मुली बिघडतात असे तालिबानी आतंकवाद्यांचे म्हणणे होते. परंतु मलालाने बुरखा घालण्यास नकार दिला. स्वात खो़्यामध्ये नेहमी गोळीबार होत असतात. मलालाच्या वडिलांनी कुटुंबांना घेऊन गाव सोडले. काही काळानंतर पाकिस्तान व अफगाणिस्तान यांच्या शांतता करार झाला. तेव्हा पुन्हा मलालाची कुटुंब गावी परत आले. मलाला पुन्हा शाळेत जाऊ लागली. पण मला ज्या स्कूल बस मध्ये शाळेत जात होती. त्या स्कूलबस वर तालिबानी आतंकवाद्यांनी हल्ला केला. मलालावर बंदुकीचा गोळीबार करण्यात आला. म्हणजे 9 ऑक्टोबर 2012 या दिवशी स्कूल बस मध्ये बसलेल्या मलालावर बंदुकीच्या गोळ्या झाडण्यात आल्या. जखमी मलाला पेशावरच्या सैनिकी हॉस्पिटलमध्ये नेण्यात आले. बंदुकीची गोळी डाव्या बाजून गालातून डाव्या खांद्यात अडकली

होती. ऑपरेशन करून डाव्या खंडातील गोळी बाहेर काढली. मात्र तिच्या गंभीर प्रकृतीमुळे ब्रिटिश डॉक्टर जावेद आणि डॉक्टर फीयो ना यांच्या सल्ल्यानुसार तिला रावळपिंडीच्या दवाखान्यात नेण्यात आले. तेथून तांत्रिक अडचणीमुळे युनायटेड अरब अमिराती सरकारच्या मदतीने मला लाला लंडनच्या क्वीन एलिझाबेथ बरमिंग हॅम या हॉस्पिटल या हॉस्पिटलमध्ये नेण्यात आले. ब्रिटनचे माजी पंतप्रधान गार्डन ब्राऊन दवाखान्यात आले. मलालासाठी प्रार्थना दिवस जाहीर केला. मलालाच्या प्रकृतीत सुधारणा झाली. आणि जगभरातील मुलांना शिकवा हे जाहीर आव्हान केले. शाळे बाहेर राहिलेले 10 कोटी बालकांना शाळेत प्रवेश दिला जावा असे जगभरातील संघटनांना सांगितले.

पुरस्कार व सन्मान :-

मलालाच्या कामाची जगभरात दखल घेतली गेली आणि तिला पुढील पुरस्कार जाहीर केले. मलाला युसुफझाई ला मिळालेले काही निवडक सन्मान आणि पुरस्कार _ १) पाकिस्तान सरकारचा 2011 चा पहिला राष्ट्रीय शांतता पुरस्कार २) नेदरलँड संस्थेचा 2014 चा नोबेल पुरस्कार (हावर्ड विद्यापीठ) ३) 2014 चा आंतरराष्ट्रीय शांतता पुरस्कार ४) इटाली सरकारने मलाला सन्माननीय नागरिकत्व बहाल 2011 मध्ये ५) 2013 मध्ये फ्रान्सच्या सिमोन दे बोदलियर पुरस्कार बहाल ६) नॅशनल युनियन ऑफ टीचर्स डे फ्रेंड अँड जोर्वेस सन्मान ७) युरोपियन संघाचे सकारो मानवाधिकार पुरस्कार ८) युनायटेड किंगडम चा अँड फेक ट्रस्टन 2012 चा नैतिक धैर्य पुरस्कार ९) 2013 चा वॉशिंग्टन येथे व्हायसेस ग्लोबल लीडरशिप पुरस्कार १०) आयर्लंड चा अग्निस्टी टॉप मानवाधिकार पुरस्कार ११) 2012 मध्ये टाइम्स ऑफ मॅगझीनने जगातील टॉप व्यक्तींमध्ये मलालाची निवड करण्यात आली.१२) संयुक्त राष्ट्रसंघाचे बाण की मून यांच्या जनरल सेक्रेटरी हस्ते न्यूयॉर्कमध्ये सत्कार १३) दहा डिसेंबर 2014 चा कैलास सत्यार्थी समवेत नोबेल शांतता पुरस्कार व इतर अनेक पुरस्कार मिळाले आहेत.

एक मूल एक शिक्षक एक लेखणी आणि एक पुस्तक हे जग बदलू शकते. तालिबान यांनी बंदुकीची गोळी झाडलेल्या मुलींपेक्षा शिक्षणासाठी लढणारी मुलगी अशीच माझी ओळख व्हावी. जीव घेण्या हल्ल्यावेळी झालेल्या तालिबान्यांच्या गोळया जिंकल्या नाहीत. जेव्हा सगळे जग शांत असतं तेव्हा आपला एकच आवाज शक्तिशाली बनू शकतो. संयुक्त राष्ट्र संघाने मालाला दिवस साजरा केला हा मनाला दिवस माझा एकटीचा नसून जगातील प्रत्येक स्त्रीचा मुलाचा आणि मुलीचा तो दिवस आहे. सगळयांना समानतेची संधी मिळू द्या आणि आमचा शिकण्याचा मार्ग मोकळा करा. भारतात गरीब निरागस मुलाच्या बालकामगार म्हणून बळी दिला जातो नायजेरियातील शाळा उध्वस्त केल्या जात आहेत. तलवारी होऊन लेखणीची ताकद अधिक बलशाली आहे. मुलींच्या शिक्षणाला विरोध करणाऱ्यांचा विरोधात माझा लढा आहे. दहशतवादी शिक्षणाच्या ताकतीला आणि स्त्रियांना घाबरतात. त्यांना पेन आणि पुस्तकाची भीती वाटते. समता न्याय आणि शांतता सर्वांना मिळो. अशी मलालाची इच्छा आहे.

निष्कर्ष :-

जग पंचविसाव्या शतकात असताना सुद्धा अजून कितीतरी वंचित मुला मुलींना शिक्षण मिळत नाही. त्यांना बालकामगार म्हणून राबविले जाते. या समस्याविरुद्ध अनेक संस्था संघटना व कैलास विद्यार्थी सारखे सामाजिक कार्य करणारी व्यक्ती सतत प्रयत्न व संघर्ष करीत आहेत. तरी मुलींना शिक्षण मिळावे यासाठी धडपडणारी आणि बाल शिक्षणाचे स्वप्न पाहणारी मलाला युसुफझाई अफगाणिस्तान अतिरेक्यांचा जीव घेण्या हल्ल्यातून वाचलेली मलालाचे कार्य अतिशय वेदनादायी व प्रत्येक व्यक्तीला विचार करायला लावणारे आहे. अजूनही समाजात जागृती होणे गरजेचे आहे. जगभरात मुलींना शिक्षण देण्यावर संयुक्त राष्ट्र संघटना इंग्लंड अमेरिका फ्रान्स अफगाणिस्तान संयुक्त अरब अमिराती मध्ये प्रयत्न सुरू झाले आहेत. काम करणाऱ्या नंबर बऱ्याचदा हल्ले केले जातात पण जीवाची परवा न करता आम्हाला सारखे कार्यकर्ते कार्य करीत आहेत. जगभरातील युवा पिढीला आव्हान करत आहेत. मलालावर पुन्हा आतंकवाद्यांचा हल्ला होऊ नये म्हणून लंडनच्या स्कूलमध्ये तिला ऍडमिशन देण्यात आले. तिथे ती शिक्षण घेत आहे. सध्याच्या काळात असे सकारात्मक कार्य होण्याची गरज आहे.

संदर्भ ग्रंथ सूची :-

१) मलालाची डायरी_ डायरी ऑफ पाकिस्तान स्कूल गर्ल

२) मलालाचे नोबेल पारितोषिक मिळाल्यानंतर चे भाषण

३) मला लाला मिळालेल्या विविध पुरस्कारांची माहिती.

४) संयुक्त राष्ट्र संघाचा मालाला दिन विषयक मजकूर तसेच बीबीसी न्यूज

५) कायम मनाला मलालाची क्रिस्तीना लॅम्ब सोबतची आत्मकथा

६) विविध वृत्तपत्रे दैनिक लोकसत्ता दैनिक लोकमत दैनिक दिव्य मराठी दैनिक पुण्यनगरी दैनिक सकाळ

७) मासिक, द टाइम्स ऑफ इंडिया ;इंडिया टुडे

८) डब्ल्यू.डब्ल्यू.डब्ल्यू .विकिपीडिया हिंदी

९) मलाला फॉर द नोबेल पीस प्राइज भाषण

१०) मलाला युसुफझाई फेसबुक

११) बाबा भांड शांततेचे नोबेल पारितोषिक विजेते मलाला साकेत प्रकाशन औरंगाबाद.

महिला सक्षमीकरण आणि लैंगिक समानता

प्रा.डॉ.रणजित माणिकराव आठवले
सहयोगी प्राध्यापक ,अर्थशास्त्र विभाग प्रमुख
श्री.शिवाजी विद्या प्रसारक संस्थेचे श्रीमती पी.बी.बागल महा.दोंडाईचा जिल्हा.धुळे

प्रस्तावना

समाजाच्या विकासामध्ये स्त्रियांची भूमिका अत्यंत महत्त्वाची आहे. स्त्री आणि पुरुष यांना समान संधी उपलब्ध करून देणे हे प्रत्येक राष्ट्राच्या प्रगतीसाठी आवश्यक आहे.ज्या ज्या भागात महिलांना पुरुषाप्रमाणे सर्वाच क्षेत्रात काम करण्याची समान संधी उपलब्ध आहे.अश्या प्रत्येक भागाचा,क्षेत्राचा प्रदेशाचा सर्वांगीण विकास झालेला दिसून येते. महिला विकास व मानवी हक्क यांचा निकटचा संबध आहे. महिलांच्या मागासलेपणाचे सर्वात महत्वाचे कारण म्हणजे त्यांना आतापर्यंत येथील मानवी विकृत्ती असलेल्या पुरुष जातीने अनेक मानवी हक्कापासून वंचित ठेवले आहे.भारतीय मानव समाजाच्या प्रगतीचा प्राचीन काळातील इतिहासाचा अभ्यास केला असता असे दिसून येते कि भगवान बुद्धाच्या काळात स्त्री –पुरुष समानता त्यांच्या धर्मात होती. भगवान बुद्धाच्या काळातील इतिहास अभ्यासल्यास असे दिसुन् येते .याचाच अर्थ असा होतो हि मानव जातीच्या उत्पत्तीपासून मातृसत्ताक संस्कृती भारतीय समाजामध्ये होती.म्हणजेच प्रीतुसत्तक संस्कृती हि अलीकडच्या काही वर्षापूर्वीची असावी असे म्हणण्यास वावगे ठरणार नाही.मध्ययुगीन काळात जाणता राजा छत्रपती शिवाजी महाराज यांनीही आपल्या राज्यामध्ये स्त्रियांना मानाचे स्थान देऊन स्त्री पुरुष समानता प्रस्थापित करण्याचा प्रयत्न केलेला आहे.असे ऐतहासिक उपलब्ध साहित्य व पौराणिक ग्रंथाच्या अभ्यासावरून लक्षात येते.महात्मा फुले यांनी आपली पत्नी सावित्रीबी यांना तत्कालीन परिस्थितीला तोंड देऊन शिक्षण दिले.आणि पहिली मुलीची शाळा काढली , त्या शाळेमध्ये पहिली महिला शिक्षिका म्हणून सावित्रीबाई फुले यांनी शिकविन्याच्ये महान कार्ये केले.या सर्व कार्यांचा समाजातील सर्वच घटकांना लाभ घेता यावा.सर्वाना शिक्षण घेता यावे.पुरुषांना जे अधिकार आहेत तश्याच प्रकारचे सर्व अधिकार महिलांना मिळायला पाहिजे यासाठी भारतरत्न डॉ बाबासाहेब आंबेडकर यांनी भारतीय संविधानामध्ये तशी तरतूद करून ठेवली. महिला सक्षमीकरण आणि लैंगिक समानता या केवळ सामाजिक न्यायाच्या संकल्पना नाहीत तर त्या आर्थिक, राजकीय आणि सांस्कृतिक विकासाच्या दृष्टीने देखील तेवढ्याच महत्त्वाच्या आहेत. प्रस्तून प्रकरणा मध्ये महिला सक्षमीकरण आणि लैंगिक समानता या विषयी मांडणी केली आहे.

- **संकल्पना व परिभाषा महिला सक्षमीकरण (Women Empowerment) :-**

  महिला सक्षमीकरण म्हणजे महिलांना त्यांच्या जीवनातील शैशाणिक, सामाजिक, आर्थिक, राजकीय व सांस्कृतिक क्षेत्रांमध्ये कार्ये करण्याची समान संधी उपलब्ध करून

देणे, तसेच निर्णय घेण्याचे अधिकार मिळवून द्यण्यासाठी व स्वावलंबनासाठी सक्षम करणे होय.

- शैक्षणिक सक्षमीकरण :- मुलींना सर्वच क्षेत्रात गुणवत्तापूर्ण शिक्षण मिळून देणे.
- आर्थिक सक्षमीकरण : - महिलांना रोजगाराच्या सर्वच शेत्रामध्ये,जसे व्यवसाय व आर्थिक संसाधनाचा समान हक्क मिळवून देणे.रोजगाराच्या संधी उपलब्ध करून देणे.
- सामाजिक सक्षमीकरण :- स्त्रियांना कुटुंब ,समाज व सामाजिक संस्थांमध्ये समान संधी उपलब्ध करू देणे.
- राजकीय सक्षमीकरण :- राजकारण व निर्णय प्रकियेत महिलांच्या मताला महत्व देणे.त्यांना राजकीय पटलावर पूर्णपणे निर्णय घेता यावा एवढी मोकळीक मिळणे होय.
- लैंगिक समानता (Gender Equality):-
  सर्वसामान्यपणे लैंगिक समानता म्हणजे पुरुष आणि महिला यांना उत्पादनाचा सर्वच शेत्रामध्ये समान संधी उपलब्ध करून देणे.म्हणजे लैंगिक समानता असा अर्थ घेतला जाते.परंतु अर्थशास्त्रात याची परिभाषा करताना पुढील काही बाबी स्पस्ट पणे लक्षात घेणे आवश्यक आहे.लैंगिक समानता म्हणजे पुरुष आणि महिला तसेच इतर सर्व लिंगाणा समान संधी ,हक्क व संसाधनांचा वापर करण्याचा कायदेशी अधिकार असणे होय.ते पुढील प्रमाणे अधिक स्पस्ट करता येईल .
- समान शिक्षणाचा अधिकार.:- मुलगा –मुलगी असा भेद ण करता दोघानाही शिक्षणाच्या समान संधी उपलब्ध करून देणे.
- समान रोजगारांच्या संधी :- ज्या ठिकाणी महिला आणि पुरुष एकत्रित पणे काम करतात अश्या सर्वच ठिकाणी समान कामाचे समान वेतन व अधिकार आणि कामाचे तास व कामाचा दर्जा समान असायला पाहिजे.
- समाजातील स्थान :- सामाजिक रूढी ,प्रथा आणि परंपरा यांच्यात स्त्रियांना अडकून ण ठेवता त्यांना पुरुषा प्रमाणेच समाजातील स्थान ,मान सन्मान मिळाला पाहिजे.
- कायद्यापुढे समानता :- समाजातील सर्वच घटकांना उच्च निच्च असा भेद भाव न करता सर्व मानव कायद्यापुढे समान असायला पाहिजे.प्रत्येकाला आपली बाजू मांडण्याचा ,जीवन जगण्याचा कायदेशीर अधिकार असायला पाहिजे .

थोडक्यात महिला सक्षमीकरण म्हणजे स्त्रियांना त्यांच्या जीवनातील निर्णय स्वतंत्रपणे घेण्याचे स्वातंत्र्य, समान अधिकार व संधी प्रदान करणे होय. लैंगिक समानता म्हणजे पुरुष आणि स्त्रिया यांना शिक्षण, रोजगार, आरोग्य, आर्थिक संधी तसेच सामाजिक सहभागामध्ये समान हक्क मिळणे.

महिला सक्षमीकरणाचे पैलू

1. शैक्षणिक सक्षमीकरण: मुलींना समान शैक्षणिक संधी उपलब्ध करून देणे.

2. आर्थिक सक्षमीकरण: रोजगार, उद्योजकता व आर्थिक स्वावलंबन.

3. सामाजिक-सांस्कृतिक सक्षमीकरण: परंपरा व रूढींमध्ये परिवर्तन घडवणे.

4. राजकीय सक्षमीकरण: स्थानिक स्वराज्य संस्थांमध्ये महिला प्रतिनिधित्व.

5. कायदेशीर सक्षमीकरण: स्त्रियांच्या सुरक्षेसाठी व हक्कांसाठीचे कायदे.

भारतातील महिलांची स्थिती

प्राचीन भारतात महिलांना गौरवाचे स्थान होते, परंतु मध्ययुगीन काळात त्यांचे स्थान खालावले. स्वातंत्र्योत्तर काळात महिलांना शिक्षण, राजकारण व सामाजिक क्षेत्रात अनेक संधी मिळाल्या. तरीही आजही पितृसत्ताक व्यवस्था, अशिक्षितपणा आणि सामाजिक भेदभाव दिसून येते. याचे मुख्य करणा म्हणजे भारतीय संस्कृती, येथील पौराणिक ग्रंथ. मनुवादी विचारसरणी, जाती व धर्मा धर्मा विषयी असलेला संभ्रम या मुले अनेक समस्या निर्माण झाल्या आहेत.

- **स्त्रियांचे हक्क आणि आंतरराष्ट्रीय संघटना :-**

अगदी प्राचीन काळापासून स्त्रिया सामाजिक व कौटुंबिक अन्यायाच्या बळी ठरल्या होत्या.पारंपारिक भारतीय समाजात तर स्त्रियांना अनेक हक्कापासून वंचित ठेवण्यात आले होते.इतकेच नव्हे तर,स्त्री हि पुरुषांच्या मार्गातील अडसर आहे अशा दृस्टीकोनातून स्त्रियांकडे पाहिले जात होते.साधारणता विसाव्या शतकाच्या सुरवातीपासून स्त्रियांच्या अवस्थेत व सामाजिक स्थानात बदल होण्यास सुरुवात झाली.त्यांना सामाजिक जीवनात पूर्वीपेक्षा अधिक स्वातंत्र्य मिळू लागले.शिक्षण सुविधा थोड्याफार प्रमाणात मिळू लागले त्यामुळे रोजगार व आर्थिक स्वावलंबन यामुळे स्त्रिया घरांच्या बाहेर पडू लागल्या.

संयुक्त राष्ट्रसंघाच्या संदेतच स्त्रियांच्या हक्कांचा स्पस्ट शब्दात उल्लेख करण्यात आला आहे.यामध्ये कोणताही देश लिंग भेद करणार नाही,धर्माच्या नावावर कोणताही भेद केला जाणार नाही.आपले मुलभूत स्वातंत्र्य वृद्धिगत करणे हे प्रत्येकाचे वैयाक्तिक स्वातंत्र्य आहे.अश्या प्रकारची कायदेशीर तरतूद करून महिला सक्षमीकरण आणि लैंगिक समानता यावर भर दिला आहे.सन १९७५ हे वर्ष आंतराष्ट्रीय महिला वर्ष म्हणून साजरे केले.

सन १९७६ ते १९८५ हे दशक 'संयुक्त राष्ट्रसंघाने महिला दशक म्हणून संपूर्ण जगभर साजरे केले.सन १९९५ मध्ये चीनची राजधानी असलेल्या बींजिंग या शहरात चौथ्या जागतिक महिला परिषदेचे आयोजन केले.तर सन २००० मध्ये संयुक्त राष्ट्रसंघाच्या आमसभेचे महिलाविषयक विशेष अधिवेशन आयोजित करून या मध्ये जगातील १८० महिला प्रतिनिधींनी सहभाग घेऊन महिलांचे हक्क,महिला सक्षमीकरण आणि लैंगिक समानता निर्माण करण्यासाठी काय उपाययोजना करता येतील यातील चर्चा करण्यात आली.यावरून महिला सक्षमीकरण आणि लैंगिक समानता प्रस्थापित करण्यासाठी संयुक्त राष्ट्र संघ किती प्रयन्त्शील आहे हे लक्षात येते.

- **शासकीय व स्वयंसेवी उपक्रम**

भारतीय राज्य घटनेने भारतीय महिलांना सर्वाचा क्षेत्रात समान अधिकार कायदेशीर दिले आहे.म्हणून भारतीय संविधानाला मानवी हक्काचा जाहीरनामा असेही म्हणतात. मानवी हक्काची जपणूक करणारा एक सुरक्षित ठेवा आहे.यामध्ये डॉ.बाबासाहेब आंबेडकर यांचे नावं

स्वाभिमानाने घेतले जाते.देशला स्वातंत्र्य मिळाल्यानंतर म्हणजेच २६ जानेवारी १९५० नंतर जेंव्हा भारतीय संविधाच्या नियमाप्रमाणे देशाचे राज्यकारभार सुरु झाला तेंव्हापासूनच भारत सरकारने महिला सक्षमीकरणासाठी विविध योजना राबवल्या आहेत: सन १९९३ च्या चौऱ्याहत्ताराव्या घटनादुरुस्ती कायद्यान्वये राज्यघटनेत महिलांसाठी आरक्षणाची तरतूद करण्यात आली.यामध्ये नागरी स्थानिक स्वराज्य संथांमध्ये महिलांसाठी एक –तृतीयांश जागा राखीव ठेवण्याची व्यवस्था या कायद्यात करण्यात आली आहे.यावरून असे लक्षात येते कि भारतीय राज्यघटनेने सर्व महत्वाच्या घटनात्मक अधिकारपदांसाठी पात्रतेचे निकष सर्व महिलांच्या विकासासाठी उर्जा मिळाल्यासारखे आहे.महिला सक्षमीकरण आणि लैंगिक समानता निर्माण व्हावी यासाठी अलीकडच्या काळात भारत सरकारने काही कायद्यामध्ये घटना दुरुस्ती करून नवीन कायद्यांचा समावेश केला आहे. त्यामध्ये (१) अनैतिक व्यापार (प्रतिबंध) कायदा,१९५६ (२) मातृत्व लाभ कायदा,१९६१ (३) हुंडा- बंदी कायदा ,१९६१ (४) स्त्रियांचे असभ्य प्रदर्शन (प्रतिबंध) कायदा,१९८६,(५) सतीप्रथा (प्रतिबंध) कायदा ,१९८७ ,(६) राष्ट्रीय महिला आयोग कायदा,१९९० ,(७) कौटुंबिक हिंसेपासून स्त्रियांचे संरक्षण कायदा,२००५ , (८) बालविवाह बंदी कायदा ,२००६,या व्यतिरिक्त बेटी बचाओ बेटी पढाओ, महिला शक्ति केंद्र, जननी सुरक्षा योजना, स्वयंरोजगार योजना. तसेच स्वयंसेवी संस्था (NGOs) महिला बचत गट, स्वयंसहायता गट (SHGs) यांच्या माध्यमातून देशात महिला सक्षमीकरण आणि लैंगिक समानता प्रस्थापित करण्याचे कार्ये सरकार करीत आहे.

लैंगिक समानतेचे महत्त्व

लैंगिक समानता ही सामाजिक समतेची हमी आहे.जर सर्व मानव जातीने भारतीय संविधाच्या मुलभूत कर्त्यव्य आणि अधिकाराचे प्रामाणिक पणे पालन केल्यास आणि उत्पादनाचा सर्वच क्षेत्रात महिलांना समान संधी दिल्यास ,देशातील शिक्षण, उद्योग, राजकारण, विज्ञान व कला या विविध क्षेत्रात महत्त्वाचे योगदान देउन एक सक्षम भारत उभा करतील याउलट जर . स्त्री-पुरुष यांच्यात समन्वय नसेल तर देशाचा शाश्वत विकास घडून येणे शक्य नाही.

आव्हाने व अडथळे : –

भारतीय समाजामध्ये स्त्री पुरुष यांच्यात समानता नसण्याबाबत अनेक समस्या किंवा आव्हाने आहेत.ते पुढील प्रमाणे दिसून येतात.

- 1.महिलांमध्ये शिक्षणाचा अभाव व उच्च शिक्षणामध्ये कमी सहभाग.
- 2.सामाजिक प्रथा ,रूढी परंपरा, बालविवाह व पितृसत्ताक मानसिकता.
- 3. कामाचे स्वरूप सारखे असले तरी पुरुषांच्या तुलनेत महिलांना कमी मजुरी दिली जाते.कार्यक्षेत्रात वेतनातील असमानता (Gender Pay Gap).
- 4.मुलींकडे समाजाचा पाहण्याचा दुस्टीकोण, कौटुंबिक हिंसा व लैंगिक शोषण.
- 5. राजकीय प्रतिनिधित्व आणि त्यामध्ये महिलांचा सहभाग हा मर्यादित आहे.

यशस्वी उदाहरणे

भारतीय संविधानाने महिला व पुरुष यांना समान अधिकार दिले.तसेच कायद्यापुढे सर्व मानव समाज एक आहे.याचाच अंगीकार करून भारताची पहिली महिला पंतप्रधान म्हणून श्रीमती इंदिरा गांधी यांना संधी मिळाली,पहिली महिला राष्ट्रपती श्रीमती प्रतिभाताई पाटील यांनी देशाचे सर्वोच्च स्थान मिळविले.ज्या प्रमाणे आज देशाच्या राजकारणात अनेक महिला यशेस्वीहोतांना दिसून येत आहेत.त्याच प्रमाणे देशातील खी महत्वाच्या पदावर आज महिला आपल्ये स्वताचे अस्तीत्व प्रस्थापित करीत आहे.एवढेच नव्हे तर उद्योग, व्यापार, शिक्षण, कायदा,प्रशासकीय सेवा,सुरक्षा या विविध क्षेत्रात आपल्ये कर्त्यव पार पाडीत असून त्यांच्यातील एक आई,एक मुलगी,एक पत्नी. या सर्व जबाबदाऱ्यांहि समर्थ पणे पार पडतांना दिसून येतात.अश्याच काही यशस्व्ही महिलांच्या कल्याणासाठी देशात भारत सरकारने काही कार्येक्रम राबविले आहेत.

1. स्वयं-सहायता गट (Self-Help Groups – SHGs): ग्रामीण महिलांच्या आर्थिक उन्नतीसाठी महत्त्वपूर्ण. 2. सेल्फ-एम्प्लॉयड वुमेन्स असोसिएशन (SEWA): महिलांच्या आर्थिक स्वावलंबनासाठी कार्यरत. 3. महाराष्ट्रातील महिला बचत गट: बचत व कर्ज योजनांमुळे महिलांची उन्नती.

उपाययोजना व शिफारसी

- मुलींना समान शैक्षणिक संधी मिळाव्यात.
- महिलांसाठी आरोग्य व पोषण कार्यक्रम वाढवावेत.
- रोजगाराच्या समान संधी व उद्योजकतेसाठी प्रोत्साहन द्यावे.
- कायद्यांची कठोर अंमलबजावणी व्हावी.
- सामाजिक मानसिकतेत बदल घडवावा.
- आधुनिक तंत्रज्ञानाच्या माध्यमातून महिलांना सक्षम बनविण्यासाठी त्यांना शिक्षण व प्रशिक्षण सुविधा उपलब्ध करून द्याव्यात.
- राजकीय क्षेत्रात ३३ टक्क्यावरून ५० टक्के राजकीय प्रतिनिधित्व करण्याची संधी मिळाली पाहिजे

निष्कर्ष

महिला सक्षमीकरण आणि लैंगिक समानता या केवळ सामाजिक न्यायाच्या संकल्पना नाहीत तर त्या राष्ट्राच्या आर्थिक, राजकीय व सांस्कृतिक प्रगतीसाठी अत्यावश्यक आहेत. महिलांना समान संधी मिळाल्यास कोणत्याही देशाचा शाश्वत विकास साध्य होऊ शकतो.

संदर्भसूची

1. भारताचे संविधान
2. राष्ट्रीय महिला आयोग अहवाल
3. UNDP, UN Women Reports

4. Census of India, 2011
5. Sustainable Development Goals (SDG Reports)
6. शैक्षणिक व संशोधनात्मक लेख
7. डॉ. बाबासाहेब आंबेडकर गौरव ग्रंथ . समता प्रकाशन नागपूर,
8. मानवी हक्क, के सागर प्रकाशित, पुणे
9. दैनिक वृत्तपत्रे , साप्ताहिक , मासिके
10. भारतीय अर्थव्यवस्था

विकसित भारत २०४७ च्या दिशेने अल्पभूधारक शेतकरी आणि शाश्वत शेती एक आर्थिक विश्लेषण

प्रा.शुभम मनोहर सुरवाडे
मा.ध.पालेशा वाणिज्य आणि
कला व विज्ञान महाविद्यालय,धुळे

गोषवारा

भारत २०४७ पर्यंत "विकसित भारत" बनवण्याच्या दृष्टीने अल्पभूधारक शेतकरी शेती क्षेत्रातील अत्यंत महत्त्वाचे घटक आहेत. हे शेतकरी देशातील बहुसंख्य शेतीधारक आहेत आणि त्यांचा आर्थिक, सामाजिक व उत्पादनात्मक विकास हा देशाच्या एकूण प्रगतीसाठी अनिवार्य आहे. सध्याच्या आर्थिक परिमाणानुसार, शेती व संबंधित क्षेत्रांचा एकूण सकल मूल्य २०२३-२४ मध्ये सुमारे १७.७ % होता आणि हे क्षेत्र रोजगाराचे महत्त्वाचे स्रोत देखील आहे. अल्पभूधारक शेतकऱ्यांना अनेक अडचणींचा सामना करावा लागतो. जमिनीचे तुकडीकरण, पाण्याचा अभाव, बाजारपेठेत असमानता आणि हवामानजोखीम ही त्यातील मुख्य समस्या आहेत. या समस्यांवर मात करण्यासाठी सरकारने विविध योजना राबवल्या आहेत. यामध्ये प्रधानमंत्री किसान योजना, प्रधानमंत्री पिक विमा योजना, राष्ट्रीय कृषी बाजार (e-NAM), शेतकरी संघटनांचे शेतकरी उत्पादक संघटना (FPO), तसेच सूक्ष्मसिंचन व स्थानिक पाण्याची साठवणूक यांचा समावेश आहे. २०४७ साठी शाश्वत शेती साध्य करण्यासाठी सरकारने एक आराखडा (रोडमॅप) तयार केला आहे. यात पाणी वाचवणारी सूक्ष्मसिंचन प्रणाली (मायक्रो-इरिगेशन), हवामानावर आधारित विमा, FPO-केंद्रित उत्पादन मूल्यवर्धन, डिजिटल बाजारपेठेत प्रवेश, तसेच मातीच्या आरोग्याचे डेटा-आधारित व्यवस्थापन यावर भर दिला आहे. हा कार्यक्रम तीन टप्प्यांत राबवला जाणार आहे — २०२५-30, २०३०-४० आणि २०४०-४७ . या पद्धतीने अल्पभूधारक शेतकऱ्यांचे उत्पादन, उत्पन्न आणि शेती शाश्वत बनविण्यात सुधारणा होईल. योग्य धोरणात्मक हस्तक्षेप व तंत्रज्ञानाच्या योग्य वापराद्वारे अल्पभूधारक शेतकऱ्यांचे उत्पन्न वाढवणे आणि त्यांची शेती टिकाऊ बनवणे २०४७ पर्यंत शक्य आहे. यामुळे "विकसित भारत २०४७" चे ध्येय साकार होण्यास मदत होईल.

कि -वर्डस : विकसित भारत २०४७, शाश्वत शेती , अल्पभूधारक शेतकरी , प्रधानमंत्री योजना

१. प्रस्तावना

भारताच्या अर्थव्यवस्थेत सेवा क्षेत्र जरी सध्या सर्वात मोठे असले तरी शेती आणि संबंधित क्षेत्रांचा वाटा अजूनही महत्त्वपूर्ण आहे. २०२३-२४ मध्ये भारताच्या एकूण उत्पादन आणि सेवा क्षेत्रातील मूल्यवर्धनात (सकल एकून मूल्यवर्धन, GVA) शेती आणि संबंधित क्षेत्रांचा अंदाजे १७.७ % वाटा होता. ग्रामीण भागातील रोजगाराच्या दृष्टीने शेती हा महत्त्वाचा आधार आहे. त्यामुळे २०४७ पर्यंत "विकसित भारत" साधण्यासाठी शेतीत सर्वसमावेशक आणि टिकाऊ वाढ साधणे

अत्यावश्यक आहे. भारतातील शेतीधारकांची संरचना अत्यंत तुकड्यात विभागलेली आहे. कृषी जनगणना आणि विविध अभ्यासांनुसार सरासरी शेतीची जागा (ऑपरेशनल होल्डिंग) दशकानु दशकांमध्ये घटत गेली आहे. १९७०-७१ मध्ये सरासरी शेतीची जागा २.३ हेक्टर च्या जवळपास होती, जी २०१५-१६ मध्ये ~१.०८ हेक्टरवर आली, तर काही भागांत प्रत्यक्ष शेतीसाठी वापरली जाणारी जमीन फक्त ०.५६ – ०.७०हेक्टर आहे. यामुळे उत्पादनक्षमता कमी होते, नव्या तंत्रज्ञानाचा स्वीकार करणे कठीण होतो, आणि बाजारपेठेत सौदेबाजीची क्षमता मर्यादित होते. उद्योगीकरण, नागरीकरण आणि हवामान बदलामुळे पाणी-संसाधने व मातीच्या आरोग्यावर ताण वाढत आहे. २०२३ च्या केंद्रीय भूजल मंडळ अहवालानुसार देशातील वार्षिक भूजल पुनर्भरण ४४६.९ BCM आहे, उपलब्ध उत्खननक्षम भूजल ४०६.१९ आहे, तर प्रत्यक्ष उत्खनन २४५.६४ BCM आहे, म्हणजे सुमारे ६० % "उत्खननाच्या टप्प्यात" आहे. अनेक जिल्ह्यांमध्ये ही पातळी "अतिउत्खनन किंवा गंभीर" श्रेणीत येते, ज्यामुळे पाण्याची शाश्वत उपलब्धता धोक्यात येते. या पार्श्वभूमीवर अल्पभूधारक शेतकऱ्यांसाठी शाश्वतता आणि उत्पन्नवाढ हे दोन प्रमुख स्तंभ आहेत. शाश्वततेसाठी जल-कार्यक्षमता, माती पोषण संतुलन, हवामान-जोखमीपासून संरक्षण यावर भर दिला जातो. उत्पन्नवाढीसाठी उत्पादनक्षमता सुधारणा, मूल्यवर्धन, आणि बाजार-जुळवणी या उपाययोजनांचा समावेश आहे. या दोन स्तंभांवर आधारित, २०४७ साठी अल्पभूधारक शेतकऱ्यांचे आर्थिक रूपांतर आणि टिकाऊ शेतीची रूपरेषा मांडणे हे यामागील उद्दिष्ट आहे.

२. भारतातील अल्पभूधारक शेतकऱ्यांची स्थिती

भारत हा कृषिप्रधान देश असून देशातील सुमारे ८६ टक्के शेतकरी हे लहान किंवा अल्पभूधारक आहेत. अल्पभूधारक शेतकरी म्हणजे दोन हेक्टरपेक्षा कमी जमिनीवर शेती करणारे शेतकरी. या शेतकऱ्यांसमोर अनेक अडचणी आहेत ज्यामुळे त्यांचे जीवनमान व उत्पन्न खूप मर्यादित राहते. सर्वात मोठा प्रश्न म्हणजे जमिनीचे तुकडीकरण. वारसाहक्कानुसार जमिनीचे तुकडे होणे, शेतकऱ्यांचे क्षेत्रफळ लहान करणे यामुळे उत्पादनक्षमता कमी होते. त्याचबरोबर, सिंचनाची कमतरता आणि आधुनिक शेती साधनांचा अभाव यामुळे समस्यां अधिक वाढतात. शेतकरी पारंपरिक पद्धतींवर अवलंबून असतात, ज्यामुळे उत्पादन खर्च जास्त आणि उत्पादन कमी होते. याशिवाय, बाजारपेठेतील अस्थिरता आणि हमीभावाचा अभाव शेतकऱ्यांसमोर आर्थिक संकट निर्माण करतात. अनेकदा शेतकरी दलालांच्या माध्यमातून आपले पीक विकतो, ज्यामुळे त्यांना योग्य किमतीत उत्पादन विकता येत नाही. हे सर्व घटक एकत्र येऊन शेतकऱ्यांचे उत्पन्न कमी करतात आणि त्यांना शेतीतून शाश्वत उपजीविका मिळवणे कठीण होते. अल्पभूधारक शेतकऱ्यांची स्थिती सुधारण्यासाठी आवश्यक आहे की त्यांना सिंचन सुविधा, आधुनिक तंत्रज्ञान, बाजारपेठेची थेट माहिती आणि अनुदाने मिळावी. यामुळे त्यांचे उत्पादन वाढेल, खर्च कमी होईल आणि शेतीतून दीर्घकालीन उत्पन्न मिळण्यास मदत होईल. शेतीत सुधारणा केल्यास अल्पभूधारक शेतकऱ्यांचे जीवनमान उंचावू शकते आणि ते आर्थिकदृष्ट्या अधिक सक्षम बनतील.

३. शाश्वत शेतीची संकल्पना

शाश्वत शेती ही अशी शेती आहे जी केवळ उत्पादनक्षम नसून पर्यावरणाचे संतुलन राखणारी, माती, पाणी आणि नैसर्गिक साधनसंपत्तीचे संरक्षण करणारी आणि शेतकऱ्यास आर्थिकदृष्ट्या फायदेशीर ठरणारी असते. ही संकल्पना केवळ उत्पादन वाढविण्यावर नव्हे तर दीर्घकालीन शेतीसाठी आवश्यक संसाधनांच्या वापरावर देखील भर देते. शाश्वत शेतीची मुख्य पद्धती सेंद्रिय शेती आहे. यात रासायनिक खतांचा वापर मर्यादित ठेवून शेणखत, कंपोस्ट, गवतखत यांचा उपयोग केला जातो. यामुळे मातीची सुपीकता टिकते आणि पीक आरोग्यदायी होते. याशिवाय नैसर्गिक शेती पद्धतींमध्ये झिरो बजेट नैसर्गिक शेती (ZBNF), बीजामृत, जीवामृत, आच्छादन शेती यांचा समावेश होतो. या पद्धती कमी खर्चिक असून शेतकऱ्यांचे आर्थिक भार कमी करतात. पीक विविधीकरण हा शाश्वत शेतीतील महत्त्वाचा घटक आहे. यामध्ये एकाच पिकावर अवलंबून न राहता विविध भाजीपाला, धान्य व फळबाग शेती केली जाते. यामुळे उत्पादनाचे धोके कमी होतात आणि शेतकऱ्याचे उत्पन्न स्थिर राहते. शाश्वत शेतीमध्ये जल व्यवस्थापन देखील महत्त्वाचे आहे. ठिबक सिंचन, पावसाचे पाणी साठवणे व योग्य पद्धतीने वापरणे यामुळे पाण्याचा अत्यावश्यक वापर कमी होतो आणि पीक टिकाऊ होते. अलीकडच्या काळात डिजिटल शेती देखील महत्त्व मिळवत आहे. ड्रोन, सेन्सर, मोबाईल ॲप्स आणि ई-नाम यांसारख्या तंत्रज्ञानाचा वापर करून शेतकऱ्यांना उत्पादनाचे व्यवस्थापन, पीकवाढ निरीक्षण आणि थेट विक्रीसाठी सुविधा मिळते. अशा प्रकारे शाश्वत शेती ही पर्यावरणपूरक, आर्थिकदृष्ट्या फायदेशीर आणि दीर्घकालीन दृष्टिकोनातून टिकाऊ शेतीची संकल्पना आहे, जी आजच्या आणि भविष्यातील शेतकऱ्यांसाठी अत्यंत आवश्यक ठरते.

४. भारतातील शेतीचे सध्याचे आर्थिक परिमाण

४.१ एकूण मूल्यवर्धन व रोजगार

भारतातील कृषी व संबद्ध क्षेत्रांचे आर्थिक योगदान अजूनही महत्त्वपूर्ण आहे. Statistics Times 2023–24 च्या नुसार, शेती व संबद्ध क्षेत्रांचा सकल मूल्यवर्धन मध्ये अंदाजे १७.७ % वाटा आहे. ग्रामीण भागातील मोठ्या प्रमाणावर लोकसंख्या शेतीवर अवलंबून असल्याने, शेतीतील उत्पन्नातील चढ-उतार सामाजिक व आर्थिक दृष्टिकोनातून गंभीर परिणाम निर्माण करतात. अशा परिस्थितीत जोखीम व्यवस्थापन, विमा योजना, बाजार सुधारणा आणि मूल्यवर्धन हे घटक अत्यंत महत्त्वाचे ठरतात. जोखीम कमी करण्यासाठी सरकारकडून पिक विमा, पशुपालन विमा तसेच वित्तीय सहाय्य योजना राबवण्यात येतात, तर बाजार सुधारणा व मूल्यवर्धनामुळे शेतकऱ्यांना उत्पादनाचे योग्य मूल्य मिळते, ज्यामुळे ग्रामीण अर्थव्यवस्थेतील अस्थिरता कमी करता येते.

४.२ शेतीधारक संरचना व सरासरी जमिनधारणा

भारतातील शेतीधारक संरचना हा मुद्दा अल्पभूधारक शेतकऱ्यांसाठी विशेषतः महत्त्वाचा आहे. अलीकडील NABARD या संस्थेच्या २०२३ च्या सर्वेक्षणानुसार, सरासरी जमिनधारणा

एक हेक्टरपेक्षा कमी असल्याचे दिसून आले आहे . यामुळे आधुनिक तंत्रज्ञान आत्मसात करणे, नवीन यांत्रिकीकरण मिळवणे कठीण होते. या अडचणींवर मात करण्यासाठी शेतकरी उत्पादक संघटना (FPOs) आणि सहकारी संस्था प्रभावी उपाय ठरतात. काही राज्याची कृषी जनगणना असे सूचित करतात की, "सीमांत" आणि "अल्पभूधारक" शेतक़ऱ्यांचे प्रमाण जवळपास ८० ते ८५ % आहे. उदाहरणार्थ, महाराष्ट्रातील एकूण शेतक़ऱ्यांपैकी सुमारे ४८.९ % शेतक़ऱ्यांकडे एक हेक्टरपेक्षा कमी शेती जमीन आहे, ज्यांना अत्यल्प भूधारक मानले जाते. तसेच, २९.५ % शेतक़ऱ्यांकडे ०१ ते ०२ हेक्टर जमीन असून, त्यांना अल्पभूधारक शेतकरी मानले जाते. म्हणजेच, राज्यातील ७८ ते ८० % शेतक़ऱ्यांकडे दोन हेक्टरपेक्षा कमी शेती जमीन आहे. राष्ट्रीय स्तरावरही अशाच प्रकारचे काहीसे चित्र दिसते. हे आकडे अल्पभूधारक शेतक़ऱ्यांच्या संख्येचा मोठा हिस्सा दर्शवतात, ज्यामुळे त्यांच्या आर्थिक स्थिती सुधारण्यासाठी विशेष धोरणे आवश्यक आहेत.

४.३ पाणी-संसाधने व खत-माती स्थिती

भारतातील पाण्याचे व्यवस्थापन देखील शेतीसाठी अत्यंत महत्त्वाचे आहे. Press Information Bureau, २०२३ च्या माहितीनुसार, "देशातील ग्राउंडवॉटर extraction stage ~60% आहे, आणि काही जिल्हे/शहरे "ओव्हर-एक्स्ट्रॅक्टेड" किंवा "डार्क झोन" मध्ये आहेत". अशा परिस्थितीत सिंचन व्यवस्थापनाचे सुधारित उपाय आवश्यक आहेत. यामध्ये मायक्रो-इरिगेशन (ड्रिप/स्प्रिंकलर), स्थानिक जलसंचय व पिक-विविधीकरण यांचा समावेश आहे, ज्यामुळे पाण्याचा अधिक कार्यक्षम वापर शक्य होतो. तसेच मातीच्या संवर्धनासाठी भारत सरकारने Soil Health Card (SHC) उपक्रम २०१५ पासून राबवला आहे. संचार-माहिती विभाग (PIB) २०२५ च्या माहिती नुसार जुलै २०२५ पर्यंत २५ कोटीहून अधिक SHC कार्डे वितरित केली गेली असून, हे शेतक़ऱ्यांना समतोल खत वापरण्यासाठी डेटा-आधारित मार्गदर्शन प्रदान करतात. त्यामुळे शेतक़ऱ्यांचे उत्पादन सुधारते आणि मातीची सुपीकता टिकवता येते.

५. अल्पभूधारक शेतकरी आणि शाश्वत शेतीसाठी सरकारची भूमिका

भारतातील अल्पभूधारक शेतक़ऱ्यांच्या उत्पन्नवाढ आणि शाश्वत शेतीसाठी सरकारने विविध कार्यक्रम राबवले आहेत. हे हस्तक्षेप शेतक़ऱ्यांच्या आर्थिक स्थिती सुधारण्यास, जोखीम कमी करण्यास आणि बाजारपेठेत प्रवेश वाढवण्यास मदत करतात.

५.१ प्रधानमंत्री किसान योजना (PM-KISAN)

फेब्रुवारी २०१९ पासून प्रधानमंत्री किसान योजने अंतर्गत पात्र जमीनधारक शेतक़ऱ्यांना ६००० रुपये वार्षिक (तीन हप्त्यांमध्ये) थेट DBT (Direct Benefit Transfer) मार्गे दिले जाते प्रेस इन्फॉर्मेशन ब्युरो १ ऑगस्ट २०२५ च्या माहिती नुसार "पंतप्रधान २ ऑगस्ट २०२५ रोजी वाराणसी येथून प्रधानमंत्री किसान सन्मान निधी (पीएम-किसान) योजनेचा २० वा हप्ता जारी करतील. या हप्त्यात, देशभरातील ९.७ कोटींहून अधिक शेतक़ऱ्यांना थेट लाभ हस्तांतरण (डीबीटी) द्वारे अंदाजे २०,५०० कोटी रुपयांची थेट आर्थिक मदत मिळेल, ज्यामुळे पारदर्शकता सुनिश्चित होईल आणि मध्यस्थांची कोणतीही भूमिका दूर होईल." या योजनेतून अल्पभूधारक

शेतकऱ्यांना नियमित रोख प्रवाह मिळतो, ज्यामुळे त्यांचे उत्पन्न स्थिर राहते आणि अडचणीच्या काळात आर्थिक सहाय्य उपलब्ध होते.

५.२ प्रधानमंत्री पिक विमा योजना (PMFBY)

प्रधानमंत्री पीक विमा योजने अंतर्गत शेतकऱ्यांच्या पिकाचा पिक विमा राबवण्यात येतो. प्रेस इन्फॉर्मेशन ब्युरो जुलै २०२५ च्या माहितीनुसार "सरकारने उचललेल्या विविध पावले लक्षात घेता, नोंदणीकृत शेतकऱ्यांची एकूण संख्या २०२२-२३ मध्ये ३.१७ कोटींवरून २०२४-२५ मध्ये ४.१९ कोटी झाली आहे, म्हणजेच ३२% वाढ. योजनेअंतर्गत २०२४-२५ मध्ये नोंदणीकृत शेतकऱ्यांची संख्या ही योजनेच्या सुरुवातीपासून सर्वाधिक आहे." ऑगस्ट २०२५ पर्यंत ₹3,200 कोटी रक्कम 30 लाख शेतकऱ्यांना वितरित करण्यात आली. ही योजना हवामान जोखीम व्यवस्थापनाचा महत्त्वाचा स्तंभ आहे, विशेषतः अल्पभूधारक शेतकऱ्यांसाठी.

५.३ राष्ट्रीय कृषी बाजार (e-NAM)

राष्ट्रीय कृषी बाजार हे डिजिटल बाजार यंत्रणा आहे. संपूर्ण भारतातील एक इलेक्ट्रॉनिक व्यापार पोर्टल आहे जे कृषी उत्पन्न बाजार समित्या (एपीएमसी), शेतकरी, व्यापारी आणि ग्राहक यांना एक सामान्य डिजिटल बाजारपेठ उपलब्ध करून देते . प्रेस इन्फॉर्मेशन ब्युरो २० डिसेंबर २०२४ ची Implementing of National Agriculture Market (e-NAM) Platform रिपोर्ट नुसार "३१.१०.२०२४ पर्यंत, २३ राज्ये आणि ४ केंद्रशासित प्रदेशांमधील १३८९ मंडई ई-नाम प्लॅटफॉर्मशी एकत्रित करण्यात आल्या आहेत. आतापर्यंत १.७८ कोटी शेतकरी, २.६२ लाख व्यापारी आणि ४२५० हून अधिक शेतकरी उत्पादक संघटना (एफपीओ) ई-नामवर नोंदणीकृत आहेत. ई-नाम प्लॅटफॉर्मवर ३.७९ लाख कोटी रुपयांच्या कृषी उत्पादनांच्या व्यवहारांची नोंद झाली आहे." या योजनेमुळे शेतकऱ्यांना थेट आणि पारदर्शक बाजारपेठेत प्रवेश मिळतो, ज्यामुळे मूल्यवर्धनाचे संधी वाढतात.

५.४ शेतकरी उत्पादन संघटना (FPO) योजना

शेतकरी उत्पादन संघटना (FPOs) म्हणजे शेतकऱ्यांनी स्वयंस्फूर्तीने स्थापन केलेली नोंदणीकृत संस्था होय. या संस्थेमध्ये शेतकरी एकत्र येऊन बियाणे, खते, यंत्रसामग्री खरेदी तसेच उत्पादनाचे संकलन, प्रक्रिया आणि विपणन करतात. यामुळे त्यांना मोठ्या खरेदी-विक्रीतून जास्त नफा मिळतो आणि मध्यस्थांची गरज कमी होते. सरकारही विविध योजनांद्वारे FPO ला आर्थिक व तांत्रिक मदत करते. फेब्रुवारी २०२५ पर्यंत १०,००० FPO स्थापनेचे राष्ट्रीय लक्ष्य पूर्ण करण्यात आले. ही योजना विशेषतः अल्पभूधारक शेतकऱ्यांसाठी महत्वाची ठरते.

५.५ प्रधानमंत्री कृषी सिंचन योजना

ही योजना २०१५ मध्ये सुरू करण्यात आली. तिचा मुख्य उद्देश म्हणजे 'हर खेत को पानी' म्हणजेच प्रत्येक शेतात पाणी पोहोचवणे आणि 'More crop per drop' म्हणजेच प्रत्येक थेंबातून अधिक उत्पादन मिळवणे हा आहे. या योजनेअंतर्गत सिंचनासाठी नवीन प्रकल्प, पाणी साठवण

तलाव, ठिबक व फवारा सिंचन यांसारख्या आधुनिक तंत्रज्ञानाचा प्रसार केला जातो. त्यामुळे शेतकऱ्यांचे उत्पादन वाढते, पाण्याची बचत होते आणि शेती अधिक शाश्वत बनते. प्रधानमंत्री कृषी सिंचन योजना अंतर्गत वर्ष २०१६ - २०२४ अखेर पर्यंत सुमारे ९५.६ लाख हेक्टर क्षेत्र मायक्रो-इरिगेशनखाली आले. राज्यांना २१९६८.७५ कोटीपर्यंत सहाय्य वितरित केले गेले. या योजनेमुळे पाण्याचा कार्यक्षम वापर वाढला आणि सिंचन व्यवस्थापनात लक्षणीय सुधारणा झाली.

५.६ माती आरोग्य पत्रक (Soil Health Card)

ही योजना भारत सरकारने २०१५ साली सुरू केली. या योजनेत शेतकऱ्यांच्या शेतजमिनीची माती तपासली जाते व त्यानुसार *मातीतील पोषक द्रव्यांची माहिती* दिली जाते. शेतकऱ्याला एक माती आरोग्य पत्रक (Soil Health Card) दिले जाते ज्यात नायट्रोजन, फॉस्फरस, पोटॅशियम, सेंद्रिय कार्बन, सूक्ष्म अन्नद्रव्ये इत्यादी घटकांची स्थिती व शिफारसी नमूद केलेल्या असतात. यामुळे शेतकरी योग्य प्रमाणात व योग्य खतांचा वापर करून उत्पादन वाढवू शकतो, खर्च कमी करू शकतो आणि मातीचे आरोग्य टिकवू शकतो. जुलै २०२५ पर्यंत २५ कोटीहून अधिक SHC कार्डे वितरित करण्यात आली. यामुळे शेतकऱ्यांना संतुलित NPK व सूक्ष्म पोषक घटकांचा वापर करता येतो. सरकारी हस्तक्षेपांचे व्याप लक्षात घेता, PM-KISAN, PMFBY, e-NAM, FPO योजना, PDMC आणि SHC अशा कार्यक्रमांनी अल्पभूधारक शेतकऱ्यांच्या आर्थिक स्थिरतेस, जोखीम व्यवस्थापनास, पाणी कार्यक्षमता सुधारण्यास आणि बाजारपेठेत प्रवेश वाढवण्यास महत्त्वपूर्ण योगदान दिले आहे. या उपाययोजनांमुळे शेतकऱ्यांचे उत्पन्न वाढते, शाश्वत शेतीला चालना मिळते आणि २०४७ च्या विकसित भारताच्या उद्दिष्टांच्या दिशेने टप्पे पुढे जातात.

६. विकसित भारत २०४७ आणि शेतीचे योगदान

भारताला २०४७ पर्यंत विकसित राष्ट्र बनवण्यासाठी कृषी क्षेत्राचे योगदान महत्त्वपूर्ण ठरेल. देशाची अन्ननिर्भरता, ग्रामीण अर्थव्यवस्था आणि निर्यात क्षमता या सर्व गोष्टी शाश्वत शेतीच्या माध्यमातून सुधारता येऊ शकतात. अल्पभूधारक शेतकऱ्यांचे सशक्तिकरण हे या प्रक्रियेत केंद्रस्थानी आहे. सर्वप्रथम, शेतकऱ्यांचे उत्पन्न दुप्पट होणे आवश्यक आहे. शाश्वत शेती, पीक विविधीकरण, सेंद्रिय उत्पादन आणि डिजिटल प्लॅटफॉर्मचा उपयोग करून शेतकऱ्यांना अधिक लाभ मिळू शकतो. उदाहरणार्थ, सेंद्रिय उत्पादनांना पारंपरिक उत्पादनांच्या तुलनेत २०–३० टक्के जास्त दर मिळतो, ज्यामुळे अल्पभूधारक शेतकऱ्यांचे उत्पन्न वाढू शकते. तसेच ई-नामसारख्या डिजिटल बाजारपेठेच्या माध्यमातून शेतकऱ्यांना थेट विक्रीची संधी मिळते, ज्यामुळे दलालांचा अवलंब कमी होतो. दुसरे म्हणजे अन्नसुरक्षा सुनिश्चित करणे अत्यंत आवश्यक आहे. भारतातील लोकसंख्या २०४७ पर्यंत अंदाजे १६० कोटींपर्यंत पोहोचण्याची शक्यता आहे. या लोकसंख्येसाठी पुरेसे व गुणवत्तापूर्ण अन्नधान्य उपलब्ध करून देणे, त्यासाठी उत्पादन टिकाऊ व पर्यावरणपूरक पद्धतीने करणे हे शेतीच्या क्षेत्रावर अवलंबून आहे.

ग्रामीण विकास आणि रोजगार निर्मिती या बाबी महत्त्वाच्या आहेत. शाश्वत शेतीतून कृषी प्रक्रिया उद्योग, मूल्यवर्धन केंद्रे, कृषी पर्यटन यांना चालना मिळते. परिणामी ग्रामीण भागात रोजगार निर्मिती होते आणि स्थलांतराचे प्रमाण कमी होते. निर्यात क्षमता वाढवणे गरजेचे आहे. सेंद्रिय आणि मूल्यवर्धित उत्पादनांना जागतिक बाजारात मागणी आहे. यामुळे भारताला कृषी निर्यात वाढवण्याची संधी मिळते आणि विदेशी चलन मिळते, ज्यामुळे देशाची अर्थव्यवस्था मजबुती होते. शेवटी, पर्यावरणीय शाश्वतता राखणे आवश्यक आहे. कार्बन उत्सर्जन कमी करण्यासाठी शाश्वत शेती महत्त्वाची आहे. ठिबक सिंचन, पावसाचे पाणी साठवणे, नैसर्गिक खतांचा वापर यामुळे 'ग्रीन इकॉनॉमी'कडे वाटचाल करता येते.

अशा प्रकारे शाश्वत शेती ही फक्त उत्पादन वाढविण्याचे साधन नाही, तर विकसित भारत २०४७ च्या ध्येयाच्या पूर्ततेसाठी आधारस्तंभ ठरते. शेतकऱ्यांचे सशक्तिकरण, आर्थिक स्थिरता, अन्नसुरक्षा, रोजगार निर्मिती आणि पर्यावरणीय टिकाव या सर्व बाबींचा समन्वय करून भारताला २०४७ पर्यंत प्रगत राष्ट्र बनवता येईल.

७. भारतीय शेतीतील आव्हाने

भारताला २०४७ पर्यंत विकसित राष्ट्र बनवण्याच्या दृष्टीने शेती क्षेत्र महत्त्वपूर्ण भूमिका बजावणार आहे. तथापि, या प्रक्रियेत अनेक आव्हाने शेतकऱ्यांसमोर उभी आहेत, ज्यामुळे उद्दिष्ट साध्य करणे कठीण होते. अल्पभूधारक शेतकरी, जे सुमारे ८६% शेतकरी वर्गाचा हिस्सा आहेत, अनेक आर्थिक आणि तंत्रज्ञानात्मक अडचणींना सामोरे जात आहेत. सर्वप्रथम, तंत्रज्ञानाचा मर्यादित वापर ही मोठी अडचण आहे. भारतातील अल्पभूधारक शेतकऱ्यांकडे आधुनिक शेती साधने, ड्रोन, सेन्सर, स्मार्ट ॲप्स किंवा पीक व्यवस्थापनासाठी डिजिटल साधनांचा पुरेपूर उपयोग होऊ शकत नाही. परिणामी उत्पादन क्षमतेत मर्यादा येते आणि उत्पन्न स्थिर राहत नाही. उदाहरणार्थ, महाराष्ट्रातील फक्त ३०% शेतकरी ई-नाम आणि डिजिटल साधनांचा उपयोग करतात, ज्यामुळे विक्रीत थेट फायदा मिळत नाही. दुसरे म्हणजे शेतमाल साठवण व प्रक्रिया केंद्रांचा अभाव शेतकऱ्यांसमोर आर्थिक संकट निर्माण करतो. अनेक वेळा शेतातील माल निघाल्यानंतर लगेच विक्री करावी लागते, तसे नाही केल्यास उत्पादन खराब होते. देशात सध्या केवळ ३०% शेतमालासाठी आधुनिक साठवण आणि प्रक्रिया केंद्र उपलब्ध आहेत, जे उत्पादन टिकवण्यासाठी अपुरी आहेत. उदाहरणार्थ, केरळमध्ये नारळ व फळांचे योग्य प्रक्रिया केंद्र नसल्यामुळे शेतकऱ्यांचे उत्पादन १५–२०% नष्ट होते. तसेच वित्तीय सहाय्याची कमतरता शेतकऱ्यांना अधिक उत्पादक पद्धती अवलंबण्यापासून रोखते. बँक कर्ज, सरकारी अनुदान किंवा विमा सुविधा सर्व शेतकऱ्यांपर्यंत पोहचत नाहीत. प्रधानमंत्री पीक विमा योजना अंतर्गत २०२२–२३ मध्ये ५ कोटीहून अधिक शेतकऱ्यांना पीक विमा दिला गेला, परंतु त्यापेक्षा खूप जास्त शेतकरी अद्याप लाभातून वंचित आहेत. अनेक अल्पभूधारक शेतकरी उच्च व्याजदरावर कर्ज घेतात, ज्यामुळे त्यांचे आर्थिक स्थैर्य धोक्यात येते.

हवामानात होणाऱ्या बदलामुळे अनिश्चित पाऊस हे सध्याचे गंभीर आव्हान झाले आहे. अतिवृष्टी, दुष्काळ आणि वाढत तापमान यामुळे पीक उत्पादनावर विपरीत परिणाम होतो. उदाहरणार्थ, २०२३ मध्ये महाराष्ट्रातील सातारा जिल्ह्यातील धान्य उत्पादनात २५% घट नोंदवली गेली. हवामानातील बदलामुळे अनेक वेळा नुकसानभरपाई किंवा कर्ज फेडण्याची क्षमता कमी होते. शेवटी, बाजारपेठेतील दलाल व अस्थिर दर शेतकऱ्यांसाठी मोठा प्रश्न ठरतात. उत्पादनाचे योग्य दर मिळत नसल्यास उत्पन्नावर अवलंब वाढतो. दलालांच्या माध्यमातून विक्रीमुळे शेतकऱ्यांचे सरासरी उत्पन्न १०–१५% कमी होते. या सर्व आव्हानांवर मात करण्यासाठी तंत्रज्ञानाचा प्रभावी वापर, साठवण व प्रक्रिया केंद्रांची उपलब्धता, वित्तीय सहाय्याचे सुयोग्य वितरण, हवामान अनुकूल पद्धतींचा अवलंब आणि बाजारपेठेतील सुधारणा गरजेची आहेत. केवळ अशा उपाययोजनांमुळे अल्पभूधारक शेतकरी सशक्त होऊ शकतो आणि विकसित भारत २०४७ च्या ध्येयाच्या दिशेने शेतीची वाट सोपी होईल.

८.उपाययोजना व शिफारसी

विकसित भारत २०४७ च्या दृष्टीने अल्पभूधारक शेतकऱ्यांसाठी ठोस उपाययोजना आणि शिफारसी आखणे अत्यंत महत्त्वाचे आहे. शाश्वत शेती, आधुनिक तंत्रज्ञान आणि आर्थिक सहाय्याच्या माध्यमातून शेतकऱ्यांचे उत्पन्न वाढवणे, पर्यावरणाचे संरक्षण करणे आणि ग्रामीण अर्थव्यवस्थेला स्थिरता मिळवणे हे उद्दिष्ट आहे.

सर्वप्रथम, शेतकऱ्यांना सामूहिक शेती संघटना (FPOs) मध्ये एकत्र आणणे गरजेचे आहे. भारतात सध्या अंदाजे ८,००० पेक्षा जास्त FPOs आहेत, पण त्यांचा विस्तार अजून खूप कमी आहे. FPOs मध्ये सामील झाल्यास शेतकरी थेट विक्री करू शकतात, उत्पादनासाठी सामूहिक खरेदी करू शकतात, दलालांवर अवलंब कमी होतो आणि सरासरी १५–२०% जास्त नफा मिळवू शकतो. उदाहरणार्थ, महाराष्ट्रातील "राहुरी शेतकरी उत्पादक संघटना" FPO मध्ये सामील झालेल्या शेतकऱ्यांचे उत्पन्न सरासरी २०% वाढले आहे.

दुसरे, सेंद्रिय व नैसर्गिक शेतीसाठी विशेष अनुदान देणे गरजेचे आहे. झिरो बजेट नैसर्गिक शेती (ZBNF) आणि सेंद्रिय खतांचा वापर अल्पभूधारक शेतकऱ्यांसाठी आर्थिकदृष्ट्या फायदेशीर ठरतो. झिरो बजेट नैसर्गिक शेती म्हणजे शेतीसाठी बाह्य रासायनिक खतं, कीटकनाशके किंवा महागडी खरेदी न करता, नैसर्गिक साधनसंपत्तीवर आधारित शेती करणे. यात गायीच्या शेण, गोमूत्र, जीवामृत, बीजामृत, आच्छादन व मिश्र पिक पद्धतीचा वापर केला जातो. सरकारने ZBNF प्रकल्पांसाठी २०२३–२४ मध्ये अंदाजे ५,००० कोटी रुपये अनुदान म्हणून मंजूर केले आहे. यामुळे रासायनिक खतांचा खर्च ३०–४०% कमी होऊ शकतो आणि उत्पन्नात २०–२५% वाढ होऊ शकते.

तिसरे, स्थानिक मूल्यवर्धन उद्योग उभारणे आवश्यक आहे. फळबाग, भाजीपाल्याचे प्रक्रिया केंद्र, पॅकिंग व विपणन केंद्रे निर्माण केल्यास शेतकऱ्यांचे पीक अधिक किमतीत विकता येईल. उदाहरणार्थ, केरळमधील "को-ऑपरेटिव्ह पॅकिंग युनिट"मुळे नारळ व फळांचे मूल्य सरासरी २५%

वाढले आहे. यामुळे ग्रामीण रोजगार देखील निर्माण होतो; अंदाजे ५० लाख लोक या उद्योगांत थेट व अप्रत्यक्षपणे रोजगार मिळवतात.

चौथे, डिजिटल साक्षरता वाढवणे अत्यावश्यक आहे. शेतकऱ्यांना ई-नाम, कृषी ॲप्स, ड्रोन व सेन्सर वापरण्याची माहिती दिल्यास पीक व्यवस्थापन सुधारेल, थेट विक्री होईल आणि दलालांवरील अवलंब कमी होईल. सध्या भारतात फक्त काहीच शेतकऱ्यांपर्यंत डिजिटल साधनांचा प्रभाव पोहोचला आहे; यावर भर दिल्यास मोठा बदल घडू शकतो.

पाचवे, हवामान बदलासाठी पीक विमा व जलसंधारण प्रकल्प राबवणे गरजेचे आहे. भारतात २०२२–२३ मध्ये प्रधानमंत्री पीक विमा योजना अंतर्गत ५ कोटीहून अधिक शेतकऱ्यांना पीक विमा दिला गेला. जलसंधारण प्रकल्पांमुळे पाण्याचा साठा सुधारला जाऊ शकतो आणि दुष्काळ किंवा अतिवृष्टीचे नुकसान कमी होते.

शेवटी, शाश्वत शेती संशोधन केंद्रे व प्रशिक्षण सुरू करणे अत्यंत आवश्यक आहे. शेतकऱ्यांना पीक व्यवस्थापन, रोगनियंत्रण व सेंद्रिय शेतीबाबत प्रशिक्षण दिल्यास उत्पादन टिकाऊ राहते. उदाहरणार्थ, महाराष्ट्रातील "सेंद्रिय शेती प्रशिक्षण केंद्र, पुणे" मध्ये प्रशिक्षण घेतलेल्या शेतकऱ्यांचे उत्पन्न सरासरी १५–२०% वाढले आहे.

अशा उपाययोजना व शिफारसींचा प्रभावी अवलंब केल्यास अल्पभूधारक शेतकऱ्यांचे जीवनमान उंचावेल, उत्पन्न वाढेल आणि ग्रामीण अर्थव्यवस्था मजबूत होईल. या सर्व उपाययोजना विकसित भारत २०४७ च्या दिशेने शेतीला सशक्त आणि टिकाऊ बनवतील.

९. निष्कर्ष

विकसित भारत २०४७ च्या दृष्टीने शेती क्षेत्राचा विकास अत्यंत महत्त्वाचा आहे. अल्पभूधारक शेतकऱ्यांचे सशक्तिकरण, शाश्वत शेती आणि आधुनिक तंत्रज्ञानाचा वापर या सर्व बाबींचा समन्वय केल्यास शेती अधिक टिकाऊ आणि लाभदायक ठरू शकते.

सर्वप्रथम, भारतातील अल्पभूधारक शेतकऱ्यांची स्थिती विचारात घेतल्यास, जमिनीचे तुकडीकरण, सिंचनाची कमतरता आणि उत्पादनखर्चातील वाढ या अडचणींमुळे त्यांचे उत्पन्न कमी राहते.शेतकऱ्यांना योग्य मार्गदर्शन, संघटन आणि आर्थिक सहाय्य मिळाल्यास त्यांचे उत्पन्न सुधारता येईल आणि शेतीतून दीर्घकालीन उपजीविका मिळवता येईल.

दुसरे, शाश्वत शेतीच्या संकल्पनेतून स्पष्ट होते की, सेंद्रिय व नैसर्गिक पद्धतींमुळे माती, जलस्रोत आणि पर्यावरणाचे संरक्षण होते. पीक विविधीकरण, ठिबक सिंचन आणि डिजिटल साधनांचा वापर केल्यास शेतकऱ्यांचे उत्पादन टिकाऊ राहते. म्हणजेच, शाश्वत शेती केवळ पर्यावरणपूरक नाही, तर आर्थिकदृष्ट्या फायदेशीर देखील ठरते.

तिसरे, आर्थिक विश्लेषण दर्शवते की, नैसर्गिक शेती व सेंद्रिय उत्पादनामुळे उत्पादन खर्च कमी होतो, उत्पन्न वाढते आणि ग्रामीण रोजगार निर्मिती होते. डिजिटल बाजारपेठांमुळे शेतकऱ्यांना

थेट विक्रीसाठी संधी मिळते. म्हणजेच, आर्थिक दृष्टिकोनातून शाश्वत शेतीची अंमलबजावणी शेतकऱ्यांच्या जीवनमानात लक्षणीय सुधारणा करू शकते.

चौथे, विकसित भारत २०४७ आणि शेतीचे योगदान विचारात घेतल्यास, शेतकऱ्यांचे उत्पन्न दुप्पट करणे, अन्नसुरक्षा सुनिश्चित करणे, ग्रामीण विकास साधणे, निर्यात क्षमता वाढवणे आणि पर्यावरणीय टिकाव राखणे हे उद्दिष्ट साध्य करता येऊ शकते. म्हणजेच, या सर्व बाबींचा समन्वय साधल्यास शेती देशाच्या विकासात ठोस भूमिका बजावू शकते.

पाचवे, शेतीतील आव्हाने जसे की तंत्रज्ञानाचा मर्यादित वापर, साठवण व प्रक्रिया केंद्रांचा अभाव, वित्तीय सहाय्याची कमतरता, हवामान बदल आणि बाजारपेठेतील अस्थिरता यावर मात करणे गरजेचे आहे. प्रभावी धोरणे आणि उपाययोजना राबवल्यास या आव्हानांचा परिणाम कमी करता येईल. शेवटी, उपाययोजना व शिफारसी जसे की FPOs मध्ये सामूहिक शेती, सेंद्रिय शेतीसाठी अनुदान, स्थानिक मूल्यवर्धन उद्योग, डिजिटल साक्षरता, क्रॉप इन्शुरन्स, जलसंधारण प्रकल्प आणि शाश्वत शेती प्रशिक्षण केंद्र यांचा अवलंब केल्यास अल्पभूधारक शेतकऱ्यांचे जीवनमान सुधारता येईल. निष्कर्ष असा आहे की, या सर्व उपाययोजनांचा परिणाम विकसित भारत २०४७ च्या दिशेने शेतीला अधिक सशक्त, टिकाऊ आणि लाभदायक बनवेल.

१०. संदर्भ

1. https://www.nextias.com/ca/editorial-analysis/22-01-2025/india-journey-viksit-agri-economy-2047
2. https://arccjournals.com/journal/indian-journal-of-agricultural-research/A-6341
3. https://www.lokmat.com/gadchiroli/from-hectare-to-acre-75-percent-of-farmers-are-smallholders-a-a867-c1000/
4. https://www.lokmat.com/maharashtra/3-lakh-25-thousand-hectares-of-agricultural-land-has-decreased-in-just-five-years-in-maharashtra-a-a653/
5. Press Information Bureau : Extraction of Ground Water, Ministry of Jal Shakti,Posted On: 14 DEC 2023 4:21PM by PIB Delhi (https://www.pib.gov.in/PressReleasePage.aspx?PRID=1986272)
6. https://www.pib.gov.in/PressNoteDetails.aspx?NoteId=154960&ModuleId=3
7. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2086484
8. https://naarm.org.in/wp-content/uploads/2025/07/Ipmact-Evaluation-Study-of-FPOs-promoted-by-NABARD-TGRO.pdf
9. Department of Agriculture & Farmers Welfare, Ministry of Agriculture & Farmers Welfare Government of India - Annual Report 2024-25
10. https://icrier.org/pdf/New_Deal_for_Agriculture_for_Viksit_Bharat.pdf

वित्तीय समावेशन आणि डिजिटल देयक प्रणाली

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गोषवारा :

भारताने २०४७ पर्यंत विकसित राष्ट्र बनण्याचे ध्येय निश्चित केले आहे. या उद्दिष्टपूर्तीसाठी वित्तीय समावेशन (Financial Inclusion) व डिजिटल देयक प्रणाली (Digital Payment System) हे दोन महत्त्वाचे स्तंभ आहेत. वित्तीय समावेशनामुळे समाजातील दुर्बल घटकांना औपचारिक वित्तीय सेवांशी जोडले जाते, तर डिजिटल देयक प्रणालीमुळे अर्थव्यवस्थेत पारदर्शकता, गती आणि कार्यक्षमतेत वाढ होते. सुदृढ वित्तीय प्रणाली आर्थिक विकासाचे प्रतिक असते. या प्रकरणामध्ये वित्तीय समावेशनाचे उद्दिष्ट, त्यातील धोरणात्मक उपक्रम जसे की जनधन योजना, आधार व मोबाईल, महिला व ग्रामीण लोकांसाठी कर्ज सुविधा, मायक्रो-फायनान्स इत्यादींचे विश्लेषण करण्यात आले आहे. तसेच अलीकडील संख्यात्मक स्थिती दर्शविण्यात आली आहे. त्याचबरोबर UPI, डिजिटल वॉलेट्स, रूपे कार्ड, BHIM ॲप यांसारख्या डिजिटल पेमेंट साधनांनी कशा प्रकारे ग्रामीण ते शहरी स्तरावर वित्तीय व्यवहार सोपे केले आहेत, याचा ऊहापोह करण्यात आला आहे. त्यासोबत या प्रकरणामध्ये वित्तीय समावेशान व डिजिटल देयक प्रणाली अधिक सुकर करण्यासाठी धोरणात्मक मार्ग दिलेले आहेत. भारताला २०४७ पर्यंत विकसित राष्ट्र बनवण्यासाठी आवश्यक असलेले वित्तीय स्थैर्य, सामाजिक न्याय, आर्थिक समावेश व डिजिटलीकरण या सर्व प्रक्रियेत वित्तीय समावेशन व डिजिटल पेमेंट परिसंस्था किती महत्त्वाची भूमिका बजावते हे या प्रकरणाचे केंद्रबिंदू आहे.

प्रस्तावना :

मानवाच्या दैनंदिन गरजा पूर्ण करण्यासाठी विविध घटकांचा व साधनांचा वापर करावा लागतो. या विविध घटकांचा व सेवांचा उपभोग घेण्यासाठी अथवा प्राप्तीसाठी पैसा या प्रमुख साधनाचा प्रामुख्याने वापर केला जातो. एखाद्या देशाच्या अर्थव्यवस्थेत पैसा या साधनासाठी आवश्यक यंत्रणा वित्तीय प्रणाली खूप महत्त्वाची असते. कारण या वित्तीय प्रणालीतूनच पैसा या साधनाचा पुरवठा केला जातो. वित्तीय प्रणालीत कुटुंब संस्था. उद्योग संस्था व सरकार संस्था या तीनही संस्थांमधील आर्थिक व्यवहारांचे समायोजन वित्तीय प्रणालीत केले जाते. या तीनही घटकांना आवश्यक असणाऱ्या वित्तीय साधनांची उपलब्धता व वित्तीय साधनांचा पुरवठा करण्याचे प्रमुख कार्य वित्तीय प्रणालीमार्फत पार पडत असते. एखाद्या देशामध्ये वित्तीय प्रणाली जेवढी सक्षम असते तेवढ्या मोठ्या प्रमाणात त्या देशाच्या अर्थव्यवस्थेचा विकास होण्यास मदत होत असते.

एखाद्या देशाची वित्तीय प्रणाली सक्षम असणे हे विकसित अर्थव्यवस्थेचे प्रमुख लक्षण आहे. 'विकसित भारत २०४७' ही केवळ एक आर्थिक संकल्पना नसून, एक सामाजिक-आर्थिक स्थित्यंतराचे दर्शन आहे. विकसित भारत २०४७ हि संकल्पना साध्य करण्याचा मुख्य आधारस्तंभ

सर्वसमावेशक, सुरक्षित आणि सर्वसामान्य लोकांची पोहोच असलेले वित्तीय आणि डिजिटल देयक तंत्र व यंत्रणा निर्माण करणे आहे. हे तंत्र केवळ आर्थिक व्यवहारांचे साधन न राहता ते नागरिकांचे सक्षमीकरण करणारे, आर्थिक समता निर्माण करणारे आणि सुशासन प्रस्थापित करणारे एक मूलभूत साधन बनणार आहे.

वित्तीय प्रणाली : अर्थ व व्याख्या

वित्तीय प्रणाली (Financial System) म्हणजे एखाद्या देशातील अर्थव्यवस्थेत बचतदारांकडून जमा झालेल्या निधीचा, रकमांचा कार्यक्षम पद्धतीने गुंतवणूकदारांकडे प्रवाह होण्यासाठी कार्यरत असलेली एक यंत्रणा होय. या प्रणालीत नाणे बाजार व भांडवल बाजारातील विविध वित्तीय संस्था, वित्तीय साधने, राष्ट्रीयकृत बँका, विकास बँका, शेअर बाजार, विमा संस्था, म्युच्युअल फंड, तसेच विविध नियामक संस्था यांचा समावेश होतो. ही प्रणाली देशातील आर्थिक विकासाला गती देण्यासाठी गुंतवणुकीसाठी आवश्यक भांडवलाचे संकलन करून यातील वित्तीय घटकांना आवश्यक भांडवलाचे वितरण आणि उपयोग करण्याचे कार्य करते.

व्याख्या :

१) वान हॉर्न (१९७४) :-

"The financial system is the mechanism that provides the channel through which savings are mobilized and allocated efficiently for productive investments in the economy."

“वित्तीय प्रणाली ही अशी यंत्रणा आहे जी बचतीचे संकलन करून त्या बचतींचे कार्यक्षम पद्धतीने उत्पादक गुंतवणुकीमध्ये वितरण करते.”[1]

२) गुर्ले आणि शॉ (१९६०) :-

“A financial system is the set of institutions, instruments and markets which foster savings, investment, capital formation and growth.”

'वित्तीय प्रणाली (म्हणजे बचत, गुंतवणूक, भांडवल निर्मिती व आर्थिक वाढ घडवून आणण्यासाठी कार्यरत असलेल्या संस्था, साधने आणि बाजार यांचा समूह होय.”[2]

३) वॉकर (१९८०) :-

“Financial system provides a mechanism by which savings are channelized into investment for productive use.”

“वित्तीय प्रणाली ही बचतीचे प्रवाह उत्पादक उपयोगासाठी गुंतवणुकीत रूपांतरित करण्याची यंत्रणा आहे.”[3]

४) भारतीय रिझर्व्ह बँक (२०२०) :-

“The financial system of a country comprises institutions, markets, instruments and services which facilitate the flow of funds and contribute to the development of the economy.”

"देशाची वित्तीय प्रणाली म्हणजे निधीचा प्रवाह सुलभ करून अर्थव्यवस्थेच्या विकासास हातभार लावणाऱ्या संस्था, बाजार, साधने व सेवा यांचा समूह होय."[4]

वित्तीय प्रणालीचे घटक (Components of Financial System)

(अ) वित्तीय संस्था (Financial Institutions)

वित्तीय प्रणालीच्या विविध घटकांमध्ये समाविष्ट वित्तीय संस्थानामध्ये राष्ट्रीयकृत बँका, खासगी बँका, प्रादेशिक ग्रामीण बँका, सहकारी बँका, नॉन-बँकिंग वित्तीय कंपन्या, (NBFCs) विमा कंपन्या, LIC, GIC, खाजगी विमा कंपन्या, गुंतवणूक फंड, म्युच्युअल फंड, पेन्शन फंड, पोस्ट ऑफिस बचत यांचा समावेश होतो.

(ब) वित्तीय बाजारपेठा (Financial Markets)

वित्तीय प्रणालीत वित्तीय बाजारपेठा दिसून येतात. या प्रणालीत नाणे बाजार व भांडवल बाजार कार्यरत आहे.

(क) वित्तीय साधने (Financial Instruments)

शेअर्स, रोखे, म्युच्युअल फंड युनिट्स, विमा पॉलिसी, ठेवी (FD, RD), डेरिव्हेटिव्ह साधने इ. साधनांचा वापर केला जात आहे.

(ड) वित्तीय सेवा (Financial Services)

वित्तीय प्रणालीत प्रामुख्याने पेमेंट सिस्टमच्या सेवा प्रदान केल्या जातात. ज्यामध्ये UPI, NEFT, RTGS, IMPS च्या सेवा प्रदान केल्या जातात. तसेच गुंतवणूक सेवा ज्यामध्ये शेअर दलाली, पोर्टफोलिओ मॅनेजमेंटच्या सेवा प्रदान केल्या जातात. याशिवाय कर्ज सेवा प्रदान केल्या जातात.

३) वित्तीय समावेशन आणि डिजिटल देयक (Financial Inclusion and Digital Payments)

अ) वित्तीय समावेशन : अर्थ व गरज

अर्थ :

वित्तीय समावेशन (Financial Inclusion) म्हणजे समाजातील प्रत्येक घटकाला विशेषतः गरीब, वंचित व ग्रामीण भागातील लोकांना बँकिंग व वित्तीय सेवा सुलभ, परवडणाऱ्या आणि सुरक्षित पद्धतीने उपलब्ध करून देणे होय.

व्याख्या :-

1. **भारतीय रिझर्व्ह बँक (RBI, २००८)**

"वित्तीय समावेशन म्हणजे समाजातील दुर्लक्षित व गरीब घटकांपर्यंत योग्य, परवडणाऱ्या आणि वेळेवर बँकिंग व वित्तीय सेवा उपलब्ध करून देण्याची प्रक्रिया."[५]

2. **जग बँक (World Bank, २०१४)**

"Financial Inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs transactions, payments, savings, credit and insurance delivered in a responsible and sustainable way."[६]

3. **चक्रवर्ती समिती (RBI Committee on Financial Inclusion, २००९)**

"वित्तीय समावेशन म्हणजे दुर्लक्षित व गरीब लोकांना परवडणाऱ्या किंमतीत औपचारिक वित्तीय संस्थांकडून वित्तीय सेवा मिळवून देण्याची प्रक्रिया."[७]

4. **लेखक सी. रघुराम राजन (२००९)**

"Financial Inclusion is the broad-based delivery of banking services at an affordable cost to the vast sections of disadvantaged and low-income groups."[८]

वित्तीय समावेशनाची गरज :

१) आर्थिक विषमता कमी करण्यासाठी :-

समाजातील विविध स्तरांमध्ये उत्पन्न, संधी व संसाधनांच्या वापरात असमानता आढळते. वित्तीय समावेशनाद्वारे गरीब व दुर्बल घटकांनाही बँकिंग व वित्तीय सेवा उपलब्ध करून दिल्यास आर्थिक विषमता कमी करता येते.

२) लोकांना औपचारिक अर्थव्यवस्थेत आणणे :-

ग्रामीण भागातील लोक बँकिंग सेवांपासून वंचित राहतात आणि सावकारांवर अवलंबून असतात. त्यांना औपचारिक अर्थव्यवस्थेत आणल्याने शासकीय लाभ योजना, कर्ज व विमा सेवा थेट मिळतात आणि त्यांचे जीवनमान सुधारते.

३) महिलांचे आर्थिक सक्षमीकरण करणे :-

महिलांना स्वतःचे बँक खाते, मायक्रोफायनान्स, बचत व कर्ज सुविधा उपलब्ध करून दिल्यास त्या आर्थिकदृष्ट्या सक्षम होतात. यामुळे महिलांचा सामाजिक दर्जा उंचावतो व त्यांचा कुटुंब आणि समाजातील सहभाग वाढतो.

४) आर्थिक स्थैर्य टिकवून ठेवणे :-

वित्तीय समावेशनामुळे वित्तीय व्यवहार पारदर्शक होतात, भ्रष्टाचार कमी होतो, कर आधार वाढतो आणि अर्थव्यवस्था स्थिर राहते. तसेच बँकिंग यंत्रणा मजबूत होऊन देशाचा आर्थिक विकास सुदृढ होतो.

ब) डिजिटल देयक (Digital Payments) :-

अर्थ :-

डिजिटल देयक (Digital Payment) म्हणजे पैशांचा व्यवहार हा रोख रकमेच्या ऐवजी इलेक्ट्रॉनिक माध्यमातून करणे. या डिजिटल देयक व्यवहारात मोबाईल, संगणक, इंटरनेट, डेबिट/क्रेडिट कार्ड, UPI (Unified Payments Interface), QR कोड, वॉलेट्स इत्यादींचा वापर केला जातो.

व्याख्या

१. भारतीय रिझर्व्ह बँक (RBI, २०१९)

"डिजिटल देयक म्हणजे असा व्यवहार ज्यामध्ये देणारा व घेणारा दोघेही रकमेचे आदानप्रदान करण्यासाठी डिजिटल साधनांचा उपयोग करतात. यास इलेक्ट्रॉनिक देयक असेही म्हटले जाते."[९]

२. राष्ट्रीय पेमेंट्स कॉर्पोरेशन ऑफ इंडिया (NPCI, २०२०)

"डिजिटल देयक म्हणजे असा आर्थिक व्यवहार जो मोबाईल फोन, संगणक किंवा पॉइंट-ऑफ-सेल मशीनसारख्या इलेक्ट्रॉनिक साधनांद्वारे, रोकड न वापरता, पूर्ण केला जातो."[१०]

३. जागतिक बँक (World Bank, २०१६)

"डिजिटल देयक म्हणजे एका खात्यातून दुसऱ्या खात्यात किंमतीचे आदानप्रदान, जे कार्ड, मोबाईल फोन किंवा इंटरनेटसारख्या डिजिटल साधनांद्वारे केले जाते."[११]

४. आर्थिक सहकार आणि विकास संघटना (OECD, २०१८)

"डिजिटल देयक प्रणाली म्हणजे तंत्रज्ञानाधारित अशी मंच (platforms) जी व्यक्ती व व्यवसायांना व्यवहार इलेक्ट्रॉनिक पद्धतीने करण्याची व स्वीकारण्याची सुविधा देते. यामुळे व्यवहार अधिक पारदर्शक, कार्यक्षम आणि वित्तीय समावेशक ठरतात."[१२]

डिजिटल देयकाच्या पद्धती - UPI (युनिफाइड पेमेंट्स इंटरफेस) – उदा. PhonePe, Google Pay, Paytm, मोबाईल वॉलेट्स – Paytm Wallet, Amazon Pay डेबिट/क्रेडिट कार्ड्स AEPS (Aadhaar Enabled Payment System) इंटरनेट बँकिंग / मोबाइल बँकिंग QR कोड पेमेंट्स NEFT/RTGS/IMPS सारख्या बँकिंग प्रणालीचा वापर केला जातो.

३) वित्तीय समावेशन आणि डिजिटल देयक यांचा परस्परसंबंध

वित्तीय समावेशन साध्य करण्यासाठी डिजिटल देयक प्रणाली ही एक प्रभावी साधन आहे. ग्रामीण भागात UPI, आधार-आधारित पेमेंट प्रणाली व मोबाईल बँकिंगमुळे लोक औपचारिक वित्तीय व्यवस्थेशी जोडले गेले आहेत. डिजिटल व्यवहारामुळे रोख पैशावरील अवलंबित्व कमी झाले असून, अर्थव्यवस्थेतील पारदर्शकता वाढली आहे. जनधन खाते, मोबाइल बँकिंग व UPI मुळे गरीब व वंचित घटकांना सबसिडी व सरकारी मदत थेट खात्यात (DBT – Direct Benefit Transfer) मिळू लागली आहे.

४) भारतामध्ये वित्तीय समावेशन आणि डिजिटल पेमेंटमधील उपक्रम

भारतात वित्तीय समावेशान डिजिटल पेमेंटसाठी पुढील विविध उपक्रमांचा वापर केला जातो. १) प्रधानमंत्री जनधन योजना (PMJDY, 2014) – शून्य शिल्लक खात्याद्वारे वित्तीय समावेशन २) आधार कार्ड व DBT – थेट लाभ हस्तांतरण ३) BHIM UPI ॲप – सोपी डिजिटल देयक पद्धती ४) RuPay कार्ड योजना – स्वदेशी पेमेंट नेटवर्क ५) डिजिटल इंडिया अभियान (2015) – सर्वांना डिजिटल व्यवहाराशी जोडण्याचे उद्दिष्ट ६) मायक्रो एटीएम व AEPS – ग्रामीण भागात बँकिंग व्यवहार उपलब्ध करून देणे.

भारतातील वित्तीय समावेशनाचा प्रवास जन धन योजनेसारख्या मीलाच्या दगडांतून आज UPI च्या जागतिक यशासह एक नवीन उच्चांक गाठत आहे. तरीही, एका विकसित राष्ट्राच्या मानदंडाप्रमाणे, आपणास अजून एक लांबचा प्रवास करायचा आहे. ग्रामीण-शहरी अंतर, लिंग आधारित असमता, छोट्या व्यवसायांना भांडवलाची उपलब्धता, आणि डिजिटल सुरक्षेची आव्हाने ही काही अडथळे आहेत ज्यांचे निराकरण करणे गरजेचे आहे. २०४७ पर्यंत, भारताने अशी एक

अर्थव्यवस्था उभारायची आहे, जिथे देशातील प्रत्येक व्यक्ती, टोकाच्या ग्रामीण भागातील शेतकरी, छोटा दुकानदार, रिक्षाचालक, तरुण उद्योजक किंवा गृहिणी, तिला अधिकृत आणि किफायतशीर वित्तीय सेवा मिळणे हा मूलभूत अधिकार व्हावा. अशी व्यवस्था होईल की, कोणत्याही ठिकाणी, कोणत्याही वेळी, एका स्मार्टफोनच्या स्पर्शाने किंवा एका साध्या biometric ओळखीने ती आपल्या बचतीचे व्यवस्थापन, भविष्यासाठी गुंतवणूक, विमा उतराडी किंवा सरकारी लाभांची मागणी सहजपणे करू शकेल.

हा प्रवास केवळ तंत्रज्ञानाचा नसून, विश्वासाचा, सुरक्षिततेचा आणि सामूहिक सहभागाचा आहे. सरकारचे धोरणनिर्मिती, नियामकांचे दूरदर्शी मार्गदर्शन, बँका आणि फिनटेक क्षेत्राचे नाविन्यपूर्ण उपाय आणि नागरिकांची सजगता आणि स्वीकार या सर्वांच्या एकत्रित प्रयत्नांनीच हे दर्शन साकारणे शक्य आहे.

भारतातील अलीकडील उपलब्धता (सन २०२५) :-

भारताने वित्तीय समावेशन आणि डिजिटल देयक क्षेत्रात झपाट्याने प्रगती केली आहे. २०२५ पर्यंत, देश एका अशा टप्प्यावर पोहोचला आहे, जिथे मूलभूत उपलब्धता प्रचंड आहे, पण काही आव्हाने अजूनही कायम आहेत.

१. वित्तीय समावेशन (Financial Inclusion)

a) जनधन योजनेची यशस्वीता:

मार्च २०२५ पर्यंत, जनधन खात्यांची एकूण संख्या ५१.५ कोटी (515 million) पार झाली आहे.[१३] यापैकी सुमारे ३६ कोटी (70%) खाती डिजिटल पद्धतीने (डेबिट कार्ड, UPI, इ.) वापरली जात आहेत. जनधन खात्यांमधील एकूण शिल्लक ₹२.२ लाख कोटींच्या (₹2.2 trillion) वर आहे, जी सामूहिक बचत वाढीचे संकेत देते.

b) बचत आणि विमा व्याप्ती:

देशातील एकूण बचत खात्यांची संख्या १४२ कोटी (1.42 billion) आहे,[१४] जी लोकसंख्येपेक्षा जास्त आहे, परंतु एक व्यक्ती एकाहून अधिक खाती ठेवू शकते. PMJJBY (जीवन ज्योती बीमा) योजनेअंतर्गत १५.४ कोटी लोक कव्हर्ड आहेत, तर PMSBY (सुरक्षा बीमा) योजनेअंतर्गत ३४.२ कोटी लोक कव्हर्ड आहेत.

२. डिजिटल देयक (Digital Payments)

a. **UPI चे जागतिक वर्चस्व:** फेब्रुवारी २०२५ मध्ये, UPI ने १४.२ अब्ज व्यवहार नोंदवले. वार्षिक व्यवहार संख्या १६५ अब्ज पार करण्याची अपेक्षा आहे. फेब्रुवारी २०२५ मधील व्यवहारांचे एकूण मूल्य ₹२५.५ लाख कोटी होते. वार्षिक व्यवहार मूल्य ₹३५० लाख कोटी पार करेल असे अंदाज आहे. डिजिटल खरेदीतील ८५% पेक्षा जास्त व्यवहार UPI द्वारे होतात.[१५]
b. **इतर डिजिटल माध्यमे:** दरमहा सरासरी ६०० दशलक्ष व्यवहार, ₹६.५ लाख कोटी मूल्य. सक्रिय क्रेडिट/डेबिट कार्डची संख्या १३.५ कोटी (Credit) + १०.८ कोटी (Debit) आहे. परंतु UPI च्या तुलनेत याचा वाटा घटत आहे. दरमहा सरासरी २५ अब्ज पेक्षा जास्त डिजिटल व्यवहार (सर्व चॅनेल्स मिळून) होतात.

३. पायाभूत सुविधा आणि कनेक्टिव्हिटी (Infrastructure & Connectivity)

भारतात ९० कोटी इंटरनेट वापरकर्ते आहेत, ज्यापैकी सुमारे ८५ कोटी मोबाइल इंटरनेट वापरतात. सुमारे ८२ कोटी लोक स्मार्टफोन वापरतात. २०२७ पर्यंत ही संख्या १ अब्ज होण्याची अपेक्षा आहे. देशभरात २८ लाख POS terminals आणि १५ लाख बँकिंग कॉरस्पॉडंट्स (Bank Mitras) आहेत.[१६]

४. सध्याची आव्हाने डेटाच्या दृष्टीने (Current Challenges in Numbers)

शहरी भागात ९५% डिजिटल व्यवहार व्याप्ती आहे. तर ग्रामीण भागात ६५-७०% डिजिटल व्यवहार व्याप्ती आहे. लिंग अंतर हे पुरुष: ८०% डिजिटल पेमेंट वापरतात. तर स्त्रिया ५५% डिजिटल पेमेंट वापरतात.[१७] UPI व्यतिरिक्त इतर चॅनेल्सवरील व्यवहार शुल्क (१.५% ते ३%) लहान व्यापाऱ्यांसाठी आव्हानात्मक ठरते. २०२४ मध्ये १६% वाढ झालेले सायबर गुन्हे (बहुतेक फिशिंग आणि UPI स्कॅम) नोंदवले गेले.

२०२५ मध्ये, भारत डिजिटल देयकाच्या बाबतीत जागतिक नेता बनला आहे. UPI हे एक अजोड यश आहे. परंतु, ग्रामीण भागातील व्याप्ती, स्त्रियांचा सहभाग, आणि सायबर सुरक्षा ही प्रमुख आव्हाने राहिली आहेत. वित्तीय समावेशनाच्या बाबतीत 'खाते उघडणे' हे ध्येय साध्य झाले आहे, पण आता 'खात्याचा सक्रिय आणि नियमित वापर' हे नवे ध्येय ठेवण्याची गरज आहे. २०४७ च्या विकसित भारताच्या दृष्टीकोनातून, ही उपलब्धी एक मजबूत पाया आहे, ज्यावर इतर अडचणी दूर करून एक पूर्णतः समावेशक डिजिटल अर्थव्यवस्था उभारणे शक्य आहे.

वित्तीय समावेशन आणि डिजिटल देयक प्रणालीसमोरील आव्हाने :-

भारताने वित्तीय समावेशन आणि डिजिटल देयक क्षेत्रात उल्लेखनीय प्रगती केली असली, तरी २०४७ पर्यंत 'विकसित भारताचे ध्येय साध्य करण्यासाठी अजून अनेक मोठी आव्हाने समोर आहेत. ही आव्हाने ओळखणे आणि त्यावर उपाययोजना करणे अत्यावश्यक आहे.

१. डिजिटल अंतर आणि कनेक्टिव्हिटी (The Digital Divide & Connectivity) :-

दूरच्या ग्रामीण, आदिवासी आणि पर्वतीय भागात अद्यापही विश्वासार्ह आणि वेगवान इंटरनेट कनेक्टिव्हिटीचा अभाव आहे. डिजिटल सेवांपर्यंत पोहोच येथे मोठ्या प्रमाणात मर्यादित आहे. स्मार्टफोन, टॅब्लेट किंवा इतर डिजिटल उपकरणे खरेदी करण्याची आर्थिक क्षमता बऱ्याच लोकांमध्ये नसते. जुन्या फोनवर ऑफलाइन सोल्युशन्सची मर्यादित उपलब्धता हे एक आव्हान आहे.

२. वित्तीय आणि डिजिटल साक्षरतेचा अभाव (Lack of Financial & Digital Literacy) :-

बऱ्याच शेतकऱ्यांना, कामगारांना आणि स्त्रियांना बँक खाती उघडणे, डिजिटल भुगताने कशी करावीत, त्याचे फायदे आणि जोखीम याबद्दल पुरेशी माहिती नसते. डिजिटल पद्धतींवर विश्वास न बसणे, चुकीचे व्यवहार होण्याची भीती, पैसे गमावल्याची चिंता यामुळे लोक रोख व्यवहाराकडेच झुकतात.

३. सायबर सुरक्षितता आणि गोपनीयता (Cyber Security & Privacy Concerns) :-

डिजिटल देयकांच्या प्रसाराबरोबरच फिशिंग, ओटीपी स्कॅम, खोटे फसवे कॉल्स आणि ॲप्सद्वारे होणारी फसवणूक हे एक मोठे आव्हान बनले आहे. वैयक्तिक आणि आर्थिक माहितीची गोपनीयता राखण्याबाबत गंभीर चिंता आहे. डेटा लीक किंवा दुरुपयोग होण्याची शक्यता लोकांमध्ये अविश्वास निर्माण करते.

४. पायाभूत सुविधेची कमतरता (Infrastructural Gaps)

ग्रामीण भागात बँक शाखा, ATM, PoS मशीन आणि विश्वासार्ह बँकिंग कॉरस्पॉंडंट्स (Bank Mitras) यांची अजूनही कमी आहे. नेटवर्क नसताना वापरता येणारी USSD सारखी तंत्रज्ञाने जटिल आणि मर्यादित कार्यक्षमतेची आहेत. सर्वांगीण ऑफलाइन सोल्युशन्सचा अभाव आहे.

५. भाषिक आणि सांस्कृतिक अडथळे (Linguistic & Cultural Barriers)

बहुतांश डिजिटल प्लॅटफॉर्म आणि ॲप्स प्रामुख्याने इंग्रजी आणि हिंदीमध्ये उपलब्ध आहेत. स्थानिक भाषांमध्ये सामग्री आणि इंटरफेसचा अभावामुळे ते वापरणे अवघड होते.

रोख पैशावरील विश्वास आणि डिजिटल पद्धतींना संशयाच्या दृष्टीने पाहणे हा एक सांस्कृतिक अडथळा आहे, जो बदलणे अतिशय कठीण आहे.

६. आर्थिक अडथळे (Economic Barriers)

छोट्या रकमेच्या व्यवहारासाठी (मोबाइल रिचार्ज, छोटी खरेदी) डिजिटल पद्धतींमध्ये होणारा वेळ आणि डेटा खर्च हा रोख व्यवहारापेक्षा अकार्यक्षम ठरू शकतो. छोट्या दुकानदारांसाठी डिजिटल व्यवहारासाठी होणारे व्यवहार शुल्क (Transaction Fees) हे एक आर्थिक ओझे आहे.

७. नियामकीय आणि तांत्रिक आव्हाने (Regulatory & Technical Challenges)

भारतात विविध बँका, फिनटेक कंपन्या आणि भुगतान प्लॅटफॉर्म्समध्ये पूर्ण अंतरकार्यक्षमता अद्याप प्राप्त झालेली नाही. जुन्या बँकिंग आयटी सिस्टम्सना आधुनिक डिजिटल प्लॅटफॉर्म्सशी एकत्रित (Integrate) करणे हे एक तांत्रिक आव्हान आहे.

८. लिंग आधारित असमता (Gender-Based Disparities)

घरगुती कामांमध्ये अडकलेल्या स्त्रियांमध्ये स्मार्टफोनची मालकी, इंटरनेट वापर आणि वित्तीय निर्णय घेण्याचे स्वातंत्र्य मर्यादित आहे. त्यामुळे त्या वित्तीय समावेशनाच्या मुख्य प्रवाहातून वगळल्या जातात.

ही आव्हाने जटिल आणि एकमेकांशी जोडलेली आहेत. केवळ तंत्रज्ञानाच्या प्रसारानेच नव्हे, तर एक व्यापक धोरणात्मक दृष्टीकोन स्वीकारून, ज्यामध्ये पायाभूत सुविधा, शिक्षण, सुरक्षा आणि सांस्कृतिक बदल या सर्वांचा समावेश असेल, त्याद्वारेच या आव्हानांवर मात करता येईल. २०४७ पर्यंतचे 'विकसित भारताचे ध्येय साध्य करण्यासाठी या अडचणी दूर करणे अनिवार्य आहे.

- **वित्तीय समावेशन आणि डिजिटल देयक या विषयी धोरणात्मक आणि व्यावहारिक मार्ग (Strategic and Practical Pathways)**

विकसित भारत २०४७: वित्तीय समावेशन आणि डिजिटल देयक प्रणालीसाठी धोरणात्मक आणि व्यावहारिक मार्ग पुढील प्रमाणे स्पष्ट करता येईल.

भाग १: धोरणात्मक चौकट (Strategic Framework)

१. दृष्टी आणि उद्दिष्ये (Vision & Objectives)

२०४७ पर्यंत भारतात अशी व्यवस्था निर्माण करणे, जिथे प्रत्येक प्रौढ नागरिकास एक सक्रिय बँक खाते, डिजिटल भुगतान साधने वापरण्याची सोय आणि त्यांच्या गरजेनुसार किफायतशीर वित्तीय सेवा मिळेल. यासाठी पुढील धोरणात्मक उदिष्टे ठरविता येईल.

a) देशातील प्रत्येक प्रौढ नागरिक अधिकृत वित्तीय प्रणालीचा भाग बनणे.
b) GDP च्या ९०% पेक्षा जास्त व्यवहार डिजिटल माध्यमातून होणे.
c) प्रत्येक गावात डिजिटल देयकाची सर्वत्र पोहोच.
d) सर्व सरकारी योजनांचा लाभ थेट बँक खात्यात हस्तांतरण (DBT).

२. सर्वसमावेशक पायाभूत सुविधा (Inclusive Infrastructure)

डिजिटल कनेक्टिव्हिटी: ५जी/६जी नेटवर्कद्वारे देशात सर्वत्र हाय-स्पीड इंटरनेट पोहोच. ग्रामीण भागात डिजिटल कनेक्टिव्हिटी ही 'उपयोगिता हक्क' (Utility Right) बनवणे. प्रत्येक गावात बँकिंग कॉरस्पॉडंट (Bank Mitra), ATM, आणि PoS (Point of Sale) मशीनची उपलब्धता. नेटवर्क नसतानाही डिजिटल भुगतान शक्य करणारी तंत्रज्ञाने (USSD, NFC) वापरली जाणे.

३. नियामकीय सुधारणा आणि सहकार्य (Regulatory Reforms & Collaboration)

RBI च्या Regulatory Sandbox द्वारे फिनटेक कंपन्यांना नवीन उत्पादने चाचण्याची संधी देणे. डिजिटल डेटा संरक्षण कायद्याची कडक अंमलबजावणी आणि AI-आधारित फ्रॉड डिटेक्शन सिस्टमची निर्मिती. सरकार, बँका आणि फिनटेक कंपन्यांमध्ये सहकार्य वाढवणे.

भाग २: व्यावहारिक अंमलबजावणीचे मार्ग (Practical Implementation Pathways)

१. ग्राहक-केंद्रित उपाय (Customer-Centric Solutions)

भाषा आणि साक्षरता अडथळा दूर करणे, स्थानिक भाषांमध्ये बोलून व्यवहार करण्याची सोय. अक्षरशः न सहन करणाऱ्यांसाठी सोपे इंटरफेस. सूक्ष्म-बचत आणि सूक्ष्म-विमा: डिजिटल प्लॅटफॉर्मवरून कमी प्रीमियमवर विमा उतराडी. एकाच खात्यात बचत, विमा, गुंतवणूक यासारख्या एकाधिक कार्यक्षमता निर्माण करणे.

२. सक्षमीकरण आणि जागरूकता (Empowerment & Awareness)

मोठ्या प्रमाणावर प्रशिक्षण कार्यक्रम हाती घेण्यात यावेत. डिजिटल साक्षरता शिबिरे आयोजित करण्यात यावेत. ग्रामपंचायत स्तरावर प्रशिक्षण पुरविण्यात यावी. नारी शक्ती केंद्रे निर्माण करून महिलांसाठी वित्तीय साक्षरता अभ्यासक्रम राबविण्यात यावेत. शाळा-महाविद्यालयांमध्ये वित्तीय साक्षरता अनिवार्य करणे.

३. तंत्रज्ञानाचा वापर आणि नाविन्य (Leveraging Technology & Innovation)

आधारचा वापर सुरक्षित आणि सोपा करणे. सर्व कागदपत्रे डिजिटल स्वरूपात साठवणे. CBDC (डिजिटल रुपया - e₹) चा प्रसार स्वयंचलित देयके शक्य करणे. परदेशातील भारतीयांसाठी क्रॉस-बॉर्डर भुगताने सोय करण्यात यावी. ग्राहकाच्या वर्तनाचे विश्लेषण करून व्यक्तिचलित सेवा देणे.

४. सरकारी योजनांचे डिजिटलीकरण (Digitization of Government Schemes)

केवळ पैसेच नव्हे, तर अनुदान, विद्यार्थीवृत्ती, औषधपाण्याची मदत देखील डिजिटल पद्धतीने हस्तांतरित करणे. जमिनीचे हक्क डिजिटल स्वरूपात, ज्यामुळे त्या जमिनीवर गुंतवणूक करणे सोपे होईल.

५. आंतरराष्ट्रीय सहकार्य (Global Integration)

जगभरात UPI भुगतान स्वीकारले जाणे. परदेशातून पाठवलेले पैसे थेट डिजिटल वॉलेटमध्ये मिळणे.

आव्हाने आणि त्यावरील उपाय (Challenges & Mitigation Strategies)

अ.क्र.	आव्हान (Challenge)	व्यावहारिक उपाय (Practical Solution)
१	डिजिटल अंतर (Digital Divide)	ऑफलाइन भुगतान सोल्युशन्स, व्हॉइस-आधारित इंटरफेस
२	सायबर सुरक्षा (Cyber Security)	AI-आधारित फ्रॉड डिटेक्शन, बायोमेट्रिक प्रमाणीकरण
३	विश्वासाचा अभाव (Lack of Trust)	सरलीकृत तक्रार निवारण यंत्रणा, पारदर्शकता
४	नफा-तोटा (Profitability for Agents)	बँकिंग कॉरस्पॉंडंट्ससाठी अतिरिक्त सेवांची ऑफर

२०४७ पर्यंत विकसित भारताचे स्वप्न साकारण्यासाठी, वित्तीय समावेशन आणि डिजिटल देयक प्रणाली ही रक्ताऐवजी काम करणारी धमनी आहे. यासाठी धोरणात्मक दूरदृष्टी आणि व्यावहारिक अंमलबजावणी यांचा मेळ आवश्यक आहे. सरकार, नियामक, बँका, फिनटेक कंपन्या आणि नागरिक या सर्वांना मिळून केलेल्या प्रयत्नांनीच हे स्वप्न साकारता येईल. केवळ आर्थिकदृष्ट्या समृद्धच नव्हे, तर तंत्रज्ञानाने सक्षम आणि सामाजिकदृष्ट्या समाविष्ट असलेला भारत निर्माण करणे हे अंतिम ध्येय आहे.

सारांश :-

"विकसित भारत २०४७" या राष्ट्रीय ध्येयामध्ये भारताला आर्थिक, सामाजिक व तांत्रिक दृष्ट्या स्वयंपूर्ण आणि जागतिक स्तरावर स्पर्धात्मक राष्ट्र बनविण्याचे उद्दिष्ट ठेवलेले आहे. या दृष्टीकोनात वित्तीय समावेशन आणि डिजिटल देयक प्रणाली यांना केंद्रस्थानी स्थान आहे. वित्तीय समावेशन म्हणजे समाजातील प्रत्येक घटकाला, विशेषतः गरीब, वंचित व ग्रामीण लोकसंख्येला, औपचारिक बँकिंग व वित्तीय सेवांचा लाभ मिळवून देणे. यामध्ये बँक खाते उघडणे, बचत प्रोत्साहन, कर्जाची उपलब्धता, विमा कवच व निवृत्तीवेतन यांचा समावेश होतो. वित्तीय

समावेशनामुळे आर्थिक विषमता कमी होते, सामाजिक न्यायाला चालना मिळते आणि आर्थिक स्थैर्य दृढ होते. यासोबतच डिजिटल देयक प्रणाली ही आधुनिक वित्तीय व्यवस्थेची गतीशील ताकद ठरते. यूपीआय (UPI), आधार-आधारित पेमेंट्स, रुपे कार्ड, मोबाइल बँकिंग, डिजिटल रुपया इत्यादी साधनांमुळे व्यवहार जलद, सुरक्षित आणि पारदर्शक होतात. यामुळे रोकडविरहित अर्थव्यवस्था प्रोत्साहन पावते, काळया पैशावर नियंत्रण मिळते आणि शासनाच्या योजनांचा लाभ थेट लाभार्थ्यांपर्यंत पोहोचतो. २०४७ पर्यंत भारत जर विकसित राष्ट्र व्हायचे असेल तर वित्तीय समावेशन आणि डिजिटल पेमेंट्स यांचा विस्तार केवळ शहरी भागापुरता मर्यादित न राहता ग्रामीण व दुर्गम भागातही व्हायला हवा. त्यासाठी डिजिटल साक्षरता वाढविणे, सायबर सुरक्षेची हमी, इंटरनेट पायाभूत सुविधा मजबूत करणे व वित्तीय जागरूकता वाढविणे आवश्यक आहे.

एकंदरीत, वित्तीय समावेशन व डिजिटल देयक प्रणाली या एकत्रित प्रक्रियेमुळे भारतामध्ये समावेशक वाढ, सामाजिक समता, पारदर्शक प्रशासन आणि शाश्वत आर्थिक विकास साध्य होईल. या प्रणालींच्या यशस्वी अंमलबजावणीमुळे भारत २०४७ पर्यंत जागतिक स्तरावर विकसित राष्ट्रांच्या श्रेणीत पोहोचेल आणि "विकसित भारत" ही संकल्पना प्रत्यक्षात उतरविण्यात महत्त्वपूर्ण योगदान देईल

संदर्भ सूची :-

१) Van Horne, James C. (1974), Financial Management and Policy, Prentice Hall of India Pvt. Ltd., New Delhi.

२) Gurley, J.G. & Shaw, E.S. (1960), Money in a Theory of Finance, Brookings Institution, Washington D.C.

३) Walker, D.A. (1980), Money and Monetary Policy in Early Times, Edinburgh University Press.

४) Reserve Bank of India (2020), Report on Currency and Finance, RBI Publications, Mumbai.

५) Chakrabarty, K. C. (2009). Financial Inclusion: The Role of Technology. Reserve Bank of India Bulletin, November Issue, RBI, Mumbai.

६) Committee on Financial Inclusion (C. Rangarajan Committee). (2008). Report of the Committee on Financial Inclusion. Government of India, Ministry of Finance.

७) Reserve Bank of India (2008). Financial Inclusion: The Indian Experience. RBI Bulletin, Mumbai.

८) Rajan, R. (2009). A Hundred Small Steps: Report of the Committee on Financial Sector Reforms. Planning Commission, Government of India.

९) Reserve Bank of India. (2019). Report on Trend and Progress of Banking in India 2018–19. Mumbai: RBI.

१०) National Payments Corporation of India. (2020). Annual Report 2019–20. Mumbai: NPCI.

११) World Bank. (2016). Payment Aspects of Financial Inclusion. Washington, DC: World Bank.

१२) Organisation for Economic Co-operation and Development (OECD). (2018). Digital Financial Services and Financial Inclusion. Paris: OECD Publishing.

१३) वित्त मंत्रालय, भारत सरकार

१४) Anul Report, RBI

१५) RBI report on Digital Payments

१६) Anul Report, TRAI, IAMAI

१७) Anul Report, NSSO Survey

About the College

Pachora Taluka Co-operative Education Society's Sau. Rajanitai Nanasaheb Deshmukh Arts, Commerce and Science College, Bhadgaon is a premier higher education institution affiliated with Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon. Established in 1979, the college is accredited with "B" Grade (third cycle) with 2.47 CGPA by NAAC, Bangalore (valid till October 17, 2028). The college primarily serves rural students, offering undergraduate programmes in Arts, Commerce, and Science, guided by a well-qualified and experienced faculty.

The college provides modern facilities including a library, departmental resources, spacious and well-maintained sports ground, open gym, Yoga and Pranayam Udyan, and precisely designed playgrounds for various games. Student-focused schemes like National Service Scheme (NSS), One Day One Rupee, Earn and Learn, and Vichar Dhan Yojana and government scholarships for eligible students help support academic and personal growth. Students are encouraged to participate in sports, cultural events, yoga, meditation camps, seminars, and celebrations of national and international events such as Yoga Day, Independence Day, and National Sports Day.

The college also actively engages alumni through a Registered Student Alumni Association, promoting networking and guidance for current students. With a strong focus on holistic development and academic excellence, the college fosters an environment for students to grow intellectually, physically, and socially. Many students have also achieved gold medals in various subjects offered by the university, highlighting the institution's commitment to academic brilliance.

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