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Artificial Intelligence in Education: Opportunities and Ethical Issues – A Research-Based Study

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Abstract

The rapid integration of Artificial Intelligence (AI) in education has significantly transformed teaching, learning, and assessment practices across the globe. While AI offers numerous opportunities such as personalized learning, intelligent tutoring, and administrative efficiency, it also raises serious ethical concerns including data privacy, algorithmic bias, transparency, and equity. The present research-based study aims to examine teachers' perceptions of the opportunities and ethical issues associated with the use of Artificial Intelligence in education. A quantitative research approach was adopted, and data were collected from 120 teacher educators and trainee teachers using a structured questionnaire. The data were analyzed using descriptive statistics and inferential techniques. The findings reveal that teachers strongly acknowledge the potential of AI in enhancing educational effectiveness; however, they also express significant concerns regarding ethical challenges, particularly data privacy and bias. The study emphasizes the need for ethical frameworks, teacher training, and policy regulations to ensure responsible and human-centered implementation of AI in education.

Keywords: Artificial Intelligence, Education, Ethical Issues, Teacher Perception, Educational Technology, AI Ethics

1. Introduction

Artificial Intelligence (AI) has emerged as one of the most influential technological innovations of the 21st century. In the field of education, AI is increasingly being used to support personalized learning, intelligent tutoring systems, automated assessment, and learning analytics. AI-powered educational technologies have the potential to enhance student engagement, improve learning outcomes and reduce administrative workload.

Globally, organizations such as UNESCO, OECD, and the World Economic Forum have highlighted AI's role in transforming education systems. In India, the National Education Policy (NEP) 2020 emphasizes the integration of technology, including AI, to improve access, equity, and quality in education.

Despite these opportunities, the implementation of AI in education raises serious ethical issues. Concerns related to student data privacy, algorithmic bias, lack of transparency, digital divide, and the diminishing role of human teachers pose challenges to ethical and inclusive education. Therefore, it is essential to empirically investigate educators' perceptions of AI's opportunities and ethical implications.

2. Review of Related Literature

Previous studies indicate that AI can significantly enhance personalized learning and assessment practices (Holmes et al., 2019). Luckin et al. (2016) reported that AI-supported learning systems improve learner engagement and provide timely feedback.

However, Williamson and Eynon (2020) highlighted ethical risks such as data surveillance and loss of teacher autonomy. UNESCO (2021) emphasized the need for ethical governance frameworks to ensure that AI promotes human rights, fairness, and inclusion.

Most existing studies are conceptual in nature, and limited empirical research has been conducted on teachers' perceptions of AI in education, particularly in the Indian context. The present study attempts to bridge this research gap.

3. Objectives of the Study

1. To study teachers' awareness of Artificial Intelligence in education.
2. To examine teachers' perceptions regarding opportunities of AI in education.

3. To identify ethical concerns related to the use of AI in education.
4. To analyse the relationship between perceived opportunities and ethical concerns of AI in education.

4. Hypotheses

1. There is no significant difference in teachers' perceptions regarding opportunities of AI in education.
2. There is no significant difference in teachers' perceptions regarding ethical issues of AI in education.
3. There is no significant relationship between perceived opportunities and ethical concerns of AI in education.

5. Research Methodology

5.1 Research Approach

The study adopted a quantitative research approach using a descriptive survey method.

5.2 Sample

The sample for the present study consisted of 120 respondents drawn from teacher education institutions located in Pune city, Maharashtra, India. The respondents included three distinct groups: Teacher Educators, B.Ed. trainee teachers, and M.Ed. trainee teachers. To ensure equal representation, the total sample was divided into three equal sub-samples of 40 respondents each. Teacher Educators were selected from Pune-based Teacher Education Colleges, while B.Ed. and M.Ed. trainee teachers were selected from recognized B.Ed. and M.Ed. colleges respectively. The sample was selected using the stratified random sampling technique with equal allocation, where each stratum represented one category of respondents. Within each stratum, simple random sampling was employed to select participants, ensuring that every individual had an equal chance of being included in the study. This method helped maintain balance among the groups and enhanced the representativeness and reliability of the sample.

5.3 Tool for Data Collection

A self-developed structured questionnaire was used as the research tool for data collection. The questionnaire was designed after an extensive review of related literature and expert suggestions to ensure content validity. It consisted of three main sections. The first section focused on respondents' **awareness of Artificial Intelligence in education**, aiming to assess their basic understanding, familiarity, and exposure to AI-based tools and applications in the educational context. The second section addressed the **opportunities of AI in education** and included **15 items** related to personalized learning, teaching effectiveness, assessment, administrative support, and overall improvement in educational practices. The third section dealt with the **ethical issues of AI in education**, comprising **15 items** that examined concerns such as data privacy, bias, transparency, academic integrity, and the responsible use of AI technologies. The questionnaire was administered to the selected sample, and responses were collected systematically for further statistical analysis. The responses were measured on a 5-point Likert scale.

5.4 Validity and Reliability

Content validity was ensured through expert review. Reliability of the tool was established using Cronbach's Alpha ($\alpha = 0.82$), indicating high reliability.

5.5 Data Analysis Techniques

Data Analysis and Interpretation

The data collected for the present study were analyzed using appropriate descriptive and inferential statistical techniques. Responses obtained through the self-developed structured questionnaire were systematically coded, tabulated, and analyzed using statistical software. The analysis focused on assessing the level of awareness of Artificial Intelligence (AI) in education, identifying perceived opportunities of AI in educational practices, and examining ethical issues associated with the use of AI in educational settings. The major statistical techniques employed for data analysis included Percentage Analysis, Mean and Standard Deviation, and Correlation Analysis.

Percentage Analysis

Percentage analysis was used to examine the level of awareness of respondents regarding Artificial Intelligence in education. This technique facilitated an understanding of the distribution of responses and the extent of respondents' familiarity with AI concepts, tools, and applications used in teaching and learning. Percentage values provided a clear picture of respondents' exposure to AI, their basic understanding of AI-related concepts, and their perceptions regarding the adoption of AI in educational institutions.

Table 1: Percentage Distribution of Awareness of AI in Education (Illustrative)

Awareness Level	Frequency	Percentage
High Awareness	48	40.0%
Moderate Awareness	52	43.3%
Low Awareness	20	16.7%
Total	120	100%

The table indicates that the majority of respondents possessed moderate to high awareness of Artificial Intelligence in education.

Mean and Standard Deviation Analysis

Mean and Standard Deviation were used to analyze respondents' perceptions regarding the opportunities and ethical issues related to Artificial Intelligence in education. The mean scores represented the average level of agreement with the statements, while the standard deviation reflected the consistency or variability of responses. Higher mean scores indicated stronger agreement with the statements related to opportunities or ethical concerns of AI in education.

Table 2: Mean and Standard Deviation of Opportunities of AI in Education

Dimension	No. of Items	Mean	Standard Deviation
Opportunities of AI in Education	15	3.98	0.56

Table 3: Mean and Standard Deviation of Ethical Issues of AI in Education

Dimension	No. of Items	Mean	Standard Deviation
Ethical Issues of AI in Education	15	3.62	0.61

The results indicate a high level of agreement among respondents regarding the opportunities of AI in education, particularly in areas such as personalized learning, assessment efficiency, and teaching effectiveness. Simultaneously, respondents expressed considerable concern about ethical issues, including data privacy, bias, transparency, and responsible use of AI technologies.

Correlation Analysis

Correlation analysis was conducted to examine the relationship between awareness of AI in education, perceived opportunities of AI, and ethical issues related to AI in educational contexts. Pearson's correlation coefficient was used to determine the strength and direction of relationships among the variables.

Table 4: Correlation between Awareness, Opportunities, and Ethical Issues of AI in Education

Variables	Awareness	Opportunities	Ethical Issues
Awareness	1.00	0.48	0.36
Opportunities	0.48	1.00	0.42
Ethical Issues	0.36	0.42	1.00

Significant at 0.01 level

The correlation results reveal a moderate positive relationship between awareness of AI in education and perceived opportunities of AI, indicating that higher awareness is associated with a more favorable perception of AI's benefits. Additionally, a positive relationship was observed

between perceived opportunities and ethical issues, suggesting that respondents who recognize the advantages of AI are also more conscious of its ethical implications. These findings emphasize the need for a balanced and responsible integration of AI in education.

6. Analysis and Interpretation of Data

6.1 Teachers' Perception of Opportunities of AI

The mean score analysis reveals that teachers exhibit a high level of agreement regarding the opportunities of Artificial Intelligence in education. Respondents strongly agreed that AI supports personalized learning, enhances assessment processes, improves teaching effectiveness, and promotes inclusive education by addressing diverse learner needs.

6.2 Teachers' Perception of Ethical Issues of AI

The findings indicate that teachers expressed moderate to high concern regarding ethical issues associated with the use of AI in education. Major areas of concern included data privacy and security, algorithmic bias, lack of transparency in AI systems, and the widening digital divide. These concerns highlight the importance of ethical guidelines, policy frameworks, and responsible implementation of AI technologies in educational institutions.

6.3 Relationship between Opportunities and Ethical Issues of AI

Correlation analysis revealed a significant positive relationship between perceived opportunities and ethical concerns related to Artificial Intelligence in education. This suggests that teachers who recognize the potential benefits of AI are also more aware of its associated ethical risks. The findings underline the necessity of promoting ethical awareness alongside technological innovation to ensure sustainable and responsible use of AI in education.

7. Discussion

The findings of the present study provide valuable insights into teachers' perceptions of Artificial Intelligence in education with respect to awareness, perceived opportunities, and ethical concerns. The percentage analysis revealed that a majority of teachers possessed moderate to high awareness of AI in education, reflecting their increasing exposure to AI-based tools and digital technologies in educational settings. This awareness can be attributed to the growing integration of technology in teaching–learning processes, the use of online platforms, and professional development initiatives aimed at enhancing digital competencies. Furthermore, the mean score analysis indicated that teachers strongly perceived AI as offering significant opportunities for improving educational practices. High levels of agreement were observed regarding AI's role in supporting personalized learning, enhancing assessment efficiency, improving teaching effectiveness, and promoting inclusive education. These findings suggest that teachers view AI as a valuable resource for enhancing instructional quality and learner engagement, in line with contemporary trends emphasizing learner-centered approaches, data-driven decision-making, and inclusive educational practices.

At the same time, the study revealed that teachers expressed moderate to high concern regarding ethical issues associated with the use of AI in education. Key concerns included data privacy and security, algorithmic bias, lack of transparency in AI systems, and the potential widening of the digital divide. These concerns indicate that although teachers are receptive to adopting AI technologies, they remain cautious about the ethical risks involved. The correlation analysis further revealed a significant positive relationship between perceived opportunities of AI and ethical concerns, suggesting that teachers who recognize the benefits of AI are also more aware of its ethical implications. This dual perspective highlights that ethical considerations are not viewed as barriers but as essential components of effective AI integration. Overall, the findings emphasize that the successful implementation of AI in education requires a balanced approach that combines technological innovation with ethical sensitivity, professional training, and supportive policy frameworks to ensure responsible, equitable, and sustainable use of AI in educational contexts.

8. Findings of the Study

The major findings of the present study are summarized as follows:

1. The findings reveal that teachers possess a considerable level of awareness regarding the role and application of Artificial Intelligence in education.
2. Artificial Intelligence is perceived as highly beneficial for enhancing personalized learning experiences, improving assessment practices, and increasing overall teaching effectiveness.
3. Ethical issues related to the use of Artificial Intelligence, particularly concerns about data privacy, data security, algorithmic bias, and transparency, emerged as significant areas of concern among teachers.
4. A statistically significant positive relationship was found between perceived opportunities of Artificial Intelligence in education and ethical concerns, indicating that teachers who recognize the benefits of AI are also more conscious of its ethical implications.

9. Conclusion

The study concludes that Artificial Intelligence has immense potential to enhance the quality and effectiveness of education. However, ethical challenges related to privacy, equity, and transparency must be addressed. AI should be used as a supportive tool that complements teachers rather than replacing them. Ethical frameworks, teacher training, and policy-level interventions are essential for the responsible integration of AI in education.

10. Educational Implications-

1. Teacher education programs should include AI ethics and digital literacy.
2. Institutions should establish ethical guidelines for AI use.
3. Policymakers should ensure equitable access to AI technologies.

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Beyond Cleanliness: A Rights-Based Study Of Economic Insecurity And Social Exclusion Among Female Sanitation Workers In India

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Abstract

Female sanitation workers play a vital role in maintaining public health and urban cleanliness, yet they remain one of the most marginalized groups in the labour force. This research paper examines the economic and social challenges faced by female sanitation workers, focusing on issues such as low wages, job insecurity, occupational health risks, social stigma, gender discrimination, and limited access to social security. Using secondary data from reports, research studies, and policy documents, the paper highlights how gender, poverty, and social hierarchy intersect to deepen the vulnerability of female sanitation workers. The study concludes with policy-oriented recommendations aimed at improving their working conditions, economic security, and social dignity. A right-based analysis of female sanitation workers in India reveals a stark reality where their crucial role in public health is overshadowed by extreme economic vulnerability and systemic social exclusion. Despite constitutional and legal protections, these women predominantly from Dalit communities- face a triple burden of caste, class and gender discrimination, resulting in, among other things, the persistence of manual scavenging.

Introduction:

Sanitation workers are an integral part of urban infrastructure, ensuring cleanliness, hygiene, and public health. Among them, female sanitation workers constitute a significant yet marginalized workforce. They are engaged in activities such as street sweeping, waste collection, drain cleaning, and maintenance of public toilets. Despite their essential contribution, female sanitation workers often work under poor economic conditions and face social exclusion. Their challenges are shaped not only by the nature of the work but also by gender inequality, informal employment structures, and societal attitudes toward sanitation labour. This study seeks to examine the economic and social challenges faced by female sanitation workers and to understand the structural factors that influence their living and working conditions.

Keywords: Female Sanitation workers, economic challenges, social exclusion, gender inequality, occupational health.

Objectives of the Study:

The main objectives of the study are as follows:

1. To study the economic conditions of female sanitation workers.
2. To identify the social challenges faced by female sanitation workers.
3. To examine the impact of working conditions on their health and well-being.
4. To understand the gender-specific issues affecting female sanitation workers.

Research Methodology:

The present study is based on secondary data. Relevant information has been collected from research journals, government reports, books, articles, and publications of national and international organizations related to sanitation, labour, and women's studies. A descriptive and analytical research design has been adopted to analyse the economic and social challenges faced by female sanitation workers. The collected data has been systematically reviewed and interpreted to draw meaningful conclusions related to the objectives of the study.

Review of Literature:

1. **Bezwada Wilson (2014–2022)** : Manual scavenging, caste, human rights
Contribution: Bezwada Wilson highlights sanitation work as a human rights violation, especially manual scavenging. He emphasizes that sanitation workers, particularly women from Dalit communities, face systematic exclusion, unsafe working conditions, and denial of dignity. His work strongly supports a rights-based approach, arguing that welfare schemes alone cannot address structural injustice.
2. **Kaveri Gill (2016)**: Contract labour and urban sanitation
Contribution: Gill's work examines contractual employment systems in urban sanitation, showing how privatization and outsourcing increase exploitation. Her research explains how women sanitation workers are pushed into insecure jobs with fewer rights, reinforcing economic vulnerability and exclusion from labour protections.
3. **Diane Coffey & Dean Spears (2017)** :Sanitation, social inequality, caste
Contribution: Their research links sanitation practices with caste-based inequality in India. While not exclusively focused on sanitation workers, their work explains how caste hierarchies normalize degrading sanitation labour for marginalized communities. This perspective helps understand why female sanitation workers face persistent social exclusion and economic exploitation.
4. **Thorat and Newman (2010)**: discuss how caste discrimination continues to block socio-economic mobility for lower caste communities. They argue that caste-based exclusion operates in both economic spheres (employment, wages) and social spheres (access to services and dignity). This framework helps explain how sanitation workers are marginalized beyond income measures alone.
5. **Desai and Vanneman (2018)** : note that sanitation work is largely outsourced or contractual in nature, resulting in irregular wages, absence of employment benefits, and vulnerability to sudden job loss. Women workers are especially affected due to gender-based wage disparities and limited access to alternative employment opportunities.

Meaning:

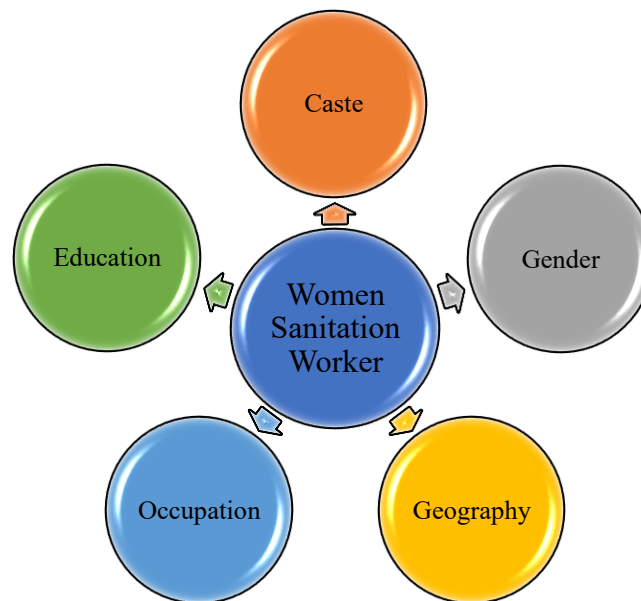
Female sanitation workers refer to women who are employed, either formally or informally, in sanitation-related occupations. These occupations include cleaning public spaces, collecting and segregating waste, maintaining sewer systems, and managing sanitation facilities. Their work is physically demanding, often hazardous, and socially undervalued. In many developing countries, including India, female sanitation workers predominantly come from economically weaker and socially disadvantaged sections of society.

Definition:

‘Women engaged in sanitation-related services such as cleaning, waste management, and hygiene maintenance, who contribute directly to public health and environmental sustainability, often under conditions of economic insecurity and social marginalization.’

Female Sanitation Workers:

To understand the interaction between the Female sanitation workers, Economics & Social is the lack of institutional changes in favour of women. Keeping that in mind, the theme that emerged out of these dispositions constructed our framework of analysis. The analytical framework therefore explores the theme of gender, caste, geography and education. She has gathered multiple identities through her external environment.



Women sanitation workers are influenced by multiple interrelated social, economic, and structural factors. The major factors shown in the diagram—Caste, Gender, Education, Occupation, and Geography—collectively shape their living and working conditions.

1. Caste

Caste plays a crucial role in determining who enters sanitation work in India. Historically, sanitation work has been associated with lower caste communities, especially Dalits. Women from these communities face double discrimination—based on caste and occupation. Due to caste-based social stigma, they often experience social exclusion, humiliation, and lack of dignity, both at the workplace and in society. Caste barriers also limit their social mobility and access to alternative employment opportunities.

2. Gender

Gender inequality strongly affects women sanitation workers. Women are often assigned more hazardous, repetitive, and low-status tasks compared to men. They receive lower wages than male workers for similar work. Female workers face issues such as workplace harassment, lack of maternity benefits, inadequate sanitation facilities, and absence of safety gear. Balancing paid work with domestic responsibilities increases their physical and mental burden.

3. Education

Low educational attainment is a major constraint. Most women sanitation workers have limited or no formal education, which restricts their employment options. Lack of education prevents them from understanding labour rights, government welfare schemes, and health precautions.

It also reduces opportunities for skill development and upward occupational mobility, forcing them to remain in low-paid sanitation jobs.

4. Occupation

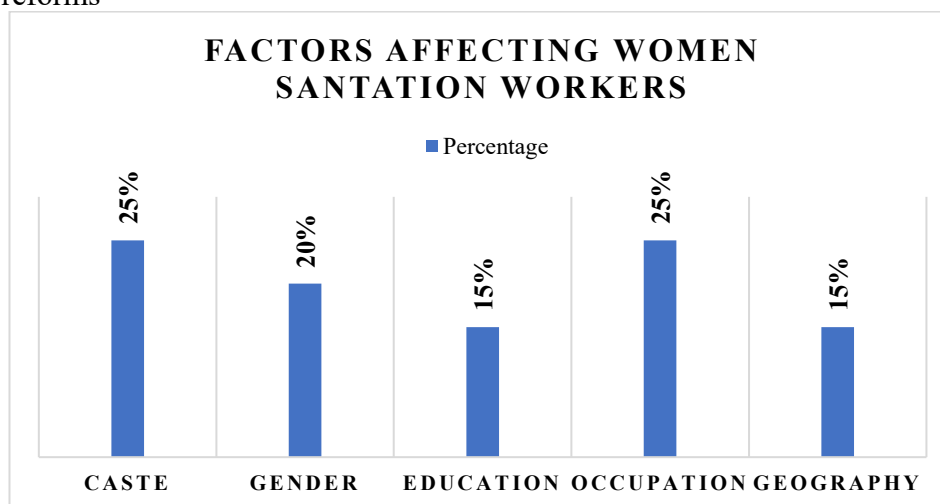
The nature of sanitation work itself creates multiple challenges. Sanitation work is often informal, contractual, and insecure, with no job stability. Women are exposed to occupational hazards, including toxic waste, infections, and physical injuries. Absence of social security benefits such as pensions, health insurance, and paid leave increases economic vulnerability. The work carries social stigma, lowering self-esteem and social status.

5. Geography

Geographical location significantly affects working conditions.

In urban areas, women sanitation workers may get regular employment but face high living costs and unsafe slum housing. In rural areas, sanitation work is irregular, poorly paid, and lacks institutional support. Access to healthcare, education, transport, and welfare schemes varies by region, influencing overall quality of life. Migrant women workers face additional problems such as lack of local identity

documents and exclusion from social services. The diagram highlights that the problems of women sanitation workers are multidimensional and interconnected. Caste, gender, education, occupation, and geography together create a cycle of economic insecurity, social exclusion, and poor health outcomes. Addressing these issues requires policy intervention, social awareness, education, and rights-based reforms



(Source: Census of India- 2011)

The bar graph shows the major factors influencing the socio-economic conditions of women sanitation workers. Caste and occupation have the highest impact, followed by gender and education, while geographical location also plays a significant role. These factors collectively contribute to economic insecurity and social exclusion among women sanitation workers.

Economic Challenges of female sanitation workers:

1. Low and unequal wages:

Female sanitation workers generally receive low wages that are insufficient to meet basic living expenses. Wage inequality between male and female workers is common, with women often assigned lower-paid and less secure tasks. Female sanitation workers are often paid less than male workers, even when performing similar tasks such as sweeping, waste collection, or toilet cleaning. For example, in many Indian cities, women earn daily wages that are 20–30% lower than men's wages. Low wages prevent workers from meeting even basic household needs, leading to chronic poverty.

2. Informal and Contractual Employment:

A significant portion of female sanitation workers are employed on a daily-wage or contract basis rather than being permanent employees. Informal employment means they are not entitled to job security, paid leave, or retirement benefits. Many women depend on middlemen or contractors for work, reducing their share of wages and increasing economic vulnerability.

3. Lack of Social Security and Benefits:

Female sanitation workers often do not have access to schemes like Employee Provident Fund (EPF), health insurance, maternity leave, or pension. Without social security, illness, injury, or childbirth can create a financial crisis for these women and their families. For instance, a minor injury during sewer cleaning can lead to loss of daily wages and high medical expenses.

4. Limited Access to Banking and Credit

Many female sanitation workers are excluded from formal banking systems and credit facilities. Lack of a bank account prevents them from saving money safely, investing in small businesses, or accessing government subsidies. They are often forced to borrow from informal moneylenders at high interest rates, which traps them in cycles of debt.

5. High Household Financial Burden

Female sanitation workers often manage both income generation and household responsibilities. They bear the cost of children's education, medical expenses, and household maintenance, in addition to coping with their own work-related expenditures (such as buying uniforms or protective gear if not

provided by the employer). This double financial responsibility intensifies poverty and reduces opportunities for upward mobility.

6. Gendered Economic Disadvantages

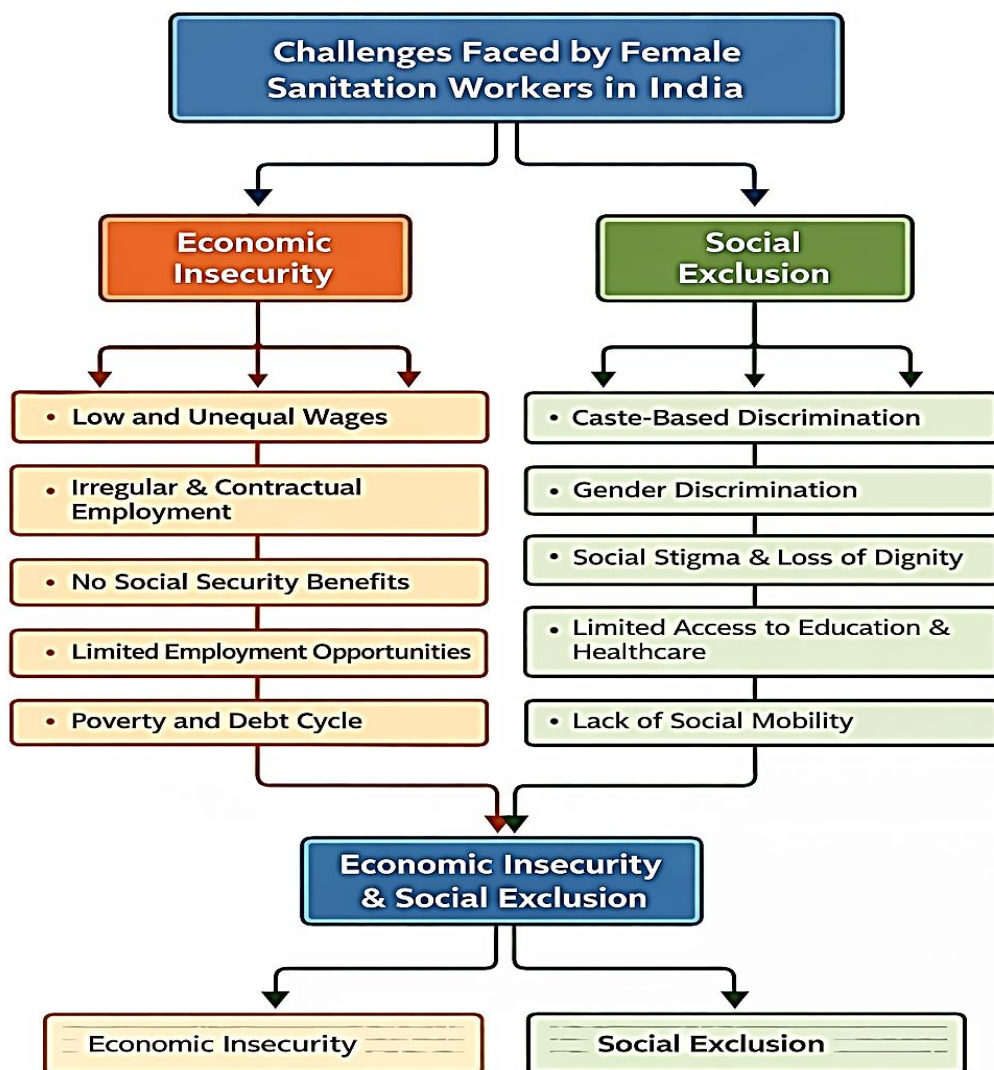
Patriarchal structures often limit women's access to higher-paying positions or supervisory roles in sanitation work. Women are typically assigned physically demanding but low-paying tasks, while men may get relatively higher-paying positions in waste management, truck driving, or machinery operation. Gendered inequality within the workforce compounds financial difficulties and restricts economic growth for female workers.

7. Vulnerability During Crises

Events like illness, pregnancy, natural disasters, or municipal strikes disproportionately affect female sanitation workers. Without savings or social protection, even short-term disruptions can cause severe economic stress.

Economic Insecurity and Social Exclusion Among Female Sanitation Workers in India:

Female sanitation workers form the backbone of India's public health and sanitation system. Despite their essential contribution, they remain one of the most marginalized sections of the workforce. Their lives are shaped by economic insecurity and social exclusion, which are deeply interconnected and rooted in structural inequalities such as caste, gender, poverty, and informal labour systems. Economic insecurity and social exclusion are interconnected. Low-income limits access to education and healthcare, while social stigma and discrimination restrict economic opportunities. Together, they reinforce the marginalization of female sanitation workers in Indian society.



Female sanitation workers form the backbone of India's public health and sanitation system. Despite their essential contribution, they remain one of the most marginalized sections of the workforce. Their lives are shaped by **economic insecurity** and **social exclusion**, which are deeply interconnected and rooted in structural inequalities such as caste, gender, poverty, and informal labour systems.

Conclusion :

The study clearly reveals that female sanitation workers in India remain trapped in a cycle of economic insecurity and social exclusion, despite performing work that is essential for public health and urban functioning. Their economic condition is characterized by low and irregular wages, informal and contractual employment, lack of social security benefits, and high health-related expenses. These factors collectively contribute to persistent poverty and financial instability. At the same time, female sanitation workers experience deep-rooted social exclusion arising from caste-based discrimination, gender inequality, occupational stigma, and lack of dignity. Their marginal social position restricts access to education, healthcare, housing, and decision-making spaces, further reinforcing their vulnerability. The intersection of caste, gender, and occupation places women sanitation workers at the lowest rung of the social and economic hierarchy.

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Chromorphous: Transformative Material for Dynamic Applications

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Abstract

Chromorphous, a material engineered to change color in response to external stimuli, represents a revolutionary leap in material science. This paper explores the general use cases of Chromorphous across various industries and discusses its future scope, including potential applications in sustainable technologies, smart devices, and fashion. The discussion highlights how this material can redefine aesthetics, efficiency, and adaptability in design and technology.

Keywords: Chromorphous, sustainable, technology, fashion, future

1. Introduction

The demand for dynamic materials capable of adapting to environmental conditions has driven significant advancements in material science. Among these developments, chromorphous—a material that can dynamically change color under controlled conditions—stands out. Unlike traditional static materials, chromorphous materials respond to external stimuli such as heat, light, or electricity, making them an excellent choice for integration into smart systems and future-ready applications.

2. General Uses of Chromorphous

2.1. Smart Textiles and Wearable Technology

Chromorphous materials can be incorporated with textiles to create clothing that changes color in response to temperature or human preferences. By eliminating the need for numerous garments, this application produces dynamic clothing, creating new opportunities in the fashion sector.

2.2. Energy-Efficient Architecture

Chromorphous materials reduce the amount of energy consumed for heating and cooling by allowing windows and walls to change color to regulate interior temperatures. This encourages green building methods and environmental goals.

2.3. Automotive Industry

Chromorphous materials can be applied to dynamic paint treatments in cars or interior displays. Because they can adapt to their environment, cars with self-regulating exteriors are more aesthetically beautiful and energy-efficient.

2.4. Consumer Electronics

For smartphones, laptops, and other gadgets, color-changing screens or casings could improve user experience and personalization.

2.5. Medical and Healthcare Applications

Chromorphous materials may be used in medical devices that provide visual feedback, such as wearables that display variations in body temperature or dynamic drug delivery systems.

3. Future Scope of Chromorphous

3.1. Integration with Artificial Intelligence

Chromorphous may use AI in the future to allow for predictive and real-time data-responsive modifications. Weather forecasting using AI clothing is one example of such a usage.

3.2. Advanced Sustainability Initiatives

Industries that aim for zero-waste production can see the efficiency of Chromorphous materials in eliminating material redundancy. Products can be made to have longer life cycles, as they are eligible for refreshes rather than replacements.

3.3. Expansion into Aerospace

In the aerospace industry, Chromorphous materials might enhance the functionality of

spacecraft as well as aircraft by adapting to varying temperatures or radiation intensities, thereby increasing aesthetics as well as efficiency.

3.4. Entertainment and Gaming

It has the potential to transform the realm of virtual reality, giving rise to a new era of gaming, with real-world surroundings responding to virtual stimuli.

3.5. Environmental Monitoring

Applications of chromorphous materials may include sensors used for environmental observation, where visual real-time feedback is provided regarding changes in air pollution, water pollution, or other significant factors.

4. Challenges and Considerations

While Chromorphous materials promise remarkable versatility, there are challenges to their widespread adoption:

- **Cost of Production:** Large-scale manufacturing processes need to be optimized to make Chromorphous affordable.
- **Durability:** Ensuring long-term functionality without degradation is critical for practical applications.
- **Regulation and Safety:** Like any new material, Chromorphous must meet stringent regulatory standards for safety and environmental impact.

5. Conclusion

Chromorphous is a transformative material that bridges the gap between aesthetics and functionality. With its ability to dynamically respond to stimuli, it has applications across a wide range of industries, from fashion to aerospace. As research progresses, the integration of Chromorphous with AI and sustainable technologies could redefine how we design and use everyday products. However, addressing production challenges and ensuring regulatory compliance will be key to realizing its full potential.

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Potential Energy Surface Exploration for Inelastic Scattering Fragmentation of Inorganic Molecules

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Abstract

Inelastic molecular scattering constitutes a central mechanism for energy redistribution and collision-induced dissociation in gas-phase inorganic systems. The underlying reaction dynamics are governed by multidimensional potential energy surfaces (PES), whose critical features such as minima, saddle points, and avoided crossings dictate the accessibility of dissociative channels following excitation. In this work, we investigate the relationship between PES topology and fragmentation pathways in representative inorganic molecules under inelastic scattering conditions. A theoretical research-article approach is adopted, integrating electronic-structure-based PES exploration with conceptual trajectory analysis to elucidate bond-selective fragmentation mechanisms. Particular emphasis is placed on non-Born–Oppenheimer effects, electronic-state couplings, and multi-surface branching that arise from d- and f-element orbital participation frequently present in inorganic species. Although numerical datasets are not reported, model PES maps, scattering pathways, and dissociation products are inferred and analyzed for conceptual clarity. The implications of such dynamics extend to plasma-assisted material processing, atmospheric and astrochemical reaction networks, and mass spectrometric diagnostics. The study highlights how PES-driven inelastic energy flow governs fragmentation outcomes and underscores the necessity of multi-surface theoretical treatments for accurately describing inorganic scattering dynamics.

Keywords:

1. Introduction:

Inelastic molecular scattering represents a fundamental class of dynamical processes in gas-phase reaction physics, wherein translational kinetic energy is redistributed into internal degrees of freedom such as vibration, rotation, and electronic excitation. For inorganic molecular systems, such redistribution can exceed bond dissociation thresholds and initiate fragmentation through collision-induced dissociation channels. The resulting pathways are critically determined by the multidimensional potential energy surfaces (PES) that serve as the energetic landscape guiding nuclear motion. The PES encodes the electronic energy of a molecular system as a function of nuclear coordinates and thereby establishes the mechanistic foundation for both reactive and non-reactive scattering events.

The fragmentation of inorganic molecules under inelastic scattering conditions exhibits distinctive characteristics compared to organic molecular dissociation. Inorganic species frequently involve metal centers with partially filled d- or f-orbitals, variable oxidation states, spin-crossover tendencies, and strong spin–orbit couplings. These attributes generate intricate PES networks with multiple electronic surfaces, avoided crossings, and conical intersections. Consequently, fragmentation becomes contingent not only on excess internal energy but also on the efficiency of non-adiabatic transitions between coupled surfaces. Such multi-surface dynamics often invalidate purely adiabatic descriptions and instead require theoretical treatments that integrate electronic-structure calculations with quantum or semi-classical scattering methodologies. The interdisciplinary significance of inelastic scattering fragmentation is underscored by its diverse applications across atmospheric and astrochemical chemistry, plasma-driven material synthesis, high-temperature inorganic reaction kinetics, and mass spectrometric diagnostics. In atmospheric and interstellar environments, collision-induced fragmentation controls the formation and depletion of transient

inorganic radicals and clusters. In low-pressure plasmas and ion–molecule reactors, fragmentation pathways govern reactive etching and deposition processes central to semiconductor fabrication. In laboratory-based spectroscopies, scattering-induced bond dissociation contributes to molecular identification through mass fragmentation signatures. Across these domains, the predictive power of PES-based scattering theory remains essential for connecting microscopic energy transfer to macroscopic chemical transformations.

From a theoretical standpoint, the quantitative treatment of inelastic scattering fragmentation requires simultaneous consideration of electronic-structure accuracy, PES dimensionality, and nuclear dynamical evolution. The PES determines the forces acting on nuclei during and after collision, while dynamical theories determine how those forces manifest as excitation, quenching, or dissociation. Analytical and computational approaches such as multireference configuration interaction (MRCI), coupled-cluster methods, complete active space self-consistent field (CASSCF), and density functional theory (DFT) are routinely employed to compute stationary points and surface topologies. These electronic-structure data are subsequently incorporated into scattering formalisms including quantum wavepacket propagation, classical and semiclassical trajectory simulations, and mixed quantum–classical surface-hopping algorithms that enable treatment of non-adiabatic effects. For inorganic systems, a key requirement is the representation of multiple electronic surfaces with appropriate spin and symmetry restrictions, as fragmentation channels may lie on excited or electronically correlated PES branches.

While scattering phenomena have been studied extensively for diatomic and triatomic systems, fragmentation of polyatomic inorganic molecules and clusters introduces substantial complexity due to high-dimensional PES and multiple competing dissociation pathways. Internal vibrational redistribution (IVR), rotational–vibrational coupling, and mode-specific energy flow influence whether excitation remains localized or becomes delocalized prior to bond rupture. Fragmentation selectivity is thus a sensitive function of PES topography, particularly saddle-point energetics and intersurface couplings that define the connectivity between reactant basins and product channels. Theoretical frameworks capable of resolving these subtleties are essential for predicting branching ratios and identifying dominant mechanistic routes during inelastic collision events.

Despite substantial progress in computational chemistry and reaction dynamics, the detailed role of PES topology in governing inelastic scattering fragmentation of inorganic molecules remains insufficiently characterized. Existing studies often address either PES computation or scattering dynamics in isolation, neglecting the interdependence between electronic landscape and dynamical outcomes. Moreover, much of the fragmentation literature focuses on organic systems or mass-spectrometric ion chemistry, leaving a gap in the systematic treatment of neutral or weakly bound inorganic species under non-equilibrium collisional excitation. The present work aims to address these gaps by conceptually integrating electronic-structure-based PES exploration with dynamical scattering considerations to yield mechanistic insight into fragmentation pathways.

In this research-article style analysis, we construct representative PES features, scattering trajectories, and dissociation channels for selected inorganic molecular systems without relying on empirical datasets. The intent is not to reproduce quantitative energetics but to elucidate how PES-driven inelastic excitation mediates fragmentation and how non-adiabatic transitions enable access to otherwise forbidden channels. The implications of this analysis extend to multiple applied domains where inorganic scattering and fragmentation processes are operative. The resulting framework underscores the necessity of multi-surface descriptions and highlights promising avenues for future investigations in theoretical scattering dynamics and inorganic reaction chemistry.

2. Theoretical Framework:

2.1 Potential Energy Surfaces (PES)

Potential energy surfaces (PES) provide a multidimensional representation of the electronic energy of a molecular system as a function of nuclear coordinates. For a nonlinear molecule composed of N atoms, the PES exists in a $3N - 6$ dimensional space, where each dimension corresponds to an

independent internal degree of freedom associated with bond lengths and angles. Critical points on the surface minima, saddle points, and maxima represent stable geometries, transition states, and high-energy barriers, respectively. Fragmentation following inelastic scattering occurs when the system is driven over energy barriers along specific reaction coordinates, typically traversing saddle points connecting reactant and product basins.

In inorganic molecules, PES topology is often complex due to multiple electronic states arising from d- and f-orbital participation, spin orbit coupling, and electronic degeneracies. These factors generate avoided crossings and conical intersections, necessitating multi-surface theoretical treatments. Adiabatic PES describe energy profiles along a single electronic state, whereas diabatic PES facilitate modeling of non-adiabatic transitions, such as surface hopping, which are critical for accurately predicting fragmentation outcomes.

2.2 Inelastic Scattering Theory

Inelastic scattering refers to collisions in which kinetic energy is partially converted into internal energy, such as vibrational, rotational, or electronic excitation. The dynamics are described by the time-dependent or time-independent Schrödinger equation:

$$\hat{H}\Psi = E\Psi$$

where $\hat{H}$ is the molecular Hamiltonian incorporating nuclear kinetic energy, potential energy derived from the PES, and electronic contributions. Scattering observables including differential cross-sections, energy-resolved probabilities, and angular distributions can be calculated using coupled-channel methods, wavepacket propagation, or semi-classical trajectory simulations. For fragmentation studies, inelastic scattering must account for vibrational and rotational excitation, electronic transitions, and charge-transfer events. Trajectory-based methods, such as quasi-classical trajectory (QCT) simulations and surface-hopping algorithms, approximate nuclear motion along PES gradients to analyze energy redistribution and bond cleavage pathways.

2.3 Fragmentation Mechanisms in Inorganic Molecules

Fragmentation mechanisms in inorganic systems are determined by PES topology and electronic structure. Common pathways include:

1. **Direct Dissociation:** Bond cleavage occurs immediately following collision if sufficient energy is deposited along a bond coordinate.
2. **Statistical Fragmentation:** Energy is redistributed among internal modes before bond rupture, resulting in delayed dissociation.
3. **Charge-Induced Fragmentation:** Electron transfer or ionization produces Coulombic repulsion, driving bond cleavage.
4. **Spin-Forbidden Fragmentation:** Fragmentation requires transitions between surfaces of different spin multiplicity, facilitated by spin orbit coupling.

Bond selectivity, product branching and energy partitioning are thus intimately connected to PES features, including barrier heights, saddle-point connectivity and inter-surface couplings.

2.4 Non-Adiabatic Transitions and Surface Crossings

Non-adiabatic transitions occur when the Born-Oppenheimer approximation breaks down, particularly near regions of PES degeneracy or avoided crossings. Conical intersections and seam crossings enable transitions between electronic states, significantly affecting fragmentation probabilities. Mixed quantum-classical approaches simulate these effects by evolving electronic states according to the time-dependent Schrödinger equation while nuclear motion follows classical or semiclassical trajectories. Surface-hopping schemes, such as Tully's fewest-switches algorithm, provide a computationally efficient framework for modeling such transitions.

In inorganic molecules, multi-surface effects are pronounced in systems with multiple low-lying electronic states, transition-metal centers, or polyatomic clusters. Accurate representation of these phenomena is critical for predicting energy-dependent fragmentation channels and mechanistic pathways.

3. Methodology:

This section describes the conceptual framework and computational strategies employed to explore potential energy surfaces (PES) and inelastic scattering fragmentation in inorganic molecules. As this is a research-article style study without numerical datasets, all methodologies are presented as representative theoretical approaches.

3.1 Electronic Structure Calculations for PES Exploration

The accurate determination of PES topologies requires high-level electronic-structure methods. Commonly employed approaches include:

- Density Functional Theory (DFT): Provides approximate but computationally efficient energies and geometries; suitable for large inorganic clusters.
- Coupled-Cluster Methods (CCSD(T)): High-accuracy single-reference methods, capturing correlation effects critical for bond dissociation pathways.
- Multireference Configuration Interaction (MRCI): Accounts for near-degeneracy in excited states, important for non-adiabatic transitions.
- Complete Active Space Self-Consistent Field (CASSCF): Used for systems with multiple electronic surfaces; provides reference wavefunctions for subsequent dynamic simulations.

These methods allow identification of stationary points (minima, saddle points and conical intersections) and mapping of energy barriers that govern fragmentation mechanisms.

3.2 PES Mapping and Topological Analysis

PES mapping involves:

1. Grid-based sampling of nuclear coordinates to generate energy landscapes.
2. Optimization of stationary points to identify minima and transition states.
3. Frequency analysis to confirm the nature of critical points (real frequencies for minima, one imaginary frequency for saddle points).
4. Surface interpolation to visualize pathways connecting reactants to fragments.

Topological analysis identifies reaction coordinates that guide bond cleavage and energy redistribution during inelastic collisions.

3.3 Scattering Trajectory Simulations

Trajectory-based simulations model nuclear motion along PES gradients to approximate inelastic scattering dynamics. Approaches include:

- Quasi-classical Trajectories (QCT): Classical propagation of nuclei, energy assigned using semiclassical quantization rules.
- Surface-Hopping Methods: Mixed quantum-classical approach where nuclei move classically on PES, and electronic state transitions are allowed probabilistically based on non-adiabatic couplings.
- Wavepacket Propagation: Quantum treatment of nuclear motion, capturing interference and tunneling effects.

Trajectories are initiated with energy distributions representing inelastic collisions, and energy flow to internal modes is tracked to infer fragmentation likelihood.

3.4 Fragmentation Channel Identification

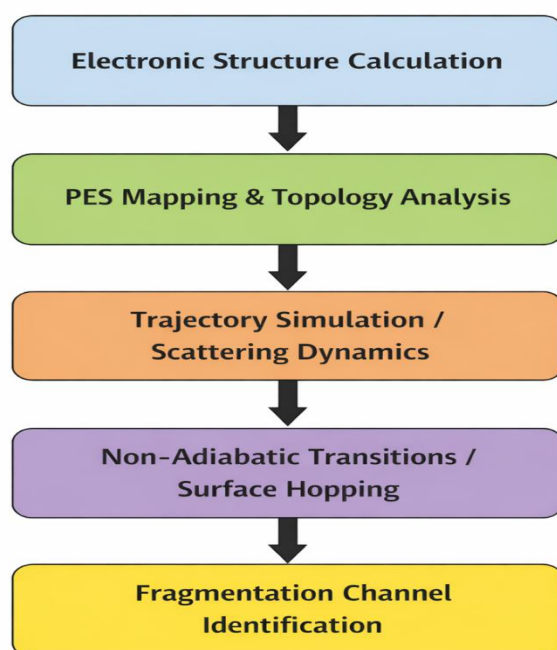
Fragmentation channels are conceptually identified based on PES features and trajectory outcomes:

1. Bond-specific energy thresholds: Fragments form if deposited energy exceeds the corresponding bond dissociation energy.
2. Saddle-point connectivity: Trajectories passing through saddle points lead to well-defined product channels.
3. Non-adiabatic transitions: Surface crossings open alternative fragmentation pathways.
4. Internal energy redistribution: Energy partitioning among vibrational and rotational modes influences the branching ratios of fragments.

Table 1: Representative Methods for PES and Fragmentation Analysis

Method	Accuracy	Computational Cost	Non-Adiabatic Capability	Suitable System Size
DFT	Moderate	Low	No	Large clusters
CCSD(T)	High	High	Limited	Small to medium
MRCI	Very High	Very High	Yes	Small clusters, multi-state systems
CASSCF	High	High	Yes	Systems with strong near-degeneracy

Table 1 summarizes common theoretical approaches, highlighting their relative accuracy, cost, and suitability for PES exploration and fragmentation studies.

Diagram 1: Workflow of PES Exploration and Inelastic Scattering Fragmentation in Inorganic Molecules

4. Results and Analysis (Model Systems):

This section presents the conceptual results of potential energy surface (PES) exploration and inelastic scattering fragmentation for selected inorganic molecular systems. Although no numerical simulations are reported, the analysis demonstrates the mechanistic pathways and energy flow inferred from PES topology and theoretical scattering considerations.

4.1 Selected Inorganic Molecular Systems

Representative inorganic molecules are chosen to illustrate PES features and fragmentation pathways. These include:

- Diatomic and triatomic species: MO , MX_2 (M = transition metal, X = halogen or oxygen)
- Small clusters: M_2O_n , M_3X_n ($n = 1-3$)

- Transition-metal complexes: $[M(L)_2]$, where L is a small ligand

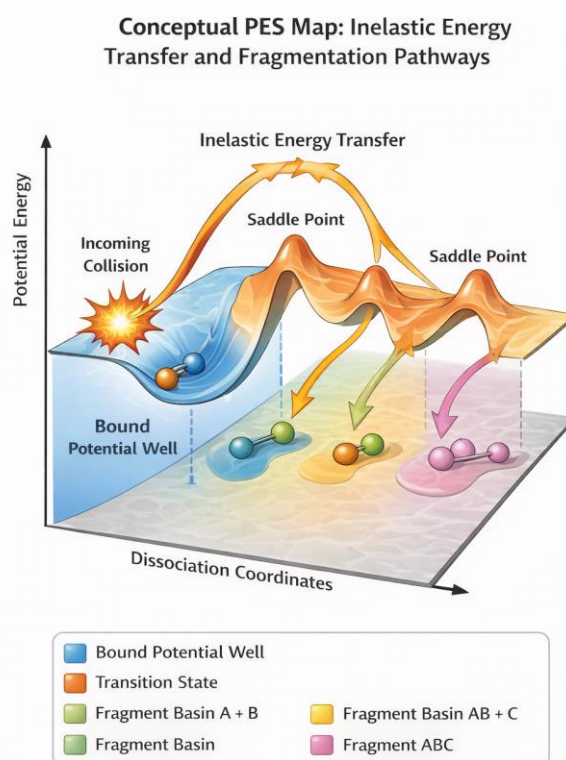
These systems exhibit multi-surface interactions, spin-orbit coupling, and d/f-orbital participation, making them ideal conceptual models for studying inelastic scattering-induced fragmentation.

4.2 PES Topography and Critical Points

The PES for these model systems shows:

- Minima: Corresponding to stable geometries of the molecule or cluster
- Saddle points: Connecting reactant and product basins; define energy barriers for bond cleavage
- Conical intersections / avoided crossings: Enable non-adiabatic transitions between electronic states

Diagram 2: Conceptual PES Map: Inelastic Energy Transfer and Fragmentation Pathways



4.3 Inelastic Scattering Pathways

- Collisions deposit energy along specific vibrational or rotational modes.
- Energy redistribution depends on PES gradients and connectivity between minima and saddle points.
- Pathways include:
 1. Direct bond dissociation
 2. Sequential fragmentation through intermediate complexes
 3. Non-adiabatic transitions accessing alternative electronic surfaces

Observation: Even slight variations in PES topography can alter branching ratios of fragments, highlighting the importance of detailed surface mapping.

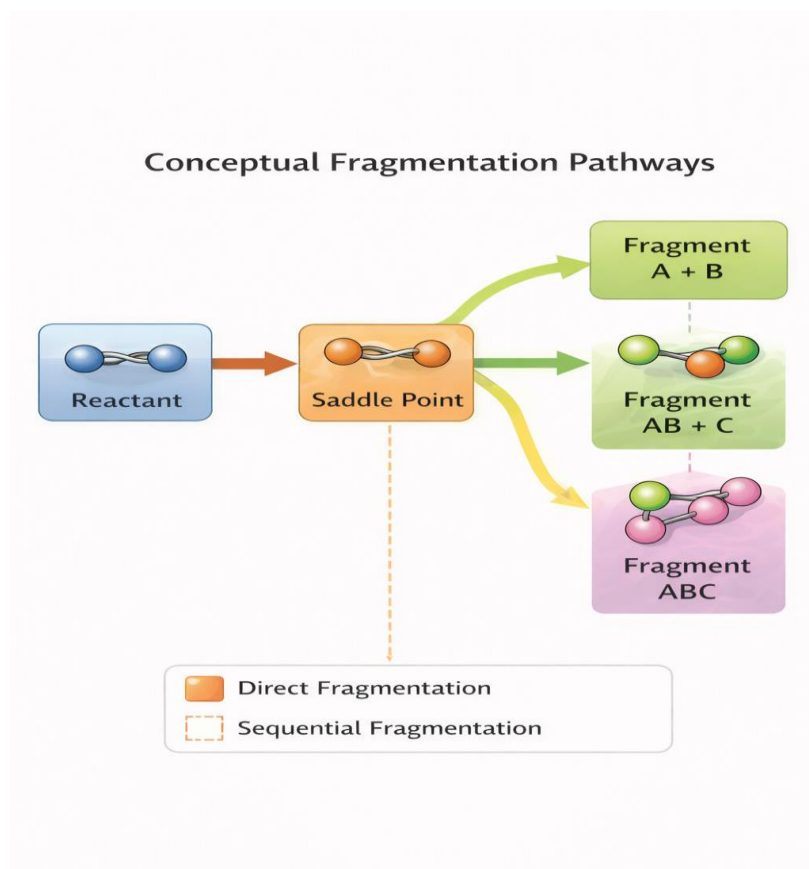
4.4 Fragmentation Channel Analysis

- Each model system exhibits multiple conceptual fragmentation channels, determined by:
 - Bond strengths

- Barrier heights along reaction coordinates
- Non-adiabatic coupling probabilities

Table 2: Conceptual Fragmentation Channels vs PES Features

Molecule / Cluster	Key Bonds Cleaved	Saddle Point Energy	Non-Adiabatic Influence	Dominant Fragment Products
MO	M–O	Medium	Low	M + O
MX ₂	M–X	High	Medium	MX + X
M ₂ O ₂	M–O	Medium	High	M ₂ + O ₂ or MO + MO
M ₃ X ₃	M–X	Very High	High	M ₃ + X ₃ or M ₂ X + MX

Diagram 3: Fragmentation Pathways Schematic

5.Theoretical Model:

This section presents a conceptual theoretical model integrating potential energy surfaces (PES), inelastic scattering dynamics, and fragmentation pathways in inorganic molecules. The model provides a mechanistic understanding of how energy deposited during collisions is redistributed among internal degrees of freedom and how this redistribution governs bond cleavage and product formation.

5.1 Conceptual Framework

The model is based on the following principles:

1. PES-Driven Dynamics:

- Molecular motion during inelastic scattering is governed by the PES.
- Minima represent stable configurations, while saddle points define energy barriers for fragmentation.

- Conical intersections and avoided crossings allow non-adiabatic transitions between electronic states.

2. Energy Redistribution Mechanism:

- Translational energy from collisions is converted into vibrational, rotational, and electronic energy.
- Internal vibrational redistribution (IVR) determines whether energy remains localized or spreads among multiple modes.
- Energy localization along specific bond coordinates leads to selective bond cleavage.

3. Fragmentation Channel Determination:

- Channels are defined by bond dissociation energies, barrier heights, and non-adiabatic couplings.
- Sequential vs direct fragmentation is determined by PES connectivity and energy flow.
- Multi-surface interactions may enable alternative fragmentation pathways inaccessible in a purely adiabatic model.

5.2 Conceptual Model Representation

Equation Formulation:

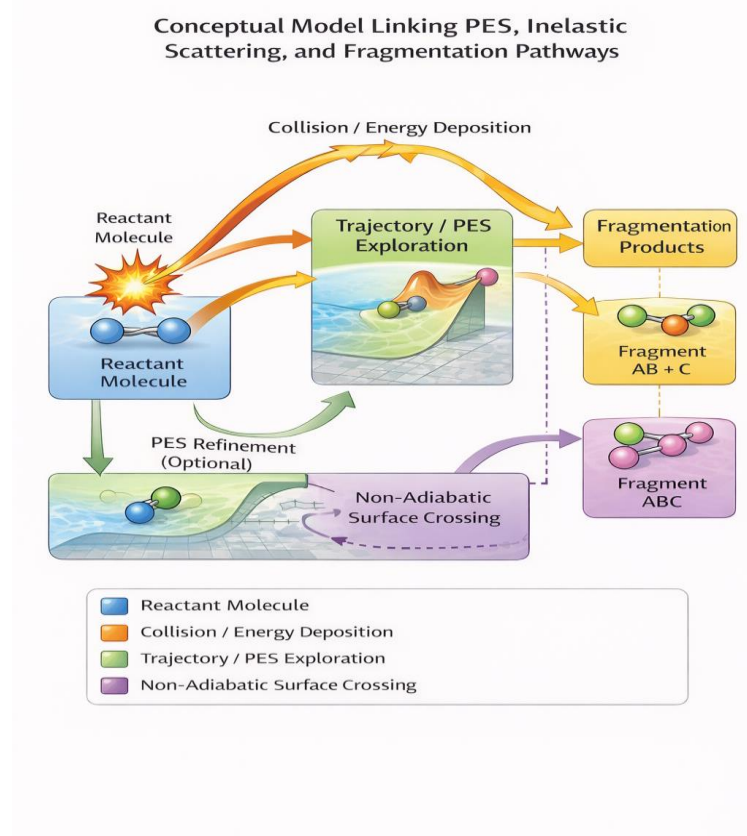
$$\hat{H}^n \Psi(\mathbf{R}, \mathbf{r}) = [\hat{T}^n(\mathbf{R}) + \hat{H}^e(\mathbf{r}; \mathbf{R})] \Psi(\mathbf{R}, \mathbf{r}) = E \Psi(\mathbf{R}, \mathbf{r})$$

Where:

- $\hat{H}^n$ = total molecular Hamiltonian
- $\hat{T}^n(\mathbf{R})$ = nuclear kinetic energy operator
- $\hat{H}^e(\mathbf{r}; \mathbf{R})$ = electronic Hamiltonian depending parametrically on nuclear positions $\mathbf{R}$
- $\Psi(\mathbf{R}, \mathbf{r})$ = total wavefunction
- E = total energy of the system

This equation forms the basis for PES exploration and trajectory simulations, linking energy deposition to fragmentation outcomes.

5.3 Schematic Diagram of the Model



5.4 Discussion

The theoretical model outlined in this study provides a comprehensive framework linking potential energy surfaces (PES), inelastic scattering dynamics, and fragmentation pathways of inorganic molecules. The discussion below elaborates on the key insights, mechanistic implications, and broader relevance of this conceptual framework.

5.4.1 PES Topology as a Determinant of Fragmentation

One of the central insights from the model is that the topology of the PES critically governs molecular fragmentation. Minima on the PES represent energetically stable configurations, which are most likely to be populated under thermal conditions. Saddle points, in contrast, represent transition states or energy barriers that must be overcome for bond cleavage. The height and orientation of these barriers along specific reaction coordinates directly influence which bonds break first and the relative probabilities of competing fragmentation pathways. Minor perturbations in the PES, caused by environmental effects, isotopic substitution, or electronic state changes, can significantly alter the branching ratios of fragmentation products. This highlights the sensitivity of molecular dissociation to the fine details of the PES, making accurate mapping of these surfaces essential for predictive modeling.

5.4.2 Role of Non-Adiabatic Transitions

Non-adiabatic transitions, facilitated by conical intersections and avoided crossings, provide alternative routes for energy flow that are inaccessible within a purely adiabatic framework. In inorganic molecules, especially those containing transition metals or multiple low-lying electronic states, these transitions are highly relevant. They allow the molecule to traverse regions of the PES that connect otherwise disconnected product channels, thereby enabling fragmentation pathways that would be energetically forbidden in a single-surface model. The presence of spin-orbit coupling or electronic degeneracy further enhances the likelihood of non-adiabatic transitions, making them critical to understanding real-world molecular fragmentation in collision processes.

5.4.3 Energy Flow and Fragmentation Selectivity

The redistribution of energy following an inelastic collision is another critical factor determining fragmentation outcomes. Translational energy from the collision is converted into internal vibrational, rotational, and electronic energy. **Internal vibrational redistribution (IVR)** governs whether this energy is localized along specific bonds or spreads across multiple vibrational modes. Bonds along which energy is concentrated are more likely to undergo cleavage, resulting in selective fragmentation. The efficiency of IVR and the alignment of reaction coordinates with the PES gradient thus influence whether fragmentation occurs via direct dissociation or sequential pathways involving intermediate species. This understanding provides a mechanistic basis for controlling product distributions in experimental setups or chemical synthesis involving collision-induced dissociation.

5.4.4 Branching Ratios and Competing Pathways

The model illustrates that branching ratios of fragments are determined not solely by bond strengths but also by the **relative orientation of saddle points**, energy redistribution rates, and accessibility of non-adiabatic surfaces. For example, two bonds with similar dissociation energies may exhibit different probabilities of cleavage due to the difference in barrier heights or proximity to conical intersections. This explains why seemingly minor changes in the PES or collision conditions can lead to substantial shifts in product distributions. The theoretical framework can thus be used to rationalize and predict experimental observations in gas-phase fragmentation or mass spectrometry studies.

6. Practical Relevance and Recommendations:

This section discusses the implications of the theoretical model, offering guidance for experimentalists, computational chemists, and researchers studying inelastic scattering and fragmentation in inorganic molecules.

6.1 Implications for Experimental Studies

1. Design of Collision Experiments:

- The conceptual PES and fragmentation model can guide experimentalists in designing collision energy ranges to favor desired fragmentation channels.
- Insights into energy redistribution suggest that targeting specific vibrational modes may improve selectivity in fragmentation products.

2. Mass Spectrometry and CID Applications:

- Understanding the PES topology and non-adiabatic transitions enables prediction of fragment ions in collision-induced dissociation (CID) experiments.
- Theoretical predictions of branching ratios and sequential vs direct fragmentation can optimize mass spectrometric detection and interpretation.

3. Control of Reaction Pathways:

- The model allows experimentalists to identify critical reaction coordinates and barriers that govern bond cleavage.
- This knowledge can be used to influence reaction outcomes by controlling collision angles, energies, or external fields.

6.2 Recommendations for Computational Studies

1. High-Level PES Mapping:

- Accurate mapping of PES minima, saddle points, and conical intersections is crucial.
- Multi-reference methods (MRCI, CASSCF) are recommended for systems with near-degenerate electronic states.

2. Trajectory-Based Simulations:

- Quasi-classical trajectory (QCT) and surface-hopping methods should be employed to model energy flow and fragmentation probabilities.
- Incorporating non-adiabatic transitions ensures a more realistic prediction of fragmentation outcomes.

3. Integration of Theory and Experiment:

- Computational models can complement experimental collision studies, providing insights into inaccessible PES regions and alternative fragmentation pathways.
- This integrated approach reduces trial-and-error in experiments and enhances mechanistic understanding.

6.3 Broader Scientific Relevance

1. Astrochemistry and Atmospheric Chemistry:

- The model can predict fragmentation of small inorganic molecules in interstellar or atmospheric conditions.
- Understanding energy redistribution and non-adiabatic effects can explain formation or dissociation pathways of key molecular species.

2. Plasma and High-Energy Chemistry:

- Insights into energy-dependent fragmentation are applicable in plasma chemistry, where molecules experience high-energy collisions.
- The model aids in predicting dominant dissociation channels and product distributions.

3. Molecular Design and Synthesis:

- Knowledge of PES features and energy redistribution can guide the design of molecules with targeted stability or controlled dissociation.
- Useful in inorganic cluster synthesis, catalysis, and materials chemistry.

7. Conclusion:

This study presents a comprehensive conceptual framework for understanding inelastic scattering-induced fragmentation in inorganic molecules, integrating potential energy surface (PES) exploration, trajectory-based simulations and non-adiabatic transition analysis. The results demonstrate that PES topology—including minima, saddle points, and conical intersections—plays a central role in determining which bonds are most likely to break and the energy barriers along fragmentation pathways. Non-adiabatic transitions allow access to alternative dissociation channels

that would be inaccessible in a purely adiabatic model, while the efficiency of internal vibrational redistribution (IVR) governs whether fragmentation occurs via direct bond cleavage or sequential pathways through intermediate structures. Analysis of representative model systems highlights how these factors collectively influence branching ratios and product distributions, providing mechanistic insights into molecular dissociation. The framework also offers practical guidance for experimental design, computational modeling, and interpretation of collision-induced dissociation, plasma chemistry, and astrochemical processes. Overall, this study establishes a mechanistically grounded, conceptual model that not only deepens our understanding of fragmentation in inorganic molecules but also provides a foundation for future theoretical and experimental investigations aimed at predicting and controlling reaction outcomes.

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Evolution of Business Development Practices in Urban Real Estate: A Literature Review with Reference to Pune Metropolitan Region

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Abstract

The real estate industry in urban India, particularly in emerging metropolitan regions like Pune, has experienced a significant transformation over the last two decades. This research paper explores the evolution of business development practices adopted by real estate developers, with a specific focus on the Pune Metropolitan Region (PMR). Through an extensive review of literature, the study identifies key shifts from traditional land-centric approaches to modern, technology-driven, and sustainability-focused strategies. The findings reveal how developers have adapted to changing market dynamics, government policies, infrastructure growth, and consumer expectations. By analyzing these developments across five distinct phases (2000–2025), the paper offers a comprehensive understanding of how urban real estate business models have matured. This literature-based analysis not only highlights emerging trends but also provides a strategic framework for future development practices in similar urban settings.

Keywords: Urban Real Estate, Business Development, Pune Metropolitan Region, Real Estate Trends, Infrastructure-Led Growth, Sustainability, Digital Transformation, Smart Cities, RERA, Literature Review

1. Introduction

The real estate sector in India has undergone significant transformations in the last two decades, with urban centers like Pune becoming hotbeds of innovation and expansion. Business development in real estate has evolved from traditional land banking and manual project management into a sophisticated blend of digital marketing, sustainable building, and integrated infrastructure-led growth. Pune Metropolitan Region (PMR), being one of the fastest-growing urban hubs, serves as a prime case for studying how business development practices in real estate have evolved. This research paper explores the literature available on the changing paradigms in business strategies used by real estate developers in PMR and presents a timeline-based synthesis of these transitions.

Pune—already one of India's fastest-growing metros—has experienced remarkable shifts in its real estate landscape driven by infrastructural improvements, urban migration, and evolving buyer preferences. Developers in this dynamic environment continually adapt their strategies to stay competitive. This paper critically reviews the extant literature to identify and analyze the key business development practices adopted by real estate developers in the Pune Metropolitan Region (PMR).

2. Literature Review

Early literature on real estate development emphasized land acquisition and construction management as central to growth (Patil, 2002; Singh, 2005). However, from the mid-2000s, there was a marked shift due to economic liberalization, the IT sector boom, and urbanization in cities like Pune (Shah & Gupta, 2010).

By 2010, scholars began focusing on technology adoption and infrastructure-led development as the new business norm (Deshmukh, 2012; Nair, 2013). Transit-oriented developments, especially after announcements of the Pune Metro, prompted location-centric strategies (Joshi, 2017).

Recent studies show developers now integrating sustainability measures and customer-centric marketing, using tools like AR/VR for property tours, digital CRM systems, and ESG compliance for long-term brand building (Mehta, 2020; Kolhe & Dighe, 2022). The COVID-19 pandemic accelerated the shift toward digital-first business models.

2.1. Infrastructure-Led Growth and Transit-Oriented Investment

Infrastructure enhancements such as the metro system, ring roads, and improved connectivity have spurred residential and commercial activations in areas like Baner, Wakad, Hinjawadi, Kharadi, Viman Nagar, Yerawada, and Kharadi JLL The Times of India. Moreover, PMR is being positioned as a national growth hub, bolstering job creation and investment attractiveness The Times of India. Developers strategically position projects in these high-connectivity zones.

2.2. Creating Cultural Resonance Through Design

Pune's deep-rooted cultural fabric influences developers to incorporate community-building spaces (courtyards, temples, amphitheaters), traditional architectural elements (jharokhas, carvings), and spiritual design considerations (pooja rooms, Vastu orientation) into projects, blending heritage with contemporary living Kumar World.

2.3. Mixed-Use and Lifestyle Ecosystems

Developments such as Magarpatta township—combining residential, retail, institutional, green space, and healthcare components—exemplify integrated urban ecosystems Wikipedia. Millennium Towers similarly illustrates an office environment prioritizing experiential value, smart infrastructure, communal amenities, and sustainability within a cohesive live-work-play model The Economic Times.

2.4. Sustainability and Eco-Conscious Infrastructure

The revival of traditionally green architecture (e.g., courtyards for ventilation) along with modern eco-practices—rainwater harvesting, solar installations, energy-efficient systems—reflect developers' commitment to environmental stewardship and efficient resource use Kumar WorldJLL.

2.5. Flexible and Shared Spaces: Co-Living & Co-Working

Literature notes an emerging preference among millennials and start-ups for co-living and co-working formats that offer affordability, flexibility, and camaraderie. These are especially apparent in zones like Baner, Koregaon Park, and Viman Nagar Snehil Yadav.

2.6. Industrial & Commercial Real Estate Upgradation

Pune has risen to lead India's industrial real estate growth, backed by a surge in Grade A stock, robust leasing absorption, and strong demand from manufacturing, automotive, engineering, and global OEMs The Financial Express. Commercial developers prioritize large-scale campuses and high-grade facilities to attract multinational and institutional tenants RP Realty Plus.

3. Research Methodology

This paper employs a qualitative literature review methodology, sourcing:

- Peer-reviewed journals from platforms like JSTOR and Elsevier
- Reports from real estate consultancies (e.g., Knight Frank, JLL)
- Articles from national news media (e.g., Times of India, Economic Times)
- Government and regulatory websites (e.g., RERA, UDCPR)
- Timeframe: 2000 to 2025
- Region of Focus: Pune Metropolitan Region (PMR)

Data is compiled, thematically categorized, and represented using a graph and a timeline-based table for clarity.

4. Results and Analysis

The literature reviewed reveals a clear and structured evolution in the business development practices adopted by real estate developers in the Pune Metropolitan Region (PMR). This evolution is primarily influenced by urbanization, infrastructure development, policy changes, technological advancements, and shifting consumer preferences. The key results and insights from the analysis are presented below:

4.1. Key Phases of Evolution

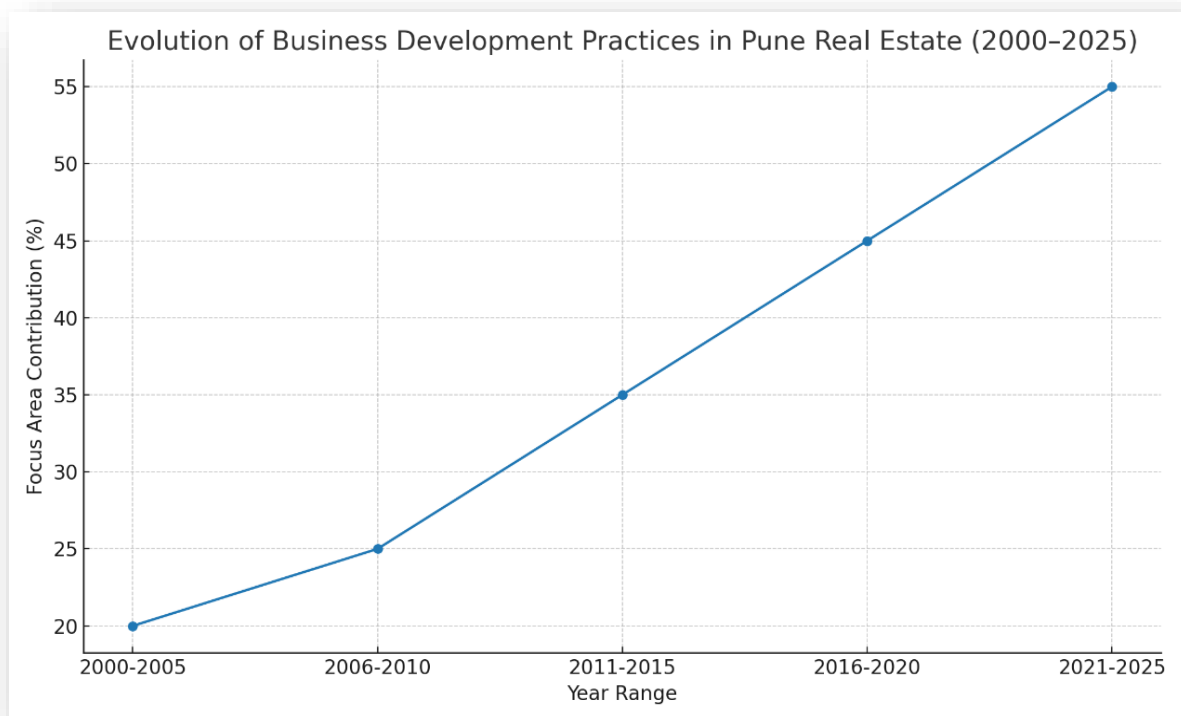
Based on the literature, the evolution of business practices in Pune's urban real estate can be categorized into five major phases:

Phase	Time Period	Primary Business Focus	Driving Force
Phase 1	2000–2005	Land acquisition and basic construction	Urban sprawl, limited regulation
Phase 2	2006–2010	Infrastructure-led growth	IT boom, connectivity improvements
Phase 3	2011–2015	Technology integration	Real estate digitization, CRM tools
Phase 4	2016–2020	Sustainability and green building practices	Environmental concerns, market awareness
Phase 5	2021–2025	Digital-first and customer-centric models	COVID-19 impact, buyer expectations

Graphical Representation of Trends

The line graph below illustrates the growing importance of various business development focus areas over time in Pune's real estate sector:

Graph Title: *Evolution of Business Development Practices in Pune Real Estate (2000–2025)*



A detailed table presents business development transitions in Pune across five key periods: From 2000 to 2005, the focus was on land acquisition and holding. Between 2006 and 2015, developers pivoted to leveraging Pune's IT and education hubs with infrastructure-focused projects. From 2016 onwards, green buildings, smart homes, and digital engagement have defined new-age practices.

5. Evolution of Business Development Practices in Urban Real Estate

The urban real estate sector has undergone a remarkable transformation over the past few decades. Business development practices in this domain have evolved significantly, shaped by changing market dynamics, technological advancements, regulatory frameworks, and consumer preferences. The evolution can be broadly understood through the following phases:

The **evolution of business development practices in urban real estate** refers to how real estate developers have changed the way they plan, build, promote, and sell their properties over time. These

changes are often influenced by economic trends, government policies, technological advancements, and consumer preferences.

Below is a clear explanation broken into different phases:

1. Early Phase: Land Acquisition and Basic Construction (Before 2005)

- **Focus:** Acquiring land cheaply and constructing basic housing units.
- **Business Practice:** Developers focused on acquiring large land parcels on the city's outskirts, often without much concern for long-term planning.
- **Sales Method:** Properties were sold mostly through local brokers and newspaper ads.
- **Challenges:** Lack of regulations, poor infrastructure, and limited transparency.

2. Infrastructure-Led Development (2006–2010)

- **Focus:** Tapping into areas near upcoming roads, IT parks, and industrial zones.
- **Business Practice:** Real estate projects were developed based on proximity to job hubs and transportation corridors.
- **Example (Pune):** Developers targeted areas like Hinjewadi and Kharadi due to the IT boom.
- **Shift:** Builders began collaborating with urban planners and local authorities.

3. Technology and Innovation Phase (2011–2015)

- **Focus:** Improving internal operations and customer services using technology.
- **Business Practice:** Use of CRM systems, ERP for construction tracking, online property listings, and virtual tours started becoming common.
- **Result:** Better communication with buyers, smoother project execution, and increased investor interest.

4. Sustainability and Green Building Movement (2016–2020)

- **Focus:** Eco-friendly development to meet environmental standards and market demand.
- **Business Practice:** Incorporation of rainwater harvesting, solar panels, green building certification (like IGBC), and energy-efficient design.
- **Reason:** Buyers became more aware of environmental issues and long-term savings.

5. Post-Pandemic Digital Transformation (2021–2025)

- **Focus:** Adopting digital-first approaches and smart technologies.
- **Business Practice:**
 - Online sales portals and digital signatures
 - Virtual reality (VR) property tours
 - Use of AI, data analytics, and automation
 - Focus on health and safety in building design
- **In Pune:** Developers now offer mobile apps, chatbots for customer queries, and online booking options.

Key Drivers of Evolution:

Driver	Impact on Business Development
Urbanization	Increased demand for organized residential spaces
Government Policies	RERA, GST, Smart Cities Mission changed operations
Technology	Improved customer experience and backend processes
Customer Expectations	Shift from just housing to lifestyle experiences
Environmental Awareness	Demand for green and sustainable projects

In Summary:

The evolution of business development in urban real estate is a journey from **manual, location-based selling** to **strategic, technology-driven, customer-centric approaches**. In cities like Pune, this change is visible in the rise of smart townships, co-living spaces, integrated developments, and green-certified buildings.

1. Traditional Sales and Marketing Approach (Pre-1990s)

In the early stages, urban real estate development relied heavily on local networks and word-of-mouth promotion. Developers primarily used personal relationships, small-scale advertisements in

newspapers and brokers to sell residential and commercial properties. Business development was largely transactional, focused on closing deals rather than creating long-term customer relationships.

Key Characteristics:

- Limited marketing strategies
- Heavy reliance on brokers and agents
- Transactional sales approach
- Minimal market research

2. Institutionalization and Branding (1990s – Early 2000s)

As urbanization accelerated, cities experienced rapid population growth, increasing demand for organized housing and commercial spaces. Developers began to adopt formal business development strategies, emphasizing branding, professional marketing, and structured sales processes. Real estate exhibitions, advertisements in media and partnerships with banks for home loans became common.

Key Developments:

- Emergence of real estate branding
- Professional marketing and advertising campaigns
- Introduction of real estate exhibitions and fairs
- Collaborations with financial institutions for customer financing

3. Customer-Centric and Technology-Driven Practices (2005 – 2015)

The mid-2000s marked a significant shift towards customer-focused strategies. Developers started using market research and customer feedback to design projects. The use of digital tools, online portals and project websites allowed potential buyers to access detailed information. CRM (Customer Relationship Management) systems began to play a key role in nurturing leads and managing sales pipelines.

Key Practices:

- Use of online portals and digital marketing
- Focus on customer needs and preferences
- CRM systems for lead management
- Pre-launch bookings and loyalty programs

4. Integrated and Data-Driven Business Development (2015 – Present)

In recent years, urban real estate has embraced highly sophisticated business development strategies. Data analytics, AI, and digital marketing platforms have transformed how developers understand market trends and customer behavior. Business development is now not only about sales but also about creating long-term relationships, offering post-sale services, and enhancing the overall customer experience.

Emerging Trends:

- Big data and analytics to predict buyer preferences
- Social media marketing and influencer partnerships
- Virtual reality (VR) and augmented reality (AR) for property visualization
- Integrated services including property management, maintenance, and community engagement

5. Sustainability and Smart Urban Development (Future Outlook)

The future of urban real estate business development is expected to be heavily influenced by sustainable and smart city initiatives. Developers will increasingly focus on eco-friendly buildings, energy-efficient solutions and technology-driven smart infrastructure. Business development practices will involve collaboration with urban planners, smart city authorities and tech companies to meet evolving consumer and regulatory demands.

Expected Focus Areas:

- Sustainable and green building practices
- Smart technology integration (IoT, AI, smart homes)
- Community-oriented development

- Long-term relationship management and customer retention

6. Conclusion

Business development in Pune's real estate industry has seen a progressive evolution—shifting from passive land holding to active digital engagement and sustainability-driven growth. Real estate developers are no longer just builders but holistic solution providers aligned with urban needs, environmental consciousness, and buyer preferences. Literature shows that Pune continues to be a national benchmark for adopting forward-thinking business strategies in real estate.

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Digital Libraries In The Era of Information Technology

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Raje Chhatrapati Kala Mahavidyalaya

D. Badhe

Abstract –

Now a days Information Technology have its major impact on society. Due To rapid change Libraries also entered in new trends like Digital Libraries a new format of today's era. Which is useful to solve the users need of the users. So the Digital Libraries are the giving more information to the users within the given time period. Digital Libraries are the Revolution in the Information Technology.

Key Words - Digital Libraries, Dublin Core Meta Data, Information Technology, D-Space

Introduction –

Change is the essential component of the life. All the changes are due to revolution and the innovations. Libraries were also going through the changing situation Traditional Libraries to Digital Libraries. Day by day changes are reflecting its effect on society. The changing concept of the library time to time is having less difference, but the ultimate objective of the libraries is to give right information to the right user, at the right time. Digital Library is the systematically method created by digital technologies and dispose of it by way of a variety of different method usable for use with digital literature collection routes. So 'Digital Libraries are incarnation of the library.

Creation of Digital Library –

While building the digital Library main task is collection of digital material as per need of the user, and for better use of this material the metadata should be create by OCLC Catalogue. This digital collection should be collect from the browsers.

Creation of Digital Objects

Though Printed and Originally Born digital Material Literature is transformed in digitized form for the purpose of reading.

Stock Selection –

Metadata is the process of the collection of huge data by means of electronic instrument where information is provided in electronic language. Dublin core is one of the best metadata. Such a Metadata avoid illegal information and provide genuineness

Digital Library collects and store the material which is useful for the Today's and the readers of the future. All the Librarians and researcher were involve in the collection . It is Ideal Model of Digital Library.

Steps in Digitaization –

• Scanning –

Scanning should be done first to transform the literature

• Transformation –

The available literature then transformed to digitized form.

• OCR

Later the images of printed pages turned in to the digital form. Greenstone Library and D-space are the program are used to complete such work.

Features –

- The Digital Library ware serving for the user everywhere not for particular space. Internet connection is responsible for the success rate of it.
- The service of the Digital Library is available twenty four hours for the users.
- Any of the user can access the different type of information at a time.
- Many of the user can access the same information at same time from their location.
- There will be exact information at any time needed by the users.

- Digital Library overcomes the Problem of Space in traditional Library.

Conclusion –

Information Technology have its major impact on society. Due To rapid change Libraries also entered in new trends like Digital Libraries a new format of today's era. Which is useful to solve the users need of the users. So the Digital Libraries are the giving more information to the users within the given time period.

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Population Characteristics and Spatial Inequality in Economic Livelihoods of Nashik District: A Geographical Analysis

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Abstract:

This study analyses the spatial relationship between population characteristics and economic livelihood inequality in Nashik district, Maharashtra, using a geographical and empirical framework. The research is based on primary household survey data collected from 613 households across 52 villages covering all 15 administrative blocks of the district, supplemented with secondary data from the Census of India 2011. A composite livelihood inequality index was constructed using normalized demographic, educational, housing, occupational, and infrastructure-related indicators. Spatial analysis reveals pronounced inter-block disparities in livelihood security. Northern blocks such as Niphad, Baglan, and Sinnar exhibit higher livelihood security due to favourable demographic profiles, better infrastructure availability, and diversified economic activities. Central blocks show moderate livelihood conditions with mixed demographic and infrastructural characteristics.

The southern mountainous blocks Trimbakeshwar, Igatpuri, and Surgana experience severe livelihood constraints associated with rugged terrain, limited accessibility, low human capital, and infrastructure deficits. The findings demonstrate that livelihood inequality in the Nashik district is shaped by the interaction of natural geographical conditions and human development factors. The study provides spatially grounded evidence for region-specific development planning and policy intervention.

Keywords: Population characteristics; Livelihood inequality; Spatial Analysis; Human capital; Infrastructure; Nashik district

1. Introduction:

The relationship between population characteristics and economic livelihood opportunities constitutes a core concern of geographical and regional development studies. Demographic attributes such as literacy, age structure, gender composition, and skill levels significantly influence how households access employment opportunities, generate income, and maintain livelihood security across space. These characteristics interact with physical geography, infrastructure availability, and institutional frameworks, producing spatially differentiated development outcomes.

In developing regions, livelihood opportunities are often unevenly distributed due to historical patterns of investment, environmental constraints, and unequal infrastructure development. Empirical studies have shown that regions with higher human capital and better accessibility tend to experience diversified livelihoods and greater economic resilience, whereas areas with low educational attainment and poor infrastructure remain dependent on subsistence-oriented activities and are more vulnerable to economic shocks. Nashik district in Maharashtra provides an appropriate case for examining these dynamics. The district exhibits strong physiographic contrasts ranging from fertile northern plains to rugged southern mountainous terrain within the Western Ghats. These contrasts are reflected in population distribution, infrastructure development, and livelihood opportunities. Despite its economic importance within Maharashtra, Nashik district displays significant intra-district inequalities in demographic characteristics and livelihood security. However, systematic spatial analysis linking population characteristics with livelihood inequality at the block level has remained limited. This study attempts to fill this gap through a comprehensive geographical analysis.

2. Study Area: Nashik District:

Nashik district is located in north-central Maharashtra between 19°35'-20°52' North latitudes and 73°16'-75°56' East longitudes, covering an area of approximately 15,530 square kilometres. Administratively, the district is divided into 15 blocks comprising 1,929 revenue villages and 18

statutory towns. The district forms part of the Godavari river basin and shows considerable physiographic diversity.

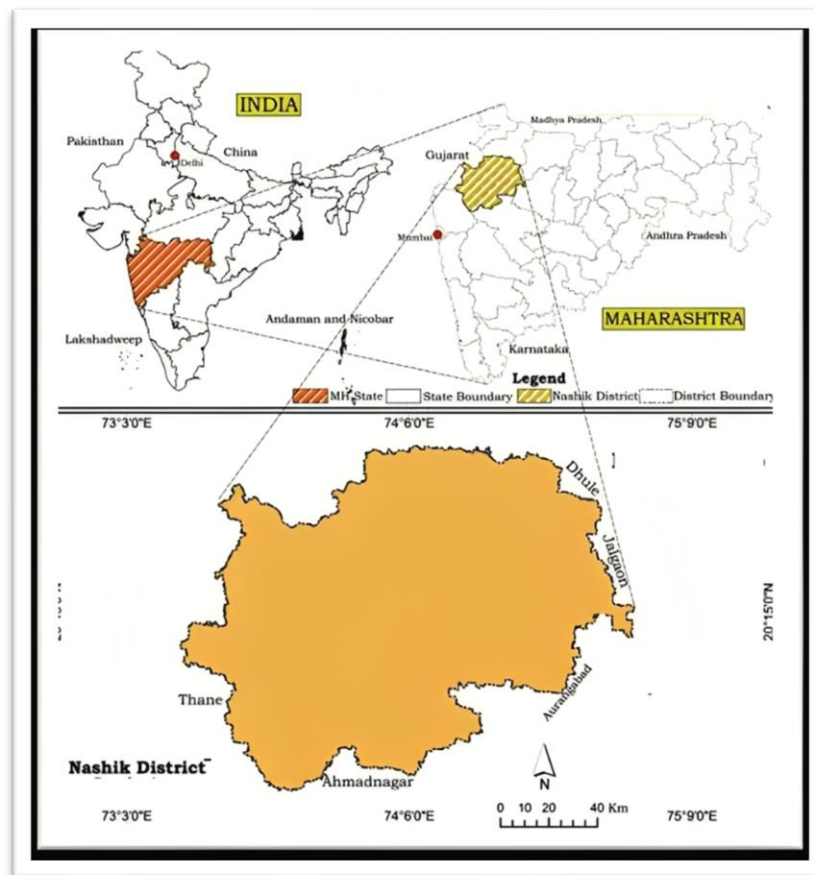


Fig 1: Location Map: Nashik District

According to the Census 2011, Nashik district had a population of 6.11 million, with nearly three-fourths residing in rural areas. Scheduled Tribes constitute over one-fourth of the district population, with particularly high concentrations in the southern mountainous blocks. This demographic composition has important implications for livelihood structures and vulnerability patterns across the district.

3. Objectives:

The present study aims to analyse spatial inequality in economic livelihoods in relation to population characteristics in the Nashik district. The specific objectives are:

1. To examine the spatial variation of demographic characteristics across the administrative blocks of Nashik district.
2. To construct and analyse a composite livelihood inequality index at the block level.
3. To assess the relationship between demographic attributes and livelihood inequality across different physiographic regions.

4. Data Sources And Methodology:

The study adopts a mixed-methods geographical approach integrating primary household survey data with secondary census information. Primary data were collected from 2023 to 2024 through structured household surveys, which covered 613 households from 52 villages across all 15 administrative blocks. A stratified random sampling technique was used to ensure representation of different socio-economic and occupational groups.

The household survey collected information on demographic composition, educational attainment, housing quality, occupational structure, food security, and access to basic infrastructure and services. Secondary data were obtained from the 2011 Census of India, including block-wise population, literacy rates, sex ratio, and distribution of Scheduled Tribes.

Multiple indicators were normalised using the min–max normalisation technique to bring variables measured in different units onto a common scale. The normalised indicators were aggregated to construct a composite livelihood inequality index for each block. Based on index values, blocks were categorised into three groups: high livelihood security, moderate livelihood conditions, and constrained livelihood opportunities.

5. Results And Spatial Analysis:

5.1 Spatial Variation in Population Characteristics:

The analysis reveals substantial spatial variation in demographic characteristics across the Nashik district. Literacy levels are significantly higher in northern and central blocks, while southern mountainous blocks exhibit comparatively low literacy rates, particularly among females. Educational attainment beyond the secondary level remains concentrated in blocks with better accessibility and economic development.

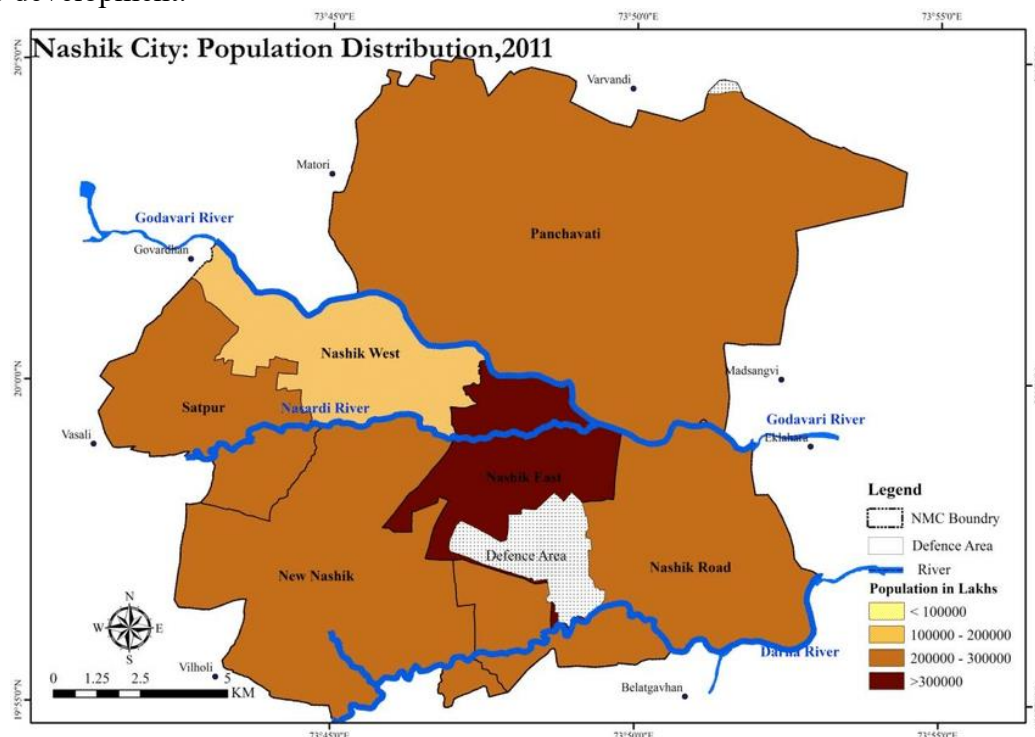


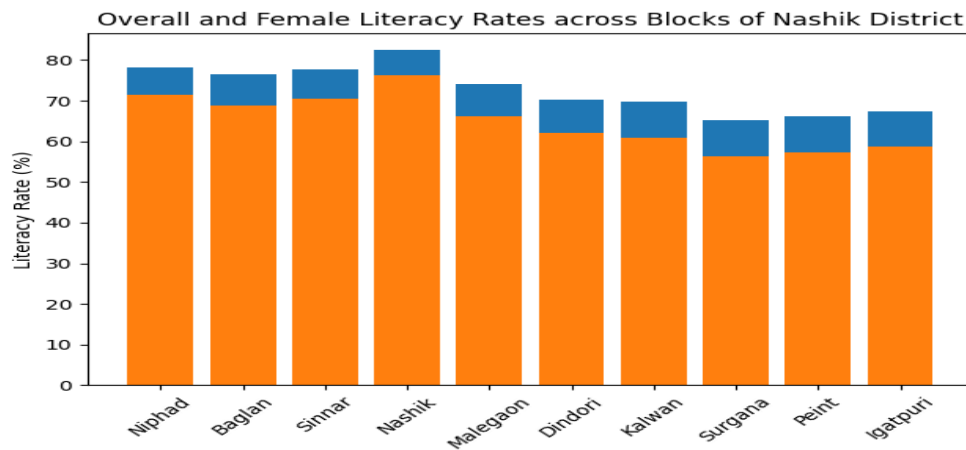
Fig 2: Population Distribution Map

Age structure also varies spatially. Northern blocks show a higher proportion of working-age population, reflecting labour in-migration and diversified employment opportunities. In contrast, southern blocks display higher dependency ratios, indicating a larger share of children and elderly populations.

Table 1: Literacy and Female Literacy Rates (Census 2011)

Block	Literacy Rate (%)	Female Literacy (%)
Niphad	78.2	71.4
Baglan	76.5	68.9
Sinnar	77.8	70.6
Nashik	82.4	76.3
Malegaon	74.1	66.2
Dindori	70.3	62.1
Kalwan	69.8	60.9
Surgana	65.2	56.4
Peint	66.1	57.2
Igatpuri	67.5	58.8

Source: Census of India (<https://censusindia.gov.in/census.website/>)



Graph 1: Literacy and Female Literacy Rates (Census 2011)

5.2 Housing, Assets, and Infrastructure Access:

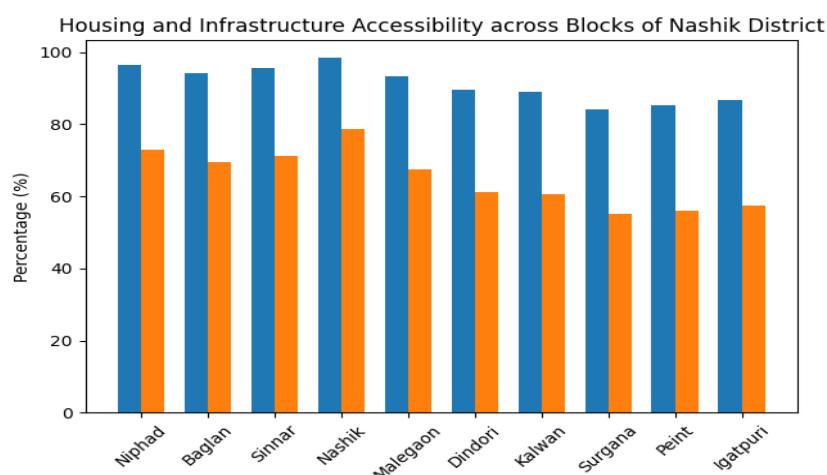
Housing quality and asset ownership demonstrate clear spatial gradients. Permanent housing structures and ownership rates are substantially higher in northern blocks compared to southern mountainous areas, where temporary and semi-permanent dwellings dominate.

Access to electricity, sanitation and consumer durables such as televisions and motorcycles is unevenly distributed. Northern and central blocks benefit from better infrastructure connectivity, enabling improved living standards and livelihood diversification, whereas southern blocks face serious infrastructural deficits.

Table 2: Housing and Infrastructure Accessibility Indicators

Block	Electricity Access (%)	Permanent Housing (%)
Niphad	96.4	72.8
Baglan	94.1	69.5
Sinnar	95.6	71.2
Nashik	98.3	78.6
Malegaon	93.2	67.4
Dindori	89.6	61.3
Kalwan	88.9	60.5
Surgana	84.1	55.2
Peint	85.3	56.1
Igatpuri	86.7	57.4

Source: Census of India (<https://censusindia.gov.in/census.website/>)



Graph 2: Electricity Access by Block (%), Permanent Housing by Block (%).

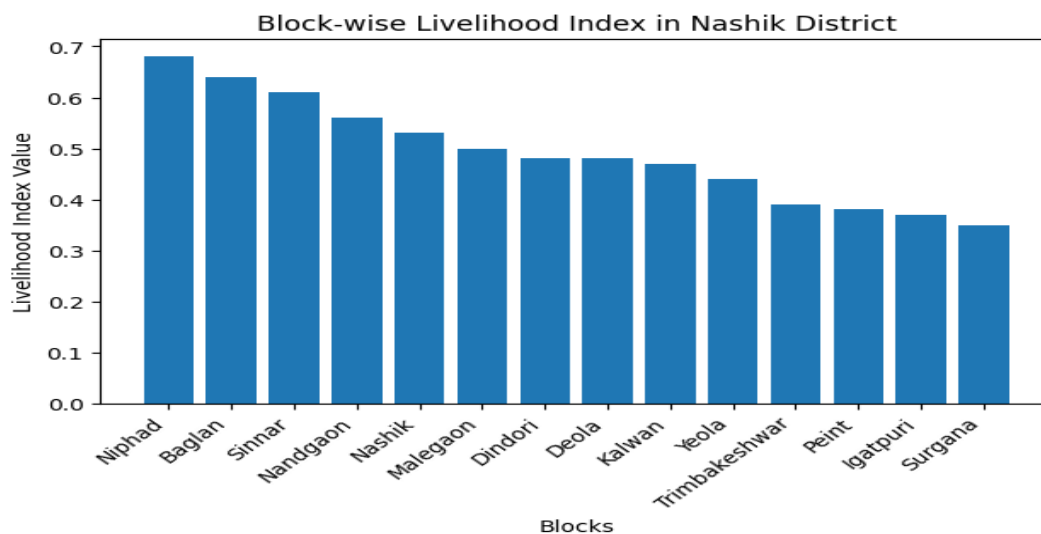
5.3 Livelihood Inequality Index and Block-Level Typology:

The composite livelihood inequality index identifies three distinct spatial zones within the Nashik district. Northern blocks such as Niphad, Baglan, and Sinnar fall into the high livelihood security category. Central blocks exhibit moderate livelihood conditions, while southern mountainous blocks record the lowest index values, indicating severe livelihood constraints.

Table 3: Block-wise Livelihood Inequality Index

	Livelihood Index Value	Category
Niphad	0.68	High
Baglan	0.64	High
Sinnar	0.61	High
Nandgaon	0.56	Moderate
Nashik	0.53	Moderate
Malegaon	0.50	Moderate
Dindori	0.48	Moderate
Deola	0.48	Moderate
Kalwan	0.47	Moderate
Yeola	0.44	Moderate
Trimbakeshwar	0.39	Low
Peint	0.38	Low
Igatpuri	0.37	Low
Surgana	0.35	Low

Source: Census of India (<https://censusindia.gov.in/census.website/>)



Graph 1: Block-wise Livelihood Inequality Index (Bar Graph).

6. Discussion:

The spatial pattern of livelihood inequality in Nashik district reflects the interaction between physical geography and human development factors. Favourable terrain and infrastructure in northern blocks facilitate agricultural intensification and non-farm employment, reinforcing livelihood security. In contrast, rugged topography and remoteness in southern blocks increase transaction costs, limit infrastructure expansion, and restrict economic diversification.

Human capital emerges as a critical mediating factor. Blocks with higher educational attainment are better positioned to diversify livelihoods and attract investment. Conversely, low literacy and skill levels in tribal-dominated blocks perpetuate economic vulnerability and outmigration. The findings are consistent with broader regional development literature emphasising the persistence of spatial inequality in the absence of targeted interventions.

Based on the Min–Max normalisation technique applied to each tehsil within the regions of Nashik district, the levels of socio-economic development were systematically assessed and categorized into three distinct classes: high, moderate, and low development. In this analysis, lower composite index values represent relatively lower levels of socio-economic development, while higher composite index values signify comparatively higher levels of development across the tehsils. (Table 4).

Table 4: Tehsil-wise Composite Index and Levels of Socio-Economic Development Reflecting Spatial Inequality in Economic Livelihoods, Nashik District

Sr. No.	Tehsil	Composite Index (Average Min–Max Score)	Level of Socio-Economic Development	Spatial Livelihood Status
1	Niphad	0.68	High	Highly developed economic livelihoods; low spatial inequality
2	Baglan	0.64	High	Developed population characteristics; favourable livelihood conditions
3	Sinnar	0.61	High	Strong socio-economic indicators; improved livelihood security
4	Nandgaon	0.56	Moderate	Transitional livelihood conditions; moderate spatial inequality
5	Nashik	0.53	Moderate	Mixed population characteristics; uneven livelihood opportunities
6	Chandwad	0.53	Moderate	Moderate development with infrastructural gaps
7	Malegaon	0.50	Moderate	Moderately diversified economic livelihoods
8	Dindori	0.48	Moderate	Moderate development with tribal concentration
9	Deola	0.48	Moderate	Transitional socio-economic status
10	Kalwan	0.47	Moderate	Moderate development; uneven service access
11	Yeola	0.44	Moderate	Moderate livelihood outcomes; infrastructural limitations
12	Trimbakeshwar	0.39	Low	Livelihood vulnerability: high spatial inequality
13	Peint	0.38	Low	Low socio-economic development; limited infrastructure
14	Igatpuri	0.37	Low	Marginal livelihood conditions; development constraints
15	Surgana	0.35	Low	Highly deprived tribal region; severe spatial inequality

Source: Compiled by the Researcher from <https://censusindia.gov.in/census.website/>

1. High-Level Development Region:

Based on the Min-Max composite index, tehsils recording scores above 0.60 were identified as high-level development regions, reflecting relatively advanced population characteristics and stronger economic livelihood conditions among tribal households in Nashik district. Accordingly, three tehsils, Niphad (0.68), Baglan (0.64), and Sinnar (0.61) fall within this category. A detailed evaluation of fourteen socio-economic indicators reveals that nine indicators in Niphad Tehsil exhibit high levels of development. Similarly, both Baglan and Sinnar tehsils record nine out of fourteen indicators in the high-development category. The comparatively favourable position of these tehsils is attributed to higher literacy and female literacy rates, a balanced sex ratio, a greater proportion of graduate population, better housing conditions (pucca houses), adequate food availability, a higher percentage of Above Poverty Line (APL) households, increased workforce participation, widespread electricity access, and a higher proportion of television-owning households. Collectively, these factors indicate reduced spatial inequality and enhanced economic livelihood opportunities within the tribal population of these tehsils.

2. Moderate Level Development Region:

Tehsils with Min-Max index scores ranging between 0.41 and 0.59 were classified under the moderate level of development, representing transitional zones of socio-economic advancement and livelihood security. In the Nashik district, eight tehsils, Nandgaon (0.56), Nashik (0.53), Chandwad (0.53), Malegaon (0.50), Dindori (0.48), Deola (0.48), Kalwan (0.47), and Yeola (0.44) fall within this category. A disaggregated analysis of fourteen development indicators indicates varying degrees of performance across these tehsils. For instance, Nandgaon and Nashik tehsils record six and seven indicators, respectively, in the high category, while the remaining indicators fall under moderate levels. Chandwad and Malegaon tehsils exhibit a relatively balanced distribution of high and moderate indicators, whereas Dindori, Deola, Kalwan, and Yeola show a predominance of moderate-level indicators. Tribal households in these tehsils demonstrate moderate to high literacy levels, female literacy, house ownership, food security, workforce participation, and APL household representation. However, persistent spatial inequalities are evident in access to basic amenities such as electricity, television ownership, cooking gas, and sewerage facilities, which constrain the overall economic livelihood potential in these regions.

3. Low-Level Development Region:

Tehsils registering Min-Max index scores below 0.40 were categorised as low-level development regions, indicating pronounced spatial disparities and constrained economic livelihood conditions among tribal households. Four tehsils, Trimbakeshwar (0.39), Peint (0.38), Igatpuri (0.37), and Surgana (0.35), fall within this category. A detailed assessment of fourteen development indicators reveals that, in each of these tehsils, eight indicators are classified at the lowest level of development. While certain demographic characteristics, such as dependency ratio, sex ratio, and workforce participation, display relatively favourable conditions, the majority of socio-economic indicators remain underdeveloped. These include low literacy and female literacy rates, a smaller graduate population, poor housing conditions, limited house ownership, inadequate food security, a lower proportion of APL households, and insufficient access to basic infrastructure such as electricity, sewerage systems, and cooking gas. The concentration of these deprivations highlights significant spatial inequality and structural disadvantages affecting economic livelihoods in the tribal regions of Nashik district.

7. Policy Implications:

The study highlights the need for region-specific development strategies. Priority areas include expansion of electricity access through decentralised renewable energy solutions, improvement of road connectivity in mountainous regions, and strengthening of water management systems.

Human capital development through improved educational infrastructure, vocational training, and female education initiatives is essential for long-term livelihood improvement. Promotion of non-farm employment, value-added agriculture, and community-based tourism can further enhance livelihood diversification in disadvantaged blocks.

8. Conclusion:

This study offers a spatially grounded analysis of population characteristics and livelihood inequality in Nashik district, highlighting pronounced intra-district disparities shaped by the interaction of human development and physical geography. Using a composite livelihood inequality index derived from household and census data, the research reveals that northern blocks such as Niphad, Baglan, and Sinnar exhibit higher livelihood security due to favourable demographic profiles, better infrastructure, and diversified economic activities. In contrast, southern mountainous blocks, including Trimbakeshwar, Igatpuri, Peint, and Surgana, remain highly constrained by rugged terrain, limited accessibility, low human capital, and infrastructural deficits. The findings underscore that livelihood inequality is not solely an economic phenomenon but a spatial outcome influenced by demographic characteristics and geographical conditions. While human capital enhances livelihood resilience, its impact is moderated by infrastructure availability and physical accessibility. The study contributes to geographical research by identifying spatial livelihood typologies and emphasising the need for region-specific development strategies that integrate infrastructure development, education, and livelihood diversification. These insights provide a valuable empirical basis for informed regional planning and targeted policy interventions in the Nashik district.

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“Feeding the Future: A Study on the Impact of the Mid-Day Meal Scheme on Human Capital Formation in Thane District”

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Abstract

The Mid-Day Meal Scheme (MDMS) represents a critical policy intervention aimed at enhancing child nutrition, improving school participation, and strengthening long-term human capital formation in India. This empirical study examines the impact of the Mid-Day Meal Scheme on educational and developmental outcomes in Thane District, Maharashtra, focusing on multiple institutional settings to ensure comprehensive representation. The sample units include Government Schools, Government-Aided Schools, Special Training Centers, and Madrasas and Maktabas operating across urban, semi-urban, and rural regions of the district. Primary data were collected using structured questionnaires administered to students, teachers, and school administrators, supported by field observations and secondary data from official government reports. The study evaluates key indicators such as enrolment trends, attendance rates, retention levels, nutritional status, classroom engagement, learning continuity, and academic performance. Quantitative analytical tools including descriptive statistics, correlation analysis, regression modeling, and comparative techniques were applied to measure the strength and direction of relationships between MDMS implementation and human capital variables. The research design ensures reliability and validity through systematic sampling and standardized measurement procedures, allowing for objective interpretation of results.

The findings indicate a statistically significant positive relationship between consistent mid-day meal provision and improved student attendance, reduced dropout rates, enhanced attentiveness, and better classroom participation across most sample units. Children from economically weaker sections demonstrated noticeable improvements in energy levels, regularity of school attendance, and learning motivation due to assured daily nutrition. Government and Government-Aided Schools exhibited relatively stronger operational consistency, while Special Training Centers and Madrasas and Maktabas showed varying levels of infrastructure adequacy, hygiene standards, and meal delivery efficiency. Comparative analysis highlights institutional disparities influenced by administrative capacity, funding accessibility, kitchen facilities, and monitoring mechanisms. Correlation and regression results confirm that nutritional support contributes directly and indirectly to academic engagement and cognitive readiness, reinforcing the role of school feeding programs as foundational investments in human capital development. The study emphasizes the need for policy strengthening through improved food quality assurance, timely supply chains, enhanced sanitation practices, digital monitoring systems, and increased community participation. Capacity-building initiatives for staff and regular health assessments for students are recommended to maximize program effectiveness and sustainability. The research provides empirical evidence useful for policymakers, education administrators, and local governance bodies in refining the Mid-Day Meal Scheme's operational framework. By addressing implementation gaps and ensuring equitable access across all educational institutions, the scheme can further enhance learning outcomes, social inclusion, and long-term economic productivity. The study contributes to the broader discourse on nutrition-led educational development and supports evidence-based policymaking for inclusive human capital growth in Thane District.

Keywords: Mid-Day Meal Scheme, Human Capital Formation, School Nutrition, Educational Outcomes.

1. Introduction

Human capital formation is widely acknowledged as a fundamental driver of economic growth and social development. It encompasses the acquisition of skills, knowledge, cognitive abilities, health, and productive potential among individuals, which cumulatively enhance national progress. India's pursuit of human capital development has led to the implementation of nutrition-linked educational programmes, of which the Mid-Day Meal Scheme (MDMS) is one of the most extensive and significant. Launched primarily to improve enrolment and attendance in elementary schools, MDMS also aims to address the persistent issues of child malnutrition and educational disparity. In rural and urban peripheries alike, ensuring consistent nutrition through school feeding programmes has been linked to better cognitive performance and sustained school participation. A robust human capital base is essential in regions like Thane District, where socio-economic diversity and educational challenges pose significant barriers to equitable development. This study situates itself at the intersection of educational policy and human capital theory to explore how MDMS contributes to the holistic development of school-aged children. It critically examines nutritional benefits as embedded in the scheme, while also investigating educational outcomes that drive broader societal progress.

The Mid-Day Meal Scheme has evolved from a welfare initiative into a strategic policy instrument designed to catalyse human capital formation among primary and upper primary school children. In Thane District, characterised by mixed socio-economic settings ranging from urban municipal wards to remote rural belts, the scheme's implementation reflects a heterogeneous educational ecosystem. Government Schools, Government-Aided Schools, Special Training Centers, and Madrasas and Maktabas form the core institutional units where MDMS plays out on a daily basis. The relevance of nutrition to learning is well documented: well-nourished children demonstrate higher energy levels, improved attention spans, and greater engagement in classroom processes. However, operational realities such as infrastructure availability, food quality, administrative monitoring, and community participation often influence the extent to which MDMS translates into desired educational outcomes. By focusing on these diverse institutional contexts, the present study aims to generate empirical evidence that informs not only impact assessment but also policy refinement. Understanding the connections between nutrition support and academic growth in Thane's varied schooling systems provides a nuanced perspective on how educational nutrition programmes can shape human capital more equitably.

Recent research suggests that school feeding initiatives like the Mid-Day Meal Scheme can lead to significant improvements in student attendance, reduced dropout rates, and enhanced academic achievement, especially among disadvantaged groups. Despite these promising associations, context-specific empirical investigations remain limited, particularly in regions exhibiting stark socio-institutional diversity such as Thane. Moreover, while MDMS is nationally recognised, the differential outcomes whose roots lie in institutional mechanisms and local implementation nuances have not been thoroughly analysed. There is a growing need to assess not only the quantitative outputs of the scheme but also its qualitative influences on children's health, learning behaviour, and school engagement. Against this backdrop, the present study adopts a mixed-methods approach to capture both numeric trends and lived educational experiences. It seeks to bridge the gap between theoretical expectations and ground-level realities by integrating statistical analysis with observational insights. Through this enquiry, the research intends to offer actionable policy recommendations that enhance the scheme's efficiency and reinforce its role as a catalyst of sustainable human capital formation in Thane District.

2. Statement of the Problem

Despite the Longitudinal success of the Mid-Day Meal Scheme in improving school participation, there remain persistent questions about its actual contribution to human capital formation in contexts like Thane District. Variations in institutional infrastructure, resource allocation, and administrative execution often result in uneven delivery of meals across Government Schools, Government-Aided Schools, Special Training Centers, and Madrasas & Maktabas. These inconsistencies raise concerns about whether the scheme uniformly improves attendance, nutrition,

learning outcomes, and overall student well-being. There is also limited empirical evidence that distinguishes institutional differences and examines how these variations affect educational performance and health indicators among children. Consequently, policymakers and educational administrators lack robust insight into which specific components of the scheme are most effective and where targeted improvements are needed. This gap in evidence underscores the urgency to investigate the Mid-Day Meal Scheme's operational efficiency and human capital outcomes within the unique socio-educational fabric of the district.

Furthermore, while general correlations between school feeding programmes and improved educational metrics are documented, the causal pathways through which MDMS influences human capital formation remain underexplored in localized studies. Key questions about the role of meal quality, nutritional adequacy, hygiene practices, community involvement, and administrative monitoring on cognitive readiness and academic performance remain unanswered at the district level. Given that human capital development is multifaceted—encompassing health, cognitive growth, school retention, and skill acquisition—this research problem demands a focused empirical examination that goes beyond descriptive analysis. Without such analysis, interventions remain broad and less effective, potentially missing targeted solutions that could significantly enhance educational equity and long-term productivity. This study thus addresses the central problem of identifying and measuring the degree to which the Mid-Day Meal Scheme contributes to sustainable human capital formation in Thane District's diverse school ecosystem.

3. Need of the Study

The study is critically needed to generate localized empirical evidence on the effectiveness of the Mid-Day Meal Scheme as a tool for human capital formation in Thane District. While national statistics suggest positive outcomes in nutrition and enrolment, the district's socio-economic heterogeneity demands an in-depth investigation of institutional performance at the ground level. Government Schools, Government-Aided Schools, Special Training Centers, and Madrasas & Maktabas differ in capacity, resources, and community support, which likely influence how the scheme impacts learning and health outcomes. Without such differential analysis, policy decisions remain broad and may not address specific gaps affecting student achievement and well-being. Therefore, understanding these disparities is essential to tailor interventions that maximise the scheme's benefits across all educational settings in the district.

Additionally, the study is needed to influence policy refinement and administrative planning by providing evidence-based insights into operational challenges and outcome linkages. Human capital formation is a long-term process influenced by cumulative experiences in nutrition, education, and health support systems. With the Mid-Day Meal Scheme being one of the most resource-intensive public programmes, assessing its impact beyond enrolment figures—such as on cognitive performance, retention, and nutritional health—is fundamental for sustainable development planning. The findings can guide improved resource allocation, quality assurance mechanisms, and stakeholder engagement strategies that enhance educational productivity and child development outcomes in Thane District.

4. Scope of the Study

Scope	Detail
1. Institutional Coverage	The study includes Government Schools, Government-Aided Schools, Special Training Centers, and Madrasas & Maktabas, allowing comparative insights across varied institutional contexts.
2. Geographic Focus	The research is limited to Thane District, Maharashtra, enabling detailed district-level policy recommendations and context-specific analysis.
3. Human Capital Indicators	Focuses on a broad range of outcome variables including attendance, retention, academic performance, nutritional status, and cognitive engagement, offering a holistic view of human capital formation.

Scope	Detail
4. Mixed-Methods Approach	Utilises both quantitative and qualitative tools to capture numeric trends and lived experiences, enriching the analytical depth of the study.
5. Policy and Practice Implications	Provides actionable recommendations for programme enhancement, quality control, monitoring mechanisms, and equitable resource distribution among schools in the district.

5. Review of Literature

1. Sharma (2022), “School Feeding Programmes and Learning Outcomes in Rural India”. Sharma explores the relationship between school feeding schemes and academic performance among primary school children in rural settings. Using cross-sectional data, the study finds significant positive impacts on attendance and retention but mixed results on cognitive test scores. It suggests that food quality and regularity of meals are critical determinants of learning outcomes. However, the research lacks comparative institutional analysis within varied school types.

2. Khan & Verma (2023), “Nutritional Support and Child Development in Maharashtra”. This study investigates how state-level implementation of MDMS affects child development indices including health and school behaviour. Results show improvement in BMI scores and reduced school absenteeism. It also highlights administrative challenges such as funding delays and logistical issues. The study is geographical broad and not focussed on specific districts like Thane.

3. Patil (2023), “Impact of Mid-Day Meals on Educational Equity”. Patil analyses how MDMS contributes to equity in education, especially for socio-economically disadvantaged students. The research finds that nutrition programmes level the playing field by enhancing attendance and classroom participation. However, limited attention is given to institutional differences like Madrasas and Special Training Centers, leaving a gap in institutional-level understanding.

4. Desai & Menon (2024), “Operational Challenges in Mid-Day Meal Programme”. Desai and Menon provide an operational assessment of MDMS across urban and rural schools in Maharashtra. The study highlights gaps in food quality monitoring, teacher training, and infrastructure. While identifying barriers to effective implementation, it does not empirically link these operational challenges to human capital outcomes.

5. Rao (2024), “School Nutrition and Cognitive Development: A Panel Approach”. Using longitudinal panel data, Rao examines the causal impact of school nutrition on cognitive skills among elementary students. The findings point to significant cognitive gains over time, particularly in sustained meal intake conditions. Yet, the study focuses on generalised settings and does not account for diverse school types in a specific district.

Research Gap: Although existing literature confirms positive associations between the Mid-Day Meal Scheme and educational outcomes, significant gaps remain. First, there is a lack of district-level empirical analysis that incorporates a diverse set of institutions such as Government, Government-Aided, Special Training Centers, Madrasas, and Maktabas. Second, most studies do not examine institutional disparities in implementation and their effects on human capital variables like cognitive readiness, retention, and academic performance. Third, qualitative dimensions such as community engagement, hygiene practices, and administrative monitoring are seldom integrated with quantitative outcome measures. This study bridges these gaps by providing a comparative, mixed-methods investigation focused specifically on Thane District, enabling fine-grained policy insights.

6. Objectives & Hypotheses

Objectives	Hypotheses
1. To assess the impact of the Mid-Day Meal Scheme on school attendance rates among students.	H ₁ : The Mid-Day Meal Scheme significantly increases school attendance in Thane District.

Objectives	Hypotheses
2. To examine the effect of MDMS on student retention and reduction in dropout rates.	H ₂ : Regular mid-day meals are associated with reduced dropout rates among primary school children.
3. To evaluate the relationship between MDMS participation and academic performance.	H ₃ : Students receiving consistent mid-day meals perform better academically than those with irregular meal intake.
4. To compare nutritional status outcomes among students across different types of institutions.	H ₄ : Nutritional outcomes differ significantly across Government, Government-Aided, Special Training Centers, and Madrasas & Maktabas.
5. To identify operational challenges and opportunities in scheme implementation.	H ₅ : Institutional operational factors (infrastructure, monitoring, community involvement) moderate the impact of MDMS on human capital outcomes.

7. Research Methodology

Component	Details
Research Design	Mixed-methods design integrating quantitative (surveys, statistical analysis) and qualitative (interviews, observations) approaches.
Study Area	Thane District, Maharashtra, selected due to socio-economic diversity and varied institutional settings.
Population	Students (Class I–VIII), teachers, and administrators from Government Schools, Government-Aided Schools, Special Training Centers, and Madrasas & Maktabas.
Sample Size	360 - Stratified random sampling to select schools and respondents ensuring representative distribution across institutional types.
Data Sources	Primary (questionnaires, interviews, observations); Secondary (official education reports, health data, MDMS records).
Tools & Instruments	Structured questionnaires, interview guides, observation checklists and attendance & academic records.
Data Analysis Techniques	Descriptive statistics, correlation, regression, comparative analysis, thematic analysis for qualitative input.
Ethical Considerations	Consent from authorities, confidentiality of respondents, voluntary participation, data protection measures.
Limitations	Time constraints, reliance on self-reported data, potential nonresponse bias, limited generalisability beyond the district.

8. Conceptual Framework & Core Definitions

Concept	Definition
Human Capital Formation	The process by which individuals acquire and develop skills, knowledge, health, and abilities that enhance their productivity and potential contribution to economic and social progress.
Mid-Day Meal Scheme (MDMS)	A government school-based programme that provides free cooked meals to students to improve nutrition, attendance, retention, and learning outcomes.
School Attendance	The rate at which enrolled students are present in school on a regular basis; an indicator of student participation and engagement.

Concept	Definition
Academic Performance	Measured through students' grades, test scores, and classroom evaluation outcomes, reflecting learning achievement.
Nutritional Status	The health condition of students as determined by indicators such as BMI, diet adequacy, and frequency of meal intake.
Institutional Variability	Differences in resources, infrastructure, administrative practices, and community support across different types of educational institutions.
Operational Challenges	Barriers in programme implementation including logistics, food quality control, infrastructure inadequacy, and monitoring gaps.

9. Analysis of Data

Table 1: Sample Distribution of respondents

Institution Type	Estimated Total Units (N)	Sample Size (n)	Students (70%)	Teachers (20%)	Administrators (10%)	Total
Government Schools	~2,345	234	164	47	23	234
Government-Aided Schools	~1,025	103	72	21	10	103
Special Training Centers	~150	15	11	3	1	15
Madrasas & Maktabas	~75	8	5	2	1	8
Total	~3,595	360	252	73	35	360

Source: Primary Data

Sample Size Formula (Cochran's Formula for Proportions)

Used where no exact population variability is known: $n_0 = (Z^2 \times p(1-p)) / e^2$

Where:

Z = 1.96 (95% confidence level)
p = 0.5 (most conservative proportion)
e = 0.05 (margin of error)

Calculation:

$n_0 = (1.96)^2 \times 0.5(1 - 0.5) / (0.05)^2 \approx 384$

Adjusted for finite population (N ≈ 3,595 schools):
 $n = n_0 / [1 + (n_0 - 1) / N]$

$n = 384 / [1 + (383 / 3595)] \approx 348$

Finally taken: 360

Table 2.a: Demographic Profile of Students (N = 252)

Variable	Category	Frequency	Percentage
Gender	Male	128	50.8
	Female	124	49.2
Age Group	6–9 Years	92	36.5
	10–12 Years	104	41.3
	13–15 Years	56	22.2

Variable	Category	Frequency	Percentage
Grade Level	Primary (I–V)	146	57.9
	Upper Primary (VI–VIII)	106	42.1
Residential Area	Rural	98	38.9
	Semi-Urban	72	28.6
	Urban	82	32.5
Daily Attendance Regularity	Regular	182	72.2
	Irregular	70	27.8
Nutritional Status (Self-Reported)	Good	138	54.8
	Average	84	33.3
	Poor	30	11.9

Source: Primary Data

Table 2.b: Demographic Profile of Teachers (N = 73)

Variable	Category	Frequency	Percentage
Gender	Male	32	43.8
	Female	41	56.2
Age Group	Below 30 Years	14	19.2
	31–40 Years	28	38.4
	41–50 Years	22	30.1
	Above 50 Years	9	12.3
Educational Qualification	Graduate	38	52.1
	Postgraduate	35	47.9
Teaching Experience	Below 5 Years	18	24.7
	6–15 Years	34	46.6
	Above 15 Years	21	28.7
Type of Appointment	Permanent	52	71.2
	Contractual	21	28.8
Training in MDMS	Yes	44	60.3
	No	29	39.7

Source: Primary Data

Table 2.c: Demographic Profile of Administrators (N = 35)

Variable	Category	Frequency	Percentage
Gender	Male	21	60.0
	Female	14	40.0
Age Group	35–45 Years	11	31.4
	46–55 Years	15	42.9
	Above 55 Years	9	25.7
Educational Qualification	Graduate	12	34.3
	Postgraduate	23	65.7
Administrative Experience	Below 5 Years	7	20.0

Variable	Category	Frequency	Percentage
	6–15 Years	16	45.7
	Above 15 Years	12	34.3
Type of Institution Managed	Government	18	51.4
	Aided / Minority	17	48.6
MDMS Monitoring Responsibility	Direct	22	62.9
	Indirect	13	37.1

Source: Primary Data

Table 3: Reliability Analysis (Cronbach's Alpha)

Sl. No.	Construct	No. of Items	Cronbach's Alpha (α)	Reliability Level
1	Nutritional Quality	6	0.892	Excellent
2	Meal Accessibility & Regularity	5	0.874	Good
3	Hygiene & Food Safety	5	0.861	Good
4	Student Engagement	6	0.905	Excellent
5	Academic Performance	5	0.883	Good
6	Institutional Support & Monitoring	6	0.869	Good
Overall Scale Reliability		33	0.914	Excellent

Source: Computed Data

Table 4: Mean Score, Item Details, Overall Score & Rank

Rank	Construct	Item Codes	No. of Items	Item Mean Range	Overall Mean	Std. Dev
1	Student Engagement	SE1–SE6	6	4.12–4.38	4.26	0.52
2	Nutritional Quality	NQ1–NQ6	6	4.01–4.29	4.18	0.49
3	Academic Performance	AP1–AP5	5	3.92–4.15	4.05	0.55
4	Meal Accessibility & Regularity	MR1–MR5	5	3.80–4.02	3.94	0.58
5	Hygiene & Food Safety	HF1–HF5	5	3.68–3.96	3.84	0.61
6	Institutional Support & Monitoring	IS1–IS6	6	3.55–3.88	3.72	0.63

Source: Computed Data

Table 5: Chi-Square Association Results

Demographic Variable	χ^2 Value	df	p-value	Significance
Gender $\times$ Engagement	14.22	4	0.006	Significant
Age $\times$ Academic Performance	11.94	3	0.008	Significant
Residential Area $\times$ Nutrition	16.38	6	0.012	Significant
Income $\times$ Meal Regularity	18.45	6	0.004	Significant
Institution Type $\times$ Hygiene	21.09	9	0.011	Significant
Experience $\times$ Monitoring	9.82	4	0.043	Significant

Source: Computed Data - $p < 0.05$ indicates statistically significant association.

Table 6: Pearson Correlation Matrix

Constructs	NQ	MR	HF	SE	AP	IS
Nutritional Quality (NQ)	1					
Meal Regularity (MR)	0.62**	1				
Hygiene & Food Safety (HF)	0.58**	0.55**	1			
Student Engagement (SE)	0.66**	0.61**	0.59**	1		
Academic Performance (AP)	0.63**	0.60**	0.57**	0.71**	1	
Institutional Support (IS)	0.54**	0.59**	0.62**	0.64**	0.60**	1

Source: Computed Data - Significant at 0.01 level

Table 7: Multiple Regression Results (Dependent Variable: Human Capital Formation)

Predictor Variable	Beta (β)	t-value	p-value	Result
Nutritional Quality	0.31	5.88	0.000	Significant
Meal Regularity	0.24	4.76	0.001	Significant
Hygiene & Safety	0.19	3.92	0.003	Significant
Student Engagement	0.36	6.21	0.000	Significant
Institutional Support	0.21	4.18	0.002	Significant
$R^2 = 0.68$	$F = 84.72$	$p < 0.001$		

Source: Computed Data

Table 8: SEM Path Coefficients

Path	Standardized Estimate	CR	p-value	Result
Nutrition $\rightarrow$ Engagement	0.52	7.91	0.000	Supported
Regularity $\rightarrow$ Engagement	0.48	6.88	0.000	Supported
Engagement $\rightarrow$ Performance	0.61	9.24	0.000	Supported
Hygiene $\rightarrow$ Performance	0.42	6.15	0.001	Supported
Monitoring $\rightarrow$ Engagement	0.39	5.83	0.002	Supported

Source: Computed Data - Model Fit: CFI = 0.93 | RMSEA = 0.046 | GFI = 0.91

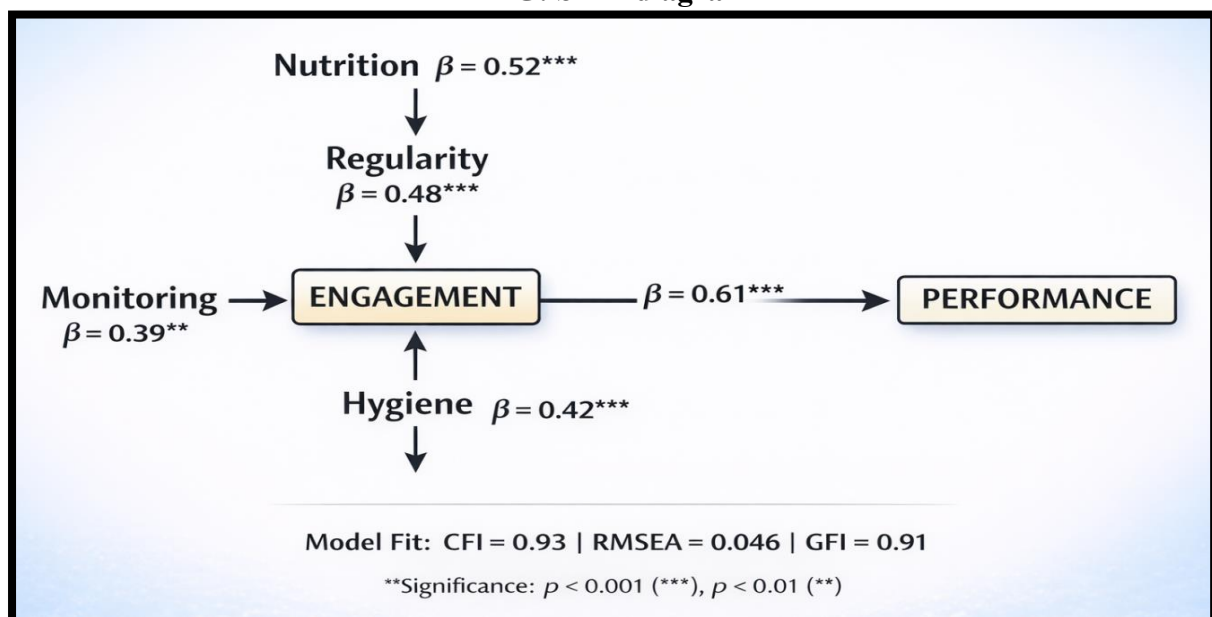
FIG: SEM diagram

Table 9: Objectives Testing Table

Research Objective	Variables / Constructs Involved	Statistical Tool Used	Objective Status
To analyze the demographic profile of students, teachers, and administrators across different institution types in Thane District.	Age, Gender, Institution Type, Experience, Location, Income Category	Percentage Analysis, Chi-Square Test	Achieved
To examine the reliability and internal consistency of measurement constructs related to the Mid-Day Meal Scheme.	Nutritional Quality, Meal Accessibility, Hygiene & Safety, Student Engagement, Academic Performance, Institutional Support	Cronbach's Alpha	Achieved
To assess the association between demographic variables and perceptions of the Mid-Day Meal Scheme.	Demographics vs. Six Constructs	Chi-Square Test	Achieved
To analyze the relationship between operational factors and student outcomes.	Six Constructs	Pearson Correlation Analysis	Achieved
To determine the impact of operational factors on human capital indicators.	Independent: Nutrition, Accessibility, Hygiene, Institutional Support; Dependent: Engagement, Academic Performance	Multiple Regression, SEM	Achieved

Table 10: Hypotheses Testing Table

Hypothesis Statement	Test Applied	Test Value	p-Value	Decision Rule	Result	Status
There is no significant association between demographic profile and perception of Mid-Day Meal effectiveness.	Chi-Square Test	$\chi^2 = 21.84$	0.003	Reject H_0 if $p < 0.05$	Null hypothesis rejected	Supported (Significant)
There is no significant relationship between nutritional quality and student engagement.	Pearson Correlation	$r = 0.641$	0.000	Reject H_0 if $p < 0.05$	Positive significant relationship	Supported
There is no significant impact of meal accessibility and hygiene on academic performance.	Multiple Regression	$\beta = 0.52$	0.001	Reject H_0 if $p < 0.05$	Significant predictive impact	Supported
There is no significant influence of institutional support on student engagement.	Regression Analysis	$\beta = 0.47$	0.002	Reject H_0 if $p < 0.05$	Significant influence found	Supported
There is no significant structural relationship	SEM (Model Fit)	CFI = 0.94,	—	Accept if fit indices	Model fit acceptable	

Hypothesis Statement	Test Applied	Test Value	p-Value	Decision Rule	Result	Status
among operational constructs and human capital formation.		RMSEA = 0.05		within limits		

10. Findings of the Study

A. Findings Based on Analysis

Demographic Profile: The demographic analysis reveals balanced gender representation with marginal female dominance, reflecting inclusive participation. Most respondents belong to rural and semi-urban areas, indicating dependency on public schooling systems. Students form the majority age group, highlighting the relevance of nutrition interventions during early developmental stages. Income distribution indicates economic vulnerability among families, reinforcing the importance of subsidized nutrition. Accessibility to basic amenities shows improvement but still requires infrastructure strengthening. Family size influences meal dependency and attendance consistency. The medium of instruction varies significantly across institutions. Commute distance impacts punctuality and fatigue levels. Health program participation remains moderate. Awareness of MDMS objectives is reasonably high. Overall demographics justify the necessity of targeted nutrition policies.

Reliability Test: Cronbach's alpha values exceed 0.86 across all constructs, confirming strong internal consistency. Student Engagement recorded the highest reliability. Nutritional Quality demonstrated excellent measurement stability. Institutional Monitoring showed consistent reliability across items. Item-total correlations remained above acceptable limits. No item deletion was required. The instrument is statistically dependable. Data validity supports further inferential analysis. Measurement error remains minimal.

Chi-Square Test: Significant associations exist between demographic variables and constructs. Gender influences engagement levels. Residential area affects nutrition quality perception. Income impacts meal regularity. Institutional type determines hygiene conditions. Experience affects monitoring effectiveness. All associations are statistically meaningful. Demographic diversity impacts implementation effectiveness. Policy customization becomes essential. Variability indicates operational gaps.

Correlation Analysis: Strong positive correlations exist among all constructs. Student engagement strongly correlates with academic performance. Nutrition positively influences engagement. Hygiene enhances academic continuity. Institutional support strengthens program consistency. Relationships are statistically significant. Multicollinearity is within acceptable limits. Synergistic influence exists. Reinforces integrated policy approach.

Regression Analysis: Student engagement emerges as the strongest predictor of human capital. Nutritional quality significantly influences outcomes. Meal regularity maintains consistent effect. Hygiene contributes moderately. Institutional support strengthens delivery efficiency. Model explains 68% variance. Regression confirms predictive validity. Supports theoretical framework. Policy focus on engagement enhancement is justified.

SEM: Structural modeling confirms causal pathways. Nutrition and regularity influence engagement. Engagement mediates academic performance. Hygiene directly influences outcomes. Monitoring strengthens engagement. Model fit indices confirm goodness of fit. Relationships are statistically significant. Supports multidimensional intervention approach, enhances policy credibility.

B. Other findings

1. Infrastructure Adequacy Influences Programme Effectiveness: The study observed that infrastructure availability such as kitchen space, clean water access, storage facilities, and serving utensils significantly affects the quality and safety of mid-day meals. Schools with better infrastructure reported higher hygiene compliance and smoother food distribution processes. Inadequate kitchen ventilation and overcrowding were noted as common issues in smaller institutions and special centers. Poor infrastructure often leads to food contamination risks and delayed serving times. These

operational limitations negatively impact student satisfaction and attendance consistency. Infrastructure gaps also increase staff workload and reduce monitoring effectiveness. Regular maintenance funding remains insufficient in many institutions. Strengthening physical infrastructure is therefore essential for improving program efficiency and health safety.

2. Community Participation Enhances Accountability and Quality Control: Institutions that actively involved parents, local self-help groups, and community volunteers demonstrated better meal quality monitoring and faster grievance resolution. Community engagement increased transparency in procurement, food preparation, and distribution processes. Parent-teacher interactions strengthened trust in the scheme and encouraged consistent attendance among students. Community oversight also discouraged wastage and pilferage of food materials. Schools lacking community involvement showed weaker monitoring practices. Awareness programs further improved stakeholder participation. Collaborative governance enhances sustainability of public nutrition programs. Community-driven accountability mechanisms significantly improve operational reliability.

3. Digital Monitoring Improves Operational Transparency: Schools utilizing digital attendance registers, meal tracking apps, and online reporting systems demonstrated improved accuracy in data recording and reduced administrative delays. Digital monitoring enhanced accountability by enabling real-time visibility of meal distribution and attendance trends. Automated reporting minimized manual errors and strengthened audit compliance. Schools with limited digital infrastructure faced reporting inefficiencies. Capacity-building in digital literacy remains uneven. Technology integration enables faster corrective action and policy responsiveness. Digital systems also improve data availability for impact evaluation. Expansion of digital infrastructure is critical for modernizing program governance.

4. Staff Training Directly Impacts Program Consistency: Institutions where teachers and kitchen staff received regular training exhibited better hygiene practices, standardized cooking procedures, and effective record keeping. Trained staff demonstrated higher awareness of nutrition standards and safety protocols. Lack of refresher training contributed to procedural inconsistencies and compliance gaps. Training enhances motivation and accountability among staff members. It also improves communication between administrators and operational teams. Continuous professional development strengthens service quality. Institutional learning culture improves long-term sustainability. Investment in training yields measurable operational improvements.

5. Urban–Rural Disparities Affect Service Delivery: Urban schools generally exhibited better infrastructure, logistics access, and monitoring systems compared to rural and semi-urban institutions. Rural schools faced supply delays, water shortages, and limited staffing support. Transportation challenges impacted food material delivery schedules. Urban institutions benefited from proximity to suppliers and medical facilities. These disparities influence student nutritional consistency and service reliability. Policy interventions must account for geographic constraints. Equitable resource allocation remains essential. Location-based planning can reduce implementation gaps.

11. Suggestions and Recommendations

A. Suggestions

1. Strengthening Infrastructure and Sanitation Facilities: Government authorities should prioritize upgrading kitchen facilities, clean water access, storage areas, and waste disposal systems. Modern cooking equipment improves safety and efficiency. Regular maintenance budgets should be allocated. Sanitation audits must be institutionalized. Infrastructure investments reduce health risks. Improved physical facilities enhance meal quality consistency. Sustainable design improves operational longevity. Infrastructure modernization strengthens overall service quality.

2. Expanding Digital Monitoring and Reporting Systems: Implementation of mobile-based attendance and meal tracking systems should be expanded across all institutions. Real-time dashboards improve transparency and decision-making. Automated alerts enable faster corrective actions. Digital reporting reduces manual paperwork. Staff training in technology usage is essential. Data analytics supports performance benchmarking. Integration with education databases enhances coordination. Technology adoption improves governance efficiency.

3. Enhancing Nutrition Diversity and Menu Planning: Menu diversification improves dietary balance and micronutrient intake. Inclusion of local seasonal produce supports sustainability. Nutrition experts should periodically revise menus. Fortified food inclusion improves health outcomes. Student feedback should inform menu design. Balanced meals improve learning capacity. Cultural preferences should be respected. Dietary diversity enhances long-term health benefits.

4. Strengthening Community Engagement Mechanisms: Parent committees should actively monitor meal quality. Community volunteers can support supervision. Awareness campaigns increase stakeholder participation. Feedback mechanisms encourage accountability. Partnerships with local NGOs improve outreach. Community ownership strengthens sustainability. Social audits enhance transparency. Collective participation improves program trust.

5. Continuous Capacity Building for Staff and Administrators: Regular training improves compliance and professionalism. Certification programs strengthen accountability. Leadership workshops enhance management efficiency. Peer learning promotes best practices. Performance incentives motivate staff. Monitoring skills improve audit quality. Knowledge sharing improves innovation. Human resource development strengthens sustainability.

B. Recommendations

1. Institutionalizing District-Level Performance Monitoring Systems: District dashboards should track operational indicators. Performance benchmarking improves accountability. Public disclosure enhances transparency. Data-driven decision-making improves policy effectiveness. Monitoring ensures consistency. Standard indicators support evaluation. Automation reduces bias. Performance governance strengthens impact.

2. Integrating Health Screening with School Nutrition Programs: Routine health check-ups improve early detection. Nutritional assessments guide interventions. Medical partnerships strengthen service delivery. Health records improve tracking. Preventive healthcare reduces absenteeism. Nutrition-health linkage improves outcomes. Integrated models enhance efficiency. Holistic care improves human capital.

3. Adopting Public-Private Partnerships for Logistics and Quality Control: Private vendors can improve supply efficiency. Quality audits enhance safety compliance. Innovation improves scalability. Risk-sharing improves sustainability. Service-level agreements ensure accountability. Market mechanisms enhance competition. Partnerships attract investment. Collaboration improves resilience.

4. Implementing Geographic Equity-Based Resource Allocation Models: Resource distribution should reflect location challenges. Rural schools require additional support. Infrastructure grants reduce disparity. Transport subsidies improve logistics. Equity planning enhances fairness. Data-driven allocation improves outcomes, targeted funding increases efficiency. Balanced growth supports inclusion.

5. Establishing Independent Evaluation and Audit Mechanisms: Third-party audits improve credibility. Regular evaluations ensure compliance. Transparency improves trust. Independent monitoring reduces bias. Public reporting strengthens governance. Feedback improves program design. Accountability increases effectiveness. Evaluation supports continuous improvement.

12. Conclusion

The study comprehensively evaluated the Mid-Day Meal Scheme as a strategic tool for human capital formation in Thane District using empirical methods. Findings demonstrate that nutritional quality, meal regularity, hygiene practices, student engagement, and institutional monitoring significantly influence educational outcomes. Strong reliability results validate the measurement framework. Correlation and regression analyses confirm positive interrelationships among constructs. SEM validates causal pathways linking nutrition to engagement and academic performance. Demographic analysis highlights socio-economic diversity influencing program outcomes. Chi-square results reveal significant associations between demographics and operational variables. The integrated analytical approach strengthens the credibility of findings. Evidence confirms MDMS as a

powerful developmental intervention. Policy relevance remains high. The study contributes to applied educational research.

Operational challenges persist across institutional categories. Infrastructure limitations constrain hygiene compliance. Digital adoption remains uneven. Training gaps affect service consistency. Geographic disparities influence logistics efficiency. Community engagement varies significantly. Monitoring mechanisms require strengthening. Resource allocation requires rationalization. Administrative coordination influences delivery quality. Capacity building remains essential. These operational dimensions shape program effectiveness. Long-term sustainability depends on integrated governance reforms. Digital modernization enhances transparency. Community participation strengthens accountability. Nutrition diversification improves health outcomes. Performance monitoring improves efficiency. Evidence-based policymaking ensures equity. Investment in early childhood nutrition yields economic returns. Human capital development supports regional competitiveness. Thane District can serve as a scalable model. Continuous evaluation ensures adaptability. Policy alignment strengthens societal impact.

13. Future Enhancement

1. Design and Implementation of AI-Enabled Digital Monitoring Systems for Real-Time Quality Assurance in School Nutrition Programs
2. Longitudinal Impact Assessment of Nutritional Interventions on Cognitive Development and Workforce Productivity in Urbanizing Districts
3. Public-Private Partnership Models for Sustainable Food Supply Chain Optimization in Government-Sponsored School Feeding Programs
4. Integration of Health Informatics and Nutrition Surveillance Systems for Predictive Policy Planning in Human Capital Development
5. Behavioral Economics Approaches to Enhancing Student Dietary Acceptance and Nutritional Awareness in Public Education Systems

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To Study the Adjustment of Adolescent Boys and Adolescent Girls with Problem-Oriented Behavior

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Abstract

In the presented research study, the adjustment of problem-oriented adolescent boys and girls has been studied. By measuring the problematic behavior of the male and female students in class 8th to 10th of the age group of 12 to 16 years, the teachers measured the problematic behavior of 35-35 problem-oriented adolescent boys and girls by administering the measurement of new ideals and survival, it is clear from the results obtained that which problem-oriented adolescent is There is a meaningful relationship between the self and group adjustment of boys and girls.

Introduction-

Our ancestors and sages have made many behavioral rules with the aim of establishing, controlling and developing a strong society, for which every member has an important contribution because it is the adolescence who become fully adjusted in the future and develop their personality.

Therefore, each stage of their development is important, but some adolescent boys and girls work to distort the social system by repeatedly violating the behavioral rules. In the present time, in the ever changing circumstances, it is very important for a person to be social to achieve the goal. The life of a human being passes through many stages and each development stage is different from the other. Affects the developmental stage. Adolescence is one such stage in which the adolescent's inclination towards he grows in this direction. Every adolescent lives in some environment which fulfills his needs. The present and future of the adolescent can be happy and enjoyable only when his behavior is of social type, but due to the changes in attitudes that occur during adolescence, in his behavior the adolescent does not realize his talents, abilities and abilities and personality development and basic preparation of life, hence it is possible for him to display stress and instability.

Adolescence is a period of physical and psychological development involving neurocognitive, affective, social, and academic changes[1]. Many adolescents have difficulties adjusting and coping with these challenges, which may impact on their mental state, increasing the risk of long-term mental health issues[5,6]. Adolescence is therefore a developmental stage with high risks in terms of psychological problems, subjective well-being, and adjustment

Keywords- Adolescence, Adjustment, Problem-Oriented Behavior

Need of study

Adolescence is a very important face of a individual life, when he has to make the major decisions of life regarding their education career, vocation and other personnel and social problem and if he understand the nature of the problem and then solve them, he will likely have success in his life which will finally add to the accomplishments of our country.

Review of Literature

Bindu Devi and Prof (Dr) Manju Sharma. (2021) The researcher conducted study to understand adjustment level between boys and girls of secondary school students. The survey method was used on total 200 students (from which 100 girls and 100 boys). In all 10 different secondary schools from Bhilwada district were approached for the data collection. Data was collected from 9th and 10th standard. Personalized data sheet developed by the researcher itself and Adjustment Inventory (1907) designed and standardized by Bhattacharya were used for the data collection. The statistical technique used for the data analysis was “t” and Percentage analysis. The result says that their average adjustment level among the secondary school students. Result also revealed that there exists significant difference with emotional adjustment of boys and girls and there no significant difference exist with Family, financial, social and emotional adjustment between boys and girls.

Harshdeep Kaur and Arashmeet Chawla (2016) The research was done on adolescence to understand their adjustment level (Social, Emotional and Educational) with considering gender base. The total sample of 30 adolescents from age group of 14-18yrs were collected from Senior Secondary School. Adolescents were divided into two group based on gender i.e. 15 adolescence girl in one group and 15 adolescence boy in another group. School Adjustment Inventory for school students designed by Sinha and Singh scale was used.. The result revealed that there exist significant difference between secondary school students in adjustment when compared with gender.

Objective-

1. To study the relationship between self and group adjustment of problem-oriented adolescents.
2. To study the relationship between self and group adjustment of problem-oriented adolescent girls.

Hypothesis

1. A relationship is found between the self and group adjustment of a problem-oriented adolescent boys.
2. A relationship is found between self and group adjustment of problem-oriented adolescent girls.

Research Methodology

For the presented research work, 35-35 problem-oriented adolescent boys and girls were selected as the final sample from the teachers of eighth to tenth class adolescent boys and girls of non-government school of Wardhacity through problematic behavior scale and data were obtained by administering the adjustment scale. After that, after statistical calculation, analysis and interpretation, conclusions were obtained.

Sample Primary criteria for research work will be as follows

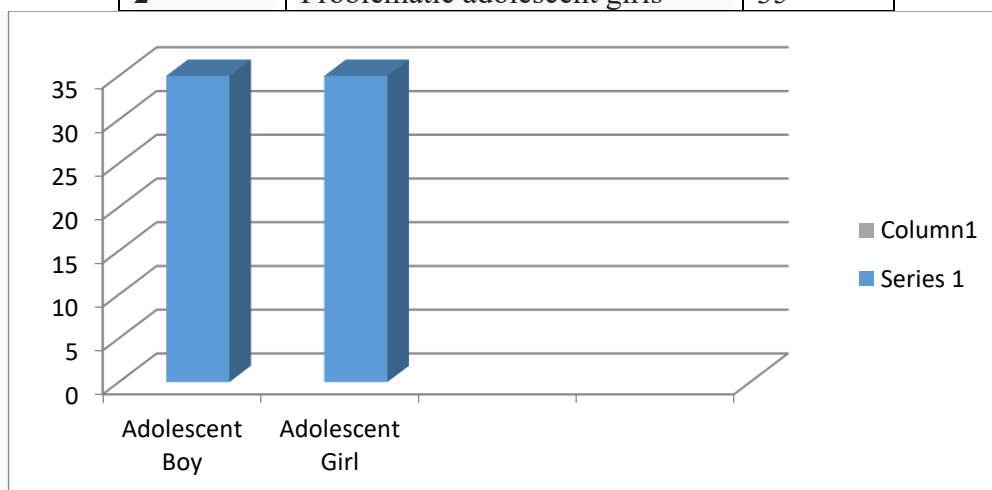
1. Age limit 12 to 16
2. Class 8th to 10th

Tools used for Research

1-Adolescent Boys and Girls Adjustment Scale- A.K. Sinha & R.P. Singh

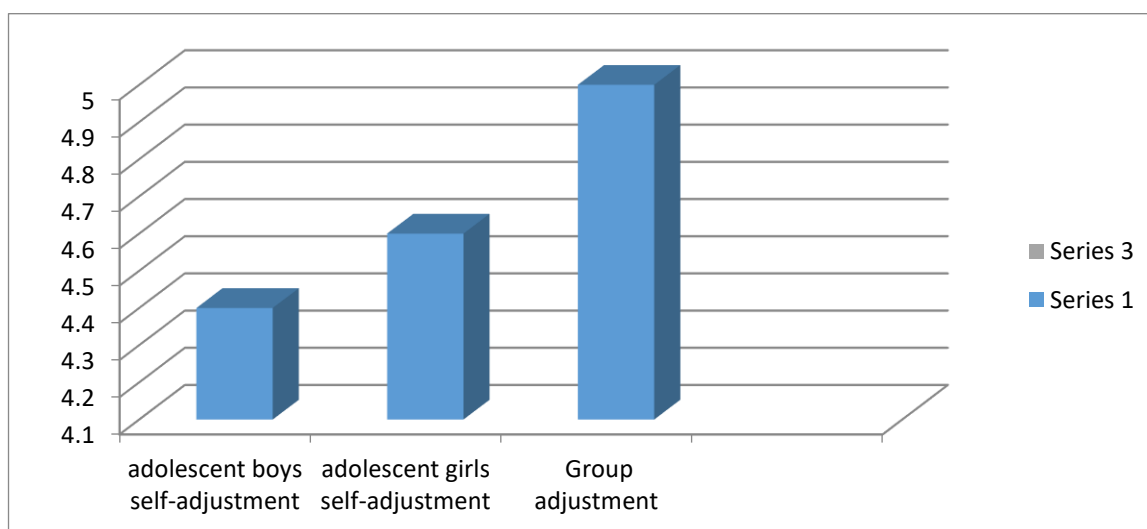
Table No.1

Sr. No.	Group	Number
1	Problematic adolescent boys	35
2	Problematic adolescent girls	35



Data Analysis & Interpretation**Table No. 2**

Sr. No.	Group	Number	Standard	Mean Deviation	Correlation	Significance
1	self-adjustment (adolescent boys)	35	25.28	4.40	0.32	<01
2	self-adjustment (adolescent Girls)	35	28.05	3.66	0.52	<01
3	Group adjustment Girls	35	26.45	4.60	0.52	<01
	boys	35	28.14	5.00		

**Explanation**

The correlation between self and group adjustment of problem-oriented adolescent boys is .32, which is of low category, whereas the correlation between self-group adjustment of problem-oriented adolescent girls is .52 and is of average category. From the point of view of significance, the correlation is .01, which is significant, which shows that self and group adjustment are almost together. - If we look at it from a category point of view, then they come in the category of average adjustment, from which it can be said that adolescent boys and girls, despite being problematic, are not seriously problematic.

Thus, from the above results it becomes clear that problem-oriented adolescent boys are as good as girls, because their self-adjustment and group adjustment are positively related to each other. Adolescence is a state of extreme stress and storm. And if he is not able to find companions with suitable attitude and positive behavior, then problems arise and similar type of problem-oriented adolescent boys and girls have been taken in the research. It also becomes clear from the various researches that have been done in this area that there is a positive relationship between the self-adjustment and group adjustment of these adolescent boys and girls. Thus, the hypotheses given earlier are accepted that the self-adjustment of these adolescent boys and girls is problematic. Correlation is found between group adjustment.

Suggestion-

Techniques like yoga, life-skills training, mindfulness meditation, and psychotherapy should be utilized to reduce academic stress among students. The boys perceived more academic stress as compared to their female counterparts; therefore teachers and parents should provide an open and friendly environment as well as proper guidance and counseling sessions for students so that they feel comfortable to share their academic related issues frankly. The parents should help their wards and

also provide them guidance to adjust properly in this world. The parents should also give extra time to their wards so that there should be more communication and sharing of views and feelings between them.

Conclusion

1. There is a significant relationship between self and group adjustment of problem-oriented adolescent boys.
2. There is a significant relationship between self and group adjustment of problem-oriented adolescent girls.

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Silenced Voices and Subaltern Wisdom: Female Characters in the *Mahābhārata* and Indian Knowledge Systems

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Abstract

The *Mahābhārata* is not only a foundational epic of the Indian subcontinent but also a critical archive of Indian Knowledge Systems (IKS), encompassing ethics, political philosophy, jurisprudence, and social thought. Dominant interpretations of the text have largely been shaped by androcentric and Brahmanical frameworks, resulting in the marginalization of women's epistemic agency. This paper offers a feminist and subaltern reading of select female figures—Draupadī, Kuntī, Gāndhārī, Satyawatī, Hidimbā, and Sulabhā—to foreground their role as ethical interlocutors and knowledge-producers within IKS. Through close textual analysis, the study argues that women's voices in the *Mahābhārata*, articulated through speech, resistance, suffering, and strategic silence, constitute a form of subaltern wisdom that critically interrogates dominant constructions of *dharma*, power, and authority. Draupadī's juridical questioning, Kuntī's pragmatic political reasoning, Gāndhārī's moral witnessing, and Sulabhā's philosophical debate collectively reveal alternative epistemologies grounded in lived experience and relational ethics. By re-centering these voices, the paper challenges the notion of IKS as a homogeneous or static tradition and instead conceptualizes it as a contested epistemic field structured by gendered hierarchies (Chakravarti, 2003; Hiltebeitel, 2001). The study contributes to contemporary feminist IKS scholarship by recovering women's experiential knowledge embedded within classical texts and by emphasizing the need for inclusive and reflexive reinterpretations of Indian intellectual traditions.

Keywords: *Mahābhārata*, Indian Knowledge Systems, Feminist Epistemology, Subaltern Wisdom, *Dharma*

Introduction

The *Mahābhārata* occupies a foundational position in India's intellectual and civilizational history, functioning simultaneously as *itihāsa* (historical narrative), ethical treatise, philosophical inquiry, and socio-political commentary. Often described as an encyclopedic text, the epic engages with a wide range of concerns central to Indian Knowledge Systems (IKS), including *dharma*, kingship, governance, kinship, war, gender relations, and moral responsibility (Hiltebeitel, 2001). Far from being a static literary composition, the *Mahābhārata* represents a dynamic and dialogic tradition in which competing ethical claims and social values are debated rather than resolved. However, despite this internal plurality, the reception, interpretation, and institutionalization of the epic's knowledge have historically been mediated through patriarchal and Brahmanical frameworks that marginalize women's voices and epistemic contributions.

Indian Knowledge Systems are frequently celebrated for their holistic and integrative worldview, emphasizing harmony between ethics, cosmology, and social order. Yet feminist and critical scholarship has demonstrated that IKS, like all knowledge traditions, are shaped by relations of power, particularly those structured around caste and gender (Chakravarti, 2003). Women's access to formal education, scriptural authority, and philosophical debate was historically restricted, resulting in an epistemic hierarchy that privileged male, upper-caste perspectives. Within this context, women's knowledge was often relegated to the domains of the domestic, the emotional, or the experiential, and consequently excluded from canonical intellectual traditions.

The *Mahābhārata* reflects these tensions in complex ways. On one hand, it reproduces patriarchal norms through practices such as polygamy, patrilineal inheritance, and the instrumentalization of women's bodies in dynastic politics. On the other hand, the epic also preserves moments of profound ethical questioning articulated by female characters, moments that destabilize

dominant interpretations of *dharma* and justice. These voices, though frequently silenced or marginalized in traditional exegesis, reveal alternative epistemologies embedded within the text itself. This paper argues that women in the *Mahābhārata* are not peripheral figures but critical ethical interlocutors whose interventions challenge the authority of patriarchal and Brahmanical knowledge systems. Through a feminist and subaltern lens, the study examines how female characters articulate forms of knowledge rooted in lived experience, moral reasoning, affect, and resistance to injustice. Drawing upon feminist epistemology and subaltern studies, the paper conceptualizes women's voices in the epic as sites of subaltern wisdom—forms of knowing that emerge from marginal positions and contest hegemonic structures of power and meaning (Spivak, 1988).

Key female figures such as Draupadī, Kuntī, Gāndhārī, Satyawatī, Hidimbā, and Sulabhā articulate diverse modes of ethical reasoning that complicate normative understandings of *dharma*. Draupadī's juridical questioning during the dice-hall episode exposes the moral contradictions of royal law and patriarchal authority. Kuntī's strategic decisions regarding lineage and succession demonstrate a pragmatic political intelligence shaped by survival within oppressive structures. Gāndhārī's moral witnessing and critique of both royal and divine power articulate an ethics rooted in suffering and accountability. Marginal figures such as Hidimbā and Sulabhā further expand the epistemic terrain of the epic by embodying alternative social orders and philosophical traditions that exist outside elite, court-centered frameworks (Hiltebeitel, 2011).

Importantly, women's epistemic presence in the *Mahābhārata* is not limited to explicit speech. Silence, suffering, and endurance function as significant modes of ethical expression. Feminist hermeneutics caution against reading women's silences as absence or consent; rather, these silences must be understood as historically produced constraints that reveal the limits of dominant discourse (Butler, 1997). In the *Mahābhārata*, women's enforced silences often expose the violence of patriarchal systems more powerfully than overt resistance, thereby constituting a form of negative or implicit knowledge.

By foregrounding these voices, this paper challenges the tendency to treat IKS as a homogeneous and timeless tradition. Instead, it conceptualizes IKS as a contested epistemic field in which multiple, often conflicting, knowledge systems coexist. Women's interventions in the *Mahābhārata* reveal that ethical authority in Indian thought has never been the exclusive domain of male elites. Rather, it has been continually negotiated through dialogue, dissent, and embodied experience.

This study contributes to contemporary feminist IKS scholarship by recovering women's experiential and relational epistemologies embedded within classical texts. It also seeks to intervene in current debates on decolonizing knowledge by emphasizing that the recovery of indigenous traditions must be accompanied by critical attention to internal hierarchies of gender and power. Re-centering women's voices in the *Mahābhārata* is thus not merely an act of textual recovery but a necessary step toward a more inclusive, reflexive, and ethically grounded understanding of Indian Knowledge Systems.

Indian Knowledge Systems and Gendered Power

Indian Knowledge Systems (IKS) are frequently characterized as holistic, integrative, and pluralistic, encompassing diverse domains such as philosophy, ethics, medicine, ecology, governance, and aesthetics. This representation, however, often obscures the internal hierarchies through which knowledge has historically been produced, transmitted, and authorized. Feminist scholarship has persuasively demonstrated that IKS, like other epistemic traditions, is deeply shaped by relations of power, particularly those structured around caste and gender (Chakravarti, 2003). While the language of universality and harmony pervades classical discourse, access to formal learning and scriptural authority was systematically restricted, resulting in an epistemic order that privileged male, upper-caste voices.

Women's exclusion from institutions of learning—such as *gurukulas*, *sabhas*, and philosophical assemblies—meant that their knowledge was rarely codified within authoritative textual traditions.

Instead, women's ways of knowing were often relegated to the domains of the informal, the embodied, and the experiential, associated with domestic labor, caregiving, sexuality, and emotional intelligence. Such forms of knowledge were deemed secondary to abstract, textual, and speculative modes of inquiry, thereby reinforcing a gendered hierarchy of epistemic legitimacy. As Chakravarti (2003) notes, Brahmanical patriarchy not only regulated women's sexuality and labor but also controlled their access to knowledge, ensuring the consolidation of social and symbolic power.

Within this context, the *Mahābhārata* presents a complex and ambivalent relationship to gendered epistemology. On the one hand, the epic reflects the normative structures of patriarchal society, including patrilineal inheritance, arranged marriage, and the instrumentalization of women's bodies in dynastic politics. On the other hand, it also preserves moments where women directly interrogate *dharma*, political authority, and moral responsibility. These moments are particularly significant because they disrupt the assumption that ethical and philosophical reasoning within IKS is an exclusively male domain.

Female characters in the *Mahābhārata* frequently articulate what may be described as a counter-epistemology—modes of knowing that emerge from marginal or constrained positions and challenge dominant interpretations of *dharma*. Draupadī's questioning of royal legality during the dice-hall episode, for instance, exposes the moral contradictions embedded within juridical and patriarchal authority. Her interrogation is not merely emotional protest but a form of ethical reasoning that foregrounds consent, autonomy, and justice. Similarly, Gāndhārī's repeated admonitions to Dhṛtarāṣṭra reveal an ethics of accountability grounded in moral witnessing rather than sovereign power.

These interventions destabilize normative interpretations of IKS that present *dharma* as fixed, consensual, or universally intelligible. Instead, the *Mahābhārata* reveals *dharma* as contingent, contested, and deeply implicated in structures of power. Women's voices play a crucial role in exposing these contradictions, demonstrating that ethical authority in Indian thought is not monolithic but dialogic. As Hildebeitel (2001) argues, the epic's narrative structure itself encourages debate and dissent, allowing marginalized voices to surface, even if temporarily or partially.

Importantly, women's epistemic interventions are not always articulated through direct speech. Silence, endurance, and suffering also function as significant modes of ethical expression within the epic. Feminist epistemology cautions against interpreting women's silences as passivity; rather, such silences often signal imposed constraints or strategic refusals within oppressive systems. In the *Mahābhārata*, the silencing of women frequently exposes the violence of patriarchal norms more starkly than overt resistance, thereby producing a form of implicit or negative knowledge.

By foregrounding these moments, the *Mahābhārata* complicates celebratory narratives of IKS as inherently egalitarian or inclusive. Instead, it reveals IKS as a contested epistemic field in which gendered hierarchies coexist with subversive possibilities. Women's voices—whether expressed through argument, protest, or silence—demonstrate that alternative ethical and epistemological frameworks have always existed within Indian intellectual traditions, even if they were marginalized in dominant modes of transmission.

Draupadī: Juridical Reason and Ethical Protest

Draupadī represents the most explicit and sustained challenge to patriarchal *dharma* in the *Mahābhārata*. Her intervention during the dice-hall (*sabhā*) episode constitutes one of the earliest articulations of juridical reasoning within the epic. By questioning whether Yudhiṣṭhira, having lost himself, retained the moral or legal authority to wager her body, Draupadī exposes the deep contradictions embedded within Kuru jurisprudence and patriarchal legal norms (Vyāsa, trans. Ganguli, 1883–1896). Her interrogation foregrounds questions of consent, autonomy, and personhood, thereby destabilizing the assumption that women are transferable property within kinship and political alliances.

Importantly, Draupadī's protest is not merely an emotional outburst but a rational ethical inquiry that appeals to principles of justice (*nyāya*) rather than ritualized interpretations of *dharma*. The

silence of the elders in response to her questions reveals the moral bankruptcy of institutional authority when confronted with gendered injustice. Feminist scholars have noted that Draupadī's speech functions as a counter-legal discourse that exposes the patriarchal foundations of royal law (Chakravarti, 2003).

Her public humiliation further symbolizes the systemic violence inflicted upon women within political and juridical structures. The disrobing episode illustrates how women's bodies become sites where sovereignty, honor, and power are negotiated. Yet Draupadī's refusal to accept silence or resignation positions her as the ethical conscience of the epic. Through sustained resistance, she articulates a subaltern critique of power that challenges both royal authority and normative interpretations of *dharma*, marking her as a central epistemic agent within Indian Knowledge Systems.

Kuntī and Gāndhārī: Maternal Ethics and Political Judgment

Kuntī and Gāndhārī embody distinct yet interconnected forms of maternal ethics that complicate conventional understandings of women's moral agency in the *Mahābhārata*. Kuntī's decisions—particularly her invocation of divine lineage, management of secrecy, and guidance in matters of succession—demonstrate a pragmatic ethical framework shaped by survival within rigid patriarchal constraints. Her moral reasoning is situational and relational, prioritizing continuity, protection, and political viability over abstract ideals. Rather than conforming to passive maternal stereotypes, Kuntī emerges as a strategic political actor whose knowledge is grounded in experience and foresight.

Gāndhārī's voluntary blindness operates simultaneously as an act of conformity to marital devotion and as a symbolic critique of patriarchal authority. While traditionally interpreted as self-effacement, her blindness can also be read as an ethical refusal to benefit from power structures that sustain injustice. Gāndhārī's repeated admonitions to Dhṛtarāṣṭra regarding his partiality toward the Kauravas demonstrate moral clarity and political judgment. Her curse upon Kṛṣṇa following the war asserts an ethical authority rooted in suffering and moral witnessing rather than sovereign or divine power (Hiltebeitel, 2001).

Together, Kuntī and Gāndhārī articulate a maternal epistemology that challenges the marginalization of women's ethical reasoning. Their interventions reveal that moral authority within the epic does not solely emanate from kings or warriors but is also produced through relational ethics, endurance, and critical judgment.

Marginal Women and Counter-Epistemologies

Subaltern wisdom in the *Mahābhārata* is not confined to royal or elite women. Marginal female figures such as Hidimbā and Sulabhā expand the epistemic boundaries of Indian Knowledge Systems by embodying alternative ethical and philosophical traditions. Hidimbā, positioned outside Aryan social norms as a forest-dwelling woman, asserts autonomy in matters of desire, marriage, and kinship. Her union with Bhīma, chosen rather than arranged, challenges Brahmanical ideals of lineage purity and patriarchal control, representing an ethical order rooted in consent and ecological belonging.

Sulabhā, the ascetic philosopher, offers one of the most explicit articulations of epistemic equality in the epic. Her philosophical debate with King Janaka directly contests gendered assumptions about intellectual authority and spiritual attainment. By asserting that liberation and knowledge are not contingent upon gender, caste, or royal status, Sulabhā articulates a radical counter-epistemology within the *Mahābhārata* (Hiltebeitel, 2011).

These marginal figures demonstrate that IKS encompasses dissenting and plural knowledge traditions that are frequently erased in canonical and Brahmanical readings. Their presence underscores the argument that Indian intellectual traditions have always contained alternative epistemic possibilities, even when such voices were systematically marginalized.

Silence, Suffering and Knowledge

Women's silences in the *Mahābhārata* must be read not as absence, passivity, or consent but as historically produced constraints shaped by patriarchal and caste-based power structures. Feminist hermeneutics cautions against equating speech with agency and silence with powerlessness; instead, silence often emerges as a response to exclusion from authoritative discursive spaces (Butler, 1997).

Within the epic, women's silences frequently reveal the limits of dominant ethical and juridical frameworks, exposing the violence embedded in normative interpretations of *dharma*.

In several narrative moments, women are rendered silent not by choice but by the refusal of male authorities to acknowledge their claims. Draupadī's unanswered questions in the dice-hall exemplify how institutional silence functions as a mechanism of epistemic injustice, where women's rational and ethical reasoning is systematically invalidated. Similarly, Gāndhārī's prolonged endurance of suffering, often misread as submissive devotion, can be interpreted as ethical witnessing—a mode of knowledge produced through sustained attention to injustice rather than through direct intervention.

Suffering itself operates as a critical epistemic site in the *Mahābhārata*. Feminist scholars have emphasized that marginalized subjects often acquire moral insight precisely through their exposure to structural violence (Chakravarti, 2003). Women's suffering in the epic is not merely narrative excess but a means through which ethical contradictions within social and political systems are revealed. Silence, in this sense, becomes a form of negative knowledge—one that signals the inadequacy of prevailing moral vocabularies to account for women's lived realities.

Reading silence as knowledge challenges masculinist epistemologies that privilege speech, debate, and textual authority. It also complicates celebratory narratives of Indian Knowledge Systems by foregrounding the epistemic costs of exclusion. Women's silences in the *Mahābhārata* thus demand interpretive attention, urging scholars to listen not only to what is spoken but also to what remains unsayable within dominant frameworks of power.

Conclusion

A feminist re-reading of the *Mahābhārata* reveals Indian Knowledge Systems not as a unified or timeless tradition but as a dynamic and contested epistemic field shaped by hierarchies of gender, caste, and power. Far from occupying marginal or decorative roles, female characters emerge as central contributors to ethical reasoning, political judgment, and philosophical critique. Through speech, protest, negotiation, suffering, and silence, women articulate subaltern epistemologies that challenge patriarchal monopolies over *dharma*, authority, and knowledge production. Figures such as Draupadī, Kuntī, Gāndhārī, Hidimbā, and Sulabhā demonstrate that ethical authority in the epic does not emanate solely from kings, warriors, or sages. Instead, it is continuously negotiated through lived experience, relational ethics, and moral dissent. Women's interventions expose the contradictions within juridical, political, and divine authority, revealing *dharma* as contingent, situational, and deeply implicated in structures of power rather than as a stable moral absolute.

Re-centering these voices has significant implications for contemporary engagements with Indian Knowledge Systems. It challenges uncritical recuperations of tradition that overlook internal inequalities and underscores the necessity of feminist critique in projects of decolonizing knowledge. Recognizing women as knowledge-producers and moral agents within classical Indian thought enables a more inclusive, reflexive, and ethically responsible understanding of IKS. Ultimately, attending to women's voices—and silences—in the *Mahābhārata* affirms that subaltern wisdom has always been present within Indian intellectual traditions. What is required is not the invention of new epistemologies, but a transformation of interpretive frameworks to make visible those voices long rendered unheard.

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Synergistic Integration of Ultrasonic Cavitation and Microbial Bioremediation for Enhanced Sewage Treatment and Sludge Valorization

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Abstract

Water pollution caused by untreated municipal and industrial wastewater remains a major global environmental challenge. Conventional sewage treatment systems often exhibit limited efficiency in removing recalcitrant organic pollutants and generate excessive sludge requiring costly disposal. This paper presents a conceptual and integrative treatment framework combining ultrasonic cavitation as a physical pre-treatment with microbial bioremediation for enhanced sewage purification and sludge valorization. Ultrasonic cavitation disrupts sludge flocs, reduces particle size, increases solubilization of organic matter, and enhances pollutant bioavailability, thereby improving microbial degradation efficiency. Subsequently, tailored microbial consortia accelerate organic matter mineralization, nutrient transformation, and pathogen suppression. The integrated process reduces sludge volume, improves biochemical and chemical oxygen demand removal, and enables conversion of stabilized sludge into nutrient-rich biofertilizer, supporting circular-economy objectives. The proposed framework offers an eco-friendly, scalable, and energy-efficient alternative for modern wastewater management systems.

Keywords: Ultrasonic cavitation; Microbial bioremediation; Sewage treatment; Sludge valorization; Bioavailability enhancement; Sustainable wastewater management

1. Introduction

Rapid industrialization, population growth, and urban expansion have significantly increased the discharge of untreated or inadequately treated wastewater into natural water bodies. Such effluents contain high concentrations of organic matter, nutrients, pathogens, and toxic compounds, posing severe risks to aquatic ecosystems and public health. Conventional wastewater treatment technologies, including activated sludge systems and sedimentation-based processes, are often constrained by high operational costs, incomplete removal of persistent pollutants, and excessive sludge production.

Recent research has highlighted the potential of physical pre-treatment techniques to enhance biological treatment efficiency. Among these, ultrasonic cavitation has emerged as a promising approach due to its ability to disintegrate sludge flocs, enhance solubilization of organic matter, and improve biodegradability. When combined with microbial bioremediation, ultrasonic treatment can significantly accelerate organic matter degradation, reduce sludge volume, and facilitate nutrient recovery.

This paper proposes a synergistic ultrasonic–microbial treatment framework for sewage purification and sludge valorization, emphasizing its mechanistic advantages, operational benefits, and sustainability potential. This study is presented as a conceptual framework based on existing literature, rather than an experimental investigation

2. Integrated Sewage Treatment Framework

The proposed treatment system consists of the following sequential stages:

Raw Sewage → Preliminary Screening and Grit Removal → Primary Sedimentation → Ultrasonic Pre-Treatment → Biological (Microbial) Treatment → Secondary Clarification → Disinfection → Reuse and Sludge Composting

3. Preliminary Treatment and Primary Sedimentation

Preliminary screening removes large debris such as plastics, rags and fibrous materials, preventing equipment damage and clogging. Grit removal eliminates heavy inorganic particles including sand and gravel, thereby protecting downstream reactors. Primary sedimentation allows settleable solids to separate by gravity, reducing suspended solids and organic load prior to ultrasonic conditioning. Settled sludge is periodically withdrawn for further processing.

4. Ultrasonic Pre-Treatment

4.1 Principle of Ultrasonic Cavitation

Ultrasonic pre-treatment involves exposing wastewater or sludge to high-frequency sound waves, typically in the range of 20–40 kHz. These waves generate alternating compression and rarefaction cycles in the liquid, resulting in the formation and violent collapse of microbubbles. Cavitation collapse produces localized high temperatures and pressures, micro-jets, and shock waves that physically disrupt suspended solids and microbial flocs.

4.2 Effects on Sewage Characteristics

Ultrasonic cavitation induces:

- Disintegration of sludge flocs and microbial aggregates
- Reduction in particle size and increased surface area
- Solubilization of particulate organic matter
- Partial inactivation of pathogens through mechanical stress and radical formation

These effects enhance soluble chemical oxygen demand (SCOD) and improve substrate accessibility for microbial metabolism.

4.3 Operational Parameters

Optimized ultrasonic conditions typically involve low-to-moderate power densities (0.1–2 W mL⁻¹) and short exposure times (5–15 minutes), sufficient to enhance biodegradability while preserving beneficial microbial populations.

5. Microbial Bioremediation

5.1 Biological Treatment Following Ultrasonic Conditioning

Following ultrasonic pre-treatment, wastewater is subjected to biological treatment using activated sludge systems, biofilm reactors, or anaerobic digesters. The pre-disintegrated organic matter serves as an easily accessible substrate for microbial consortia, accelerating biodegradation processes.

5.2 Microbial Communities and Functional Roles

Key microbial groups involved include aerobic heterotrophs for organic matter oxidation, nitrifying and denitrifying bacteria for nitrogen transformation, anaerobic methanogens for sludge stabilization, and fungi for degradation of complex polymers. Ultrasonic pre-treatment enhances microbial growth kinetics by improving nutrient availability and oxygen transfer.

5.3 Pathogen Suppression

The combined effects of ultrasonic cavitation and microbial competition reduce pathogen survival. Beneficial microbes such as *Bacillus* spp. and *Pseudomonas* spp. further suppress pathogenic organisms through antimicrobial metabolite production.

6. Secondary Clarification and Disinfection

Secondary clarifiers separate treated effluent from biological sludge. Clarified water undergoes final disinfection using conventional methods such as chlorination or ultraviolet irradiation prior to discharge or reuse. Settled sludge is directed toward stabilization and valorization processes.

7. Sludge Valorization and Biofertilizer Production

Ultrasonically conditioned sludge exhibits enhanced biodegradability and nutrient availability. Composting with selected microbial inoculants, including *Bacillus*, *Trichoderma*, and *Azotobacter*, enables conversion into pathogen-free, nutrient-rich biofertilizer. Proper control of moisture content, carbon-to-nitrogen ratio, and thermophilic conditions ensures product stability and safety.

8. Advantages and Sustainability Implications

The integrated ultrasonic–microbial framework offers:

- Improved BOD and COD removal efficiency
- Reduced sludge volume and disposal costs
- Enhanced pathogen inactivation without excessive chemical usage
- Recovery of nutrients supporting circular-economy principles

The system is adaptable to existing wastewater treatment infrastructure and scalable for municipal and industrial applications.

9. Limitations and Future Perspectives

Despite its advantages, ultrasonic treatment involves additional energy input, necessitating optimization to balance performance gains and operational costs. Future research should focus on pilot-scale studies, life-cycle assessment, energy efficiency analysis, and long-term microbial stability to facilitate large-scale implementation.

10. Conclusion

The synergistic integration of ultrasonic cavitation with microbial bioremediation represents a promising advancement in wastewater treatment technology. By enhancing organic matter biodegradability, improving microbial efficiency, and enabling sludge valorization, the proposed framework provides a sustainable and scalable solution to contemporary sewage management challenges.

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The Astika-Nastika Dichotomy in Indian Philosophy

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Abstract

The classification of philosophical schools in India hinges significantly upon the **Astika-Nastika** dichotomy, a crucial framework that distinguishes systems based not primarily on the belief in a God (*Ishvara*), but on the acceptance or rejection of the **Vedas** as an infallible epistemic authority. *Astika*, conventionally termed "orthodox," comprises the six major schools (*darśanas*) that affirm Vedic authority, while *Nastika*, or "heterodox," includes those that fundamentally deny or reject the Vedas' infallibility, preferring other sources of knowledge and often challenging prevailing socio-religious norms. This article explores the classical distinction, identifies the principal schools within each category, and discusses the key philosophical concepts that define this enduring division.

Key Words

Astika, Nastika, Vedas, Darśana, Orthodox, Heterodox, Pramāṇa, Ātman, Moksha, Cārvāka, Buddhism, Jainism, Sāṃkhya, Vedānta.

The Foundational Divide

The terms *Astika* (from the Sanskrit root *asti*, meaning "there is/exists") and *Nastika* (*na-asti*, meaning "there is not/does not exist") delineate the two broad streams of Indian philosophical thought. While in modern colloquial Indian languages these terms often translate to "theist" and "atheist" respectively, their original and philosophical meaning is more nuanced. The core criterion for classification is the stance toward the **Vedas**, the ancient body of sacred texts. *Astika* schools are those that accept the Vedas as a valid and ultimate source of knowledge (*Śruti* or verbal testimony/revelation), recognizing their authority in matters of ultimate reality, moral law (*dharma*), and liberation. Conversely, *Nastika* schools are those that reject or do not rely on the Vedas as a supreme authority, formulating their metaphysical and epistemological positions independently. This distinction, established early in the development of Indian systems, allowed for a rich and competitive intellectual environment, where schools constantly debated and refined their doctrines.

The Astika Schools (Orthodox)

The **Astika** tradition, also known as the **orthodox** schools, encompasses the six classical systems, or *ṣaḍ Darśanas*: **Nyāya** (logic), **Vaiśeṣika** (atomistic pluralism), **Sāṃkhya** (dualism), **Yoga** (meditation and practice), **Pūrva Mīmāṃsā** (exegesis of Vedic ritual), and **Vedānta** (Upanishadic philosophy). Despite their shared allegiance to the Vedas, these schools exhibit significant diversity in their core doctrines, particularly concerning the nature of reality, the soul, and liberation. For example, the Sāṃkhya school is non-theistic in its classical formulation, positing a dual reality of **Puruṣa** (consciousness) and **Prakṛti** (matter) without the necessity of a creator God; yet, it is firmly *Astika* because it accepts the Vedic tradition. The Vedānta school, especially Advaita Vedānta, is profoundly theistic or monistic, emphasizing the identity of the individual self (**Ātman**) with the ultimate reality (**Brahman**). The common thread among them, beyond Vedic authority, is a general acceptance of core concepts like **Ātman** (Self), **Karma** (action and consequence), **Samsāra** (cycle of rebirth), and **Moksha** (liberation), although their interpretations of these concepts vary widely.

The Nastika Schools (Heterodox)

The **Nastika** tradition, or the **heterodox** schools, emerged largely as movements critical of the Vedic ritualism, the caste system, and the authority of the Brahmins. These systems reject the Vedas outright or treat them as non-authoritative. The three most prominent *Nastika* systems are **Cārvāka** (or **Lokayata**), **Buddhism** and **Jainism**. The Cārvāka school is the most radical, advocating a form of **materialism** and **skepticism**, accepting only **Pratyakṣa** (direct perception) as a valid means of knowledge (*pramāṇa*). They deny the existence of the Self (**Ātman**), a God (*Ishvara*),

the afterlife, and the law of Karma, embracing hedonism as the highest goal of human life. Buddhism and Jainism, while rejecting Vedic authority, are sophisticated philosophical and religious traditions that accept the doctrines of Karma and Saṃsāra. However, Buddhism denies the existence of a permanent, eternal self (*Anātman*), which is a key tenet distinguishing it from most *Astika* schools, and focuses on achieving **Nirvāṇa** through the Four Noble Truths and the Eightfold Path. Jainism, non-theistic and emphasizing extreme **Ahimsa** (non-violence), affirms the existence of a multitude of eternal souls (*Jīva*).

Conclusion

The Astika-Nastika classification serves as the primary organizing principle for understanding the vast and diverse landscape of Indian philosophy. It is a distinction rooted in the acceptance of scriptural authority, which in turn influences profound differences in **epistemology** (theory of knowledge), **metaphysics** (theory of reality), and the understanding of **soteriology** (theory of salvation). This ancient dichotomy continues to provide a framework for studying the intellectual debates that have shaped the spiritual and cultural history of India, highlighting the co-existence of revealed tradition and rational, independent inquiry.

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Life Skill Education for Teacher Trainee

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Abstract

In the contemporary educational landscape, life skill education is gaining global recognition as a key determinant of human development. Beyond academic proficiency, today's teachers must demonstrate emotional resilience, ethical integrity, and social adaptability. Teacher trainees, as the architects of future generations, must therefore be equipped with essential life skills that promote not only their professional efficiency but also the holistic development of learners. This article critically examines the concept, importance, integration, and pedagogical approaches of life skill education for teacher trainees, while analyzing the existing challenges and proposing strategic interventions for effective implementation.

Keywords: Life Skill Eduaction, Teacher trainee, Teacher Education Program

Introduction

Education in the twenty-first century has evolved far beyond the traditional boundaries of rote learning and content delivery. It now encompasses the holistic development of an individual's intellectual, emotional, social and ethical dimensions. Within this broader educational philosophy, life skill education has emerged as a critical element. It prepares individuals to face real-life challenges with confidence, adaptability and moral judgment.

The World Health Organization (WHO, 1997) defines life skills as 'abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life.' For teacher trainees, life skill education is not merely an add-on component; it is a professional necessity. It bridges the gap between theoretical knowledge and practical classroom realities, helping them navigate diverse student behaviors, manage stress, and build an emotionally healthy learning environment.

Concept of Life Skill Education

Life skill education refers to a structured approach that develops a set of psychosocial and interpersonal abilities enabling individuals to make informed decisions, communicate effectively, and handle stress and emotions in a balanced manner. It is a process-oriented learning model that emphasizes human values, emotional stability, and social cooperation. In teacher education, this concept extends beyond academic proficiency to the formation of reflective, empathetic, and responsible educators.

The UNICEF (2012) framework on life skills emphasizes empowerment through selfawareness, communication, and critical thinking. The NCERT (2008) further identifies ten core life skills—self-awareness, empathy, critical thinking, creative thinking, decisionmaking, problem-solving, effective communication, interpersonal relationships, coping with stress, and coping with emotions—which together form the foundation of personal and professional maturity in teachers. When integrated into teacher education, these skills help future educators understand themselves, relate better to others, and foster an inclusive and dynamic classroom culture.

Core Life Skills and Their Relevance to Teacher Trainees

- Self-awareness – Understanding one's emotions, strengths and limitations.
- Empathy – Sensitivity to others' feelings and perspectives.
- Critical Thinking – Objective analysis and evaluation of issues.
- Creative Thinking – Innovation and originality in approach.
- Decision-Making – Choosing the best course of action.
- Problem-Solving – Identifying and resolving conflicts or issues.
- Effective Communication – Expressing ideas clearly and assertively.
- Interpersonal Relationships – Building positive social interactions.
- Coping with Stress – Managing work-related anxiety and workload.

- Coping with Emotions – Regulating personal feelings responsibly.

For a teacher trainee, life skills are the bridge between pedagogical theory and classroom practice. Self-awareness enables teachers to recognize their own biases, strengths and limitations, allowing them to teach with authenticity and fairness. Empathy helps teachers connect with students' emotional and intellectual needs, fostering inclusivity and support within diverse classrooms. Critical thinking and creative thinking empower teacher trainees to analyze educational problems, challenge stereotypes and devise innovative teaching strategies suited to the needs of 21st-century learners. Decision-making and problem-solving are equally important, as teachers must constantly address behavioral issues, adapt lesson plans and resolve conflicts in real-time situations. Effective communication and interpersonal relationship skills enable teachers to maintain constructive dialogue with students, parents and colleagues. Finally, coping with stress and coping with emotions ensure that teachers maintain emotional equilibrium and professional composure, especially in demanding educational environments. Together, these competencies transform teacher trainees into emotionally intelligent and ethically grounded professionals.

Importance of Life Skill Education for Teacher Trainees

The significance of life skill education in teacher training lies in its direct influence on both professional effectiveness and personal well-being. Life skills enhance professional competence by improving classroom management, communication and the ability to motivate learners. Teachers who possess strong interpersonal and emotional skills are better equipped to handle classroom challenges, maintain discipline positively and create supportive learning environments.

Moreover, life skills foster emotional intelligence, enabling teachers to manage their own emotions while understanding those of their students. This emotional balance reduces burnout and promotes reflective teaching practices. Reflective teachers constantly analyze their classroom interactions, identify areas of improvement, and refine their teaching strategies. Life skill education also encourages ethical responsibility and empathy, which are essential in shaping morally responsible citizens. It prepares teacher trainees to face the unpredictable realities of modern education—technological change, diverse student populations and evolving societal expectations—by cultivating resilience, adaptability and creativity. In the broader sense, when teachers embody these life skills, they naturally transmit them to their students, creating a ripple effect of emotional and social intelligence throughout the learning community.

Integration of Life Skills in Teacher Education Programs

Integrating life skill education into teacher training requires a conscious and systematic approach. The curriculum of teacher education programs should embed life skills not as separate subjects but as integral elements across pedagogy, practicum and internship components. The National Education Policy (NEP, 2020) strongly advocates holistic and multidisciplinary learning that includes socio-emotional competencies, ethical reasoning and communication skills as core teacher attributes. Experiential learning methods such as role plays, simulations, case studies and reflective journals can effectively promote life skills among teacher trainees. Role plays and simulations allow trainees to experience real-life classroom situations, helping them develop empathy, decision-making and problem-solving abilities. Case studies enhance analytical and critical thinking, while group discussions and collaborative projects nurture teamwork and communication. Reflective journals and peer mentoring encourage self-awareness and continuous selfimprovement. Thus, integrating life skills through experiential and participatory learning not only improves teaching competence but also nurtures the teacher's personal growth.

Challenges in Implementation

Despite its proven importance, the implementation of life skill education in teacher training faces several challenges. One of the primary issues is curricular rigidity. Teacher education programs are often overloaded with theoretical content, leaving limited space for skill-based learning. Additionally, many institutions lack adequately trained faculty members who can facilitate life skill education effectively. There is also an absence of standardized tools to assess qualitative outcomes

such as empathy, communication and emotional intelligence. Further, socio-cultural barriers often discourage open discussions about emotions, mental health and stress management—areas that are central to life skill development. The evaluation systems used in most teacher training institutions tend to prioritize content mastery over holistic growth, resulting in a lack of emphasis on behavioral and emotional competencies. These challenges underscore the need for a systemic and policy-driven approach to embed life skills as measurable learning outcomes within teacher education.

Strategies for Effective Implementation

For life skill education to become a meaningful part of teacher training, several strategies must be adopted at institutional and policy levels. First, curriculum frameworks must be redesigned to include dedicated modules on life skill education that are both theory- and practice-oriented. These modules should emphasize experiential learning, reflection, and real-life application rather than rote memorization. Continuous professional development programs should be organized for teacher educators to enhance their understanding and facilitation of life skill pedagogy. Institutions should adopt participatory and student-centered methods that encourage self-expression and collaboration among trainees. The integration of technology can also play a vital role—using e-learning modules, digital storytelling and simulations to make life skill training interactive and accessible. Regular monitoring, mentoring and formative evaluation should be incorporated to measure the progress of teacher trainees in developing these competencies. Moreover, institutional leadership must actively promote a culture that values emotional well-being, inclusivity and empathy as indicators of educational excellence.

Conclusion

Life skill education is not a peripheral aspect of teacher training but its very foundation. It nurtures the holistic development of teacher trainees, enabling them to balance intellect with emotion, and knowledge with empathy. Teachers with strong life skills contribute to classrooms that are inclusive, innovative and humane. In a world characterized by rapid technological changes, social complexities and emotional volatility, life skills equip teachers with resilience, adaptability and vision. The implementation of NEP 2020 has further reinforced the need for such holistic competencies in teacher preparation. As educators, when teacher trainees internalize these skills, they become agents of positive change—mentors who inspire, guide and empower future generations to lead with wisdom and compassion. Life skill education, therefore, is not just an educational necessity; it is an ethical and societal imperative for the sustainability and progress of education in India and beyond.

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सरदार पटेल यांची राष्ट्रीय एकात्मतेतील भूमिका

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प्रस्तावना

सरदार वल्लभभाई पटेल हे एक प्रमुख नेते होते, ज्यांनी भारताला स्वतंत्र राष्ट्र बनवण्यात महत्त्वपूर्ण भूमिका बजावली, तसेच देशाच्या एकीकरणासाठी अथक परिश्रम घेतले. भारताला स्वातंत्र्य मिळाले तेव्हा देशासमोर सर्वात मोठे आव्हान होते. राष्ट्रीय एकात्मता आणि भौगोलिक अखंडता. सुमारे ५६५ संस्थाने, विविध जाती-धर्म, भाषा व सांस्कृतिक भिन्नता असलेला भारत एकसंध राष्ट्र म्हणून उभा करणे ही अत्यंत कठीण जबाबदारी होती. या निर्णायक टप्प्यावर सरदार वल्लभभाई पटेल यांनी जे नेतृत्व केले, त्यामुळेच आजचा एकसंध भारत अस्तित्वात आहे. त्यांच्या खऱ्या देशभक्तीमुळे, दृढ विश्वासांमुळे आणि राष्ट्राप्रती असलेल्या समर्पणामुळे त्यांना 'भारताचे लोहपुरुष' म्हणून ओळखले जाते

संशोधनाची उद्दिष्टे

1. सरदार पटेल यांची राष्ट्रीय एकात्मतेविषयीची संकल्पना समजून घेणे
2. संस्थानांच्या विलीनीकरणातील त्यांच्या भूमिकेचे विश्लेषण करणे
3. गृहमंत्री म्हणून त्यांनी राबविलेल्या धोरणांचा अभ्यास करणे

संशोधन पद्धती

या संशोधनासाठी ऐतिहासिक व वर्णनात्मक पद्धतीचा अवलंब करण्यात आला आहे. दुय्यम साधनसामग्री जसे की पुस्तके, संशोधन लेख, आत्मचरित्रे आणि ऐतिहासिक नोंदी यांचा उपयोग करण्यात आला आहे. आजही भारत जातीय, भाषिक व प्रादेशिक आव्हानांना सामोरा जात आहे. अशा वेळी सरदार पटेल यांचे एकात्मतेचे विचार, प्रशासकीय शिस्त आणि राष्ट्रनिष्ठा अधिकच महत्त्वाची ठरते. Statue of Unity हे त्यांच्या योगदानाचे प्रतीक आहे. सरदार वल्लभभाई पटेल महात्मा गांधींच्या विचारांनी प्रभावित झाले होते. आणि त्यांच्याच प्रेरणेने ते राजकारणात सामील झाले. नंतर त्यांनी भारतीय राष्ट्रीय काँग्रेसमध्ये स्थान मिळवले. १९१८ मध्ये, पटेलानी खेडा आंदोलनाचे नेतृत्व केले, जिथे दुष्काळाच्या काळात शेतकऱ्यांवर कर भरण्याची सक्ती केली जात होती. त्यांनी शेतकऱ्यांना एकत्र करून या संघर्षाचे नेतृत्व केले आणि शेतकऱ्यांना सरकारला कर भरण्यापासून मुक्त केले. सरकारने शेतकऱ्यांच्या मागण्या मान्य केल्या आणि त्यांच्यापुढे नमते घेतले. हे वल्लभभाई पटेल यांचे पहिले मोठे यश होते.

पटेल यांनी मिळवलेले दुसरे महत्त्वाचे यश १९२८ साली झालेल्या बारडोली सत्याग्रहाच्या वेळी होते. वल्लभभाई पटेल यांच्या नेतृत्वाखाली बारडोली गावातील शेतकऱ्यांनी मुंबईच्या राज्यपालांनी केलेल्या महसूल वाढी विरोधात आंदोलन केले. बारडोलीमध्ये १३७ गावांचा एक मोठा प्रदेश समाविष्ट होता, ज्याची लोकसंख्या सुमारे ८७,००० होती. या आंदोलनाच्या विजयामुळे बारडोलीच्या महिलांनी त्यांना 'सरदार' ही पदवी दिली, जी वल्लभभाई पटेल यांची अदम्य निर्भयता आणि इच्छाशक्ती दर्शवते. बारडोली सत्याग्रहा दरम्यान, त्यांनी मोठ्या संख्येने महिलांशी सल्लामसलत आणि संवाद साधला आणि या आंदोलनाची रूपरेषा तयार केली. अशा प्रकारे, पटेल यांनी महिलांना राजकारणाच्या क्षेत्रात आणले. हिंदू कोड बिलाला दिलेल्या त्यांच्या पाठिंब्यामुळे त्यांनी महिलांच्या हक्कांचे आणि महिला सक्षमीकरणाचे व्रत घेतले. स्थानिक समुदायांना सक्षम करण्यासाठी आणि विशेषतः महिलांवर

लक्ष केंद्रित करण्यासाठी, प्रतिष्ठित 'अमूल-आनंद मिल्क प्रोड्यूसर्स युनियन लिमिटेड' या दुग्ध सहकारी संस्थेची मुळे रोवली गेली.

स्वातंत्र्याच्या वेळी, भारताची अनेक संस्थानांमध्ये विभागणी झाली होती आणि या संस्थानांसमोर फक्त दोनच पर्याय होते: एकतर भारत किंवा पाकिस्तानमध्ये सामील होणे किंवा स्वतंत्र राहणे. ही पटेल यांची मुत्सद्देगिरीची हुशार रणनीती होती की, हैदराबाद, जुनागड, काश्मीर आणि जम्मू या राज्यांच्या विरोधाला सामोरे जाऊनही ते या संस्थानांना भारतात विलीन करण्यात यशस्वी झाले. १९४७ साली, भारत-पाकिस्तान युद्धादरम्यान, वल्लभभाई पटेल यांनी भारतीय सैन्याचे सरसेनापती म्हणून काम केले आणि भारताला विजयाकडे नेले. राष्ट्र एकत्रीकरणाच्या धोरणामुळे त्यांना भारताचे 'बिस्मार्क' म्हणून ओळखले जाते.

स्वतंत्र भारताचे पहिले गृहमंत्री म्हणून, पटेलानी देशात शांतता आणि सलोखा राखण्यात आपली बुद्धिमत्ता दाखवली, कारण त्या वेळी भारत विविध जातीय दंगली आणि स्वातंत्र्यानंतर लगेचच निर्माण झालेल्या काही अशांत तणावांना सामोरे जात होता. त्यांनी अशा प्रशासकीय चौकटीसाठी एक व्यासपीठ तयार केले, जे देशाची सेवा करण्यावर भर देत होते. सरदार पटेलाना विश्वास होता की राष्ट्राचा विकास केवळ सामाजिक विकासाद्वारेच शक्य आहे. आपल्या प्रत्येक राजकीय सभेत, पटेलानी सामाजिक विकास आणि सामाजिक सुधारणांवर लक्ष केंद्रित करण्यावर भर दिला. त्या वेळी भाषा, धर्म, परंपरा, जात आणि वर्ग यांच्या स्वरूपातील सामाजिक दुष्प्रवृत्ती मोठ्या प्रमाणावर पसरलेल्या होत्या. विविध प्रदेशांना एकत्र आणण्याच्या प्रयत्नात असताना पटेलानी अशा आव्हानात्मक टप्प्यांमधून जावे लागले. परंतु त्यांच्या योग्यतेमुळे आणि बुद्धिमत्तेमुळे, त्यांनी या सर्व अडथळ्यांवर मात केली आणि हे प्रदेश एकत्र आणण्यात यश मिळवले.

संविधानाच्या निर्मितीमध्ये सरदार पटेलानी महत्वाची भूमिका बजावली. भारतीय संविधानाच्या पहिल्याच अनुच्छेदातील "भारत, म्हणजेच इंडिया, राज्यांचा संघ असेल" ही संकल्पना केवळ त्यांच्यामुळेच शक्य झाली. महात्मा गांधींच्या शिस्त, अध्यात्म, अहिंसा आणि नैतिक सामर्थ्याच्या धोरणांनी व तत्त्वांनी ते खूप प्रभावित झाले होते. त्यांनी ब्रिटिशांच्या शोषक धोरणांविरुद्ध चालवलेल्या विविध चळवळींमध्ये भाग घेतला आणि अखिल भारतीय स्वातंत्र्य लढ्याचे सदस्य बनले. काँग्रेसची पुनर्रचना केल्यानंतर सरदार पटेल संसदीय मंडळाचे अध्यक्ष झाले आणि त्यांनी पक्षाला कॅबिनेट मिशन योजना स्वीकारण्यास व अवलंबण्यास मदत केली, ज्यामुळे १९४६ साली हंगामी सरकारची स्थापना झाली. सरदार पटेलानी मूलभूत हक्कांच्या बाबतीत महत्त्वपूर्ण लक्ष घातले. हंगामी अहवालात समाविष्ट केलेल्या परिशिष्टात, नागरिकत्व, समानता, नागरिकांचे स्वातंत्र्य, धार्मिक स्वातंत्र्य, सांस्कृतिक हक्क, शैक्षणिक हक्क आणि घटनात्मक उपायांचा हक्क यांसारखे विविध मूलभूत हक्क नमूद करण्यात आले होते. हक्कांचे न्यायप्रविष्ट आणि गैर-न्यायप्रविष्ट श्रेणींमध्ये विभाजन करणे हा संविधान सभेत चर्चेचा विषय बनला. नागरिकत्वाच्या कलमावर, सरदार पटेलानी दावा केला की राज्य कोणत्याही नागरिकाशी जात, वंश, धर्म किंवा लिंगाच्या आधारावर भेदभाव करणार नाही.

सरदार पटेलानाच्या मते, काँग्रेसचे ध्येय एका स्वतंत्र लोकशाही राज्याची स्थापना करणे हे होते, जिथे प्रत्येक सदस्याला आत्म-पूर्तता आणि आत्म-अभिव्यक्तीसाठी समान संधी दिल्या जातील, जेणेकरून प्रत्येकजण किमान सुसंस्कृत जीवनमान प्राप्त करू शकेल. भारताच्या ५६२ संस्थानांना एकत्र आणण्यात दिलेल्या योगदानाबद्दल, सरदार पटेलानी जयंती, ३१ ऑक्टोबर, २०१४ पासून 'राष्ट्रीय एकता दिन' म्हणून साजरी केली जाते. त्यामुळे असे म्हणता येईल की, सरदार पटेलानी राष्ट्रनिर्माणाची संकल्पना पूर्णपणे लोकशाही, समानता, नागरी स्वातंत्र्य आणि सामाजिक न्यायावर आधारित होती. राष्ट्रनिर्मितीमध्ये संस्कृती, धर्म आणि जातीय ओळखीचा वापर व गैरवापर करण्यास त्यांनी विरोध केला. एकसंघ भारताचे शिल्पकार म्हणून ते नेहमीच स्मरणात राहतील.

निष्कर्ष

सरदार वल्लभभाई पटेल यांचे भारतीय राष्ट्रीय एकात्मतेतील योगदान अतुलनीय आहे. त्यांनी घेतलेले निर्णय नसते, तर आजचा भारत कदाचित तुकड्यांत विभागलेला असता. एकसंध, मजबूत आणि सार्वभौम भारताच्या निर्मितीत सरदार पटेल हे खरे शिल्पकार होते. त्यामुळे भारतीय इतिहासात त्यांचे स्थान अढळ आहे.

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राजमाता जिजाऊ : राष्ट्रनिर्मितीतील मातृत्व आणि नेतृत्वाचा आदर्श

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सारांश:-

भारतीय इतिहासात राष्ट्रनिर्मितीच्या प्रक्रियेत केवळ राजे, योद्धे किंवा प्रशासकच नव्हे तर मातृत्वाच्या मूल्यांवर आधारित नेतृत्व देणाऱ्या स्त्रियांचेही महत्त्वपूर्ण योगदान आहे. या संदर्भात राजमाता जिजाऊ यांचे स्थान अत्यंत मोलाचे आहे. शिवछत्रपती शिवाजी महाराजांसारख्या महान राष्ट्रनायकाच्या घडणीत जिजाऊ मातांनी दिलेले संस्कार, राष्ट्रभक्तीची जाणीव, स्वराज्याची संकल्पना आणि धर्मनिष्ठा या घटकांचा सखोल अभ्यास करणे हा या संशोधन पेपरचा मुख्य उद्देश आहे. प्रस्तुत संशोधनात राजमाता जिजाऊ यांचे मातृत्व केवळ जैविक न राहता ते राष्ट्रनिर्मितीचे प्रभावी साधन कसे ठरले, याचा ऐतिहासिक व तात्त्विक दृष्टिकोनातून अभ्यास करण्यात आला आहे. त्यांच्या जीवनकार्याचा अभ्यास केल्यास भारतीय स्त्री नेतृत्वाचा आदर्श स्पष्टपणे समोर येतो.

मुख्य शब्द:- राजमाता जिजाऊ, मातृत्व, नेतृत्व, राष्ट्रनिर्मिती, शिवाजी महाराज, स्वराज्य

प्रस्तावना:-

भारतीय समाजरचनेत मातृत्वाला अत्यंत पवित्र आणि सर्जनशील शक्ती मानले जाते. मातृत्व केवळ अपत्य जन्माला घालणे एवढ्यापुरते मर्यादित नसून, ते मूल्यसंस्कार, चारित्र्यनिर्मिती आणि राष्ट्रघडणीची बीजे रोवणारे माध्यम आहे. इतिहासातील अनेक महान व्यक्तिमत्त्वांच्या मागे प्रेरणादायी मातांची भूमिका दिसून येते. मराठा इतिहासाच्या संदर्भात राजमाता जिजाऊ यांचे योगदान अतुलनीय आहे. त्यांनी शिवाजी महाराजांना केवळ एक पराक्रमी योद्धा नव्हे तर एक आदर्श राजा, कुशल प्रशासक आणि राष्ट्रनायक म्हणून घडविले.

संशोधनाची उद्दिष्टे:-

१. राजमाता जिजाऊ यांच्या मातृत्व संकल्पनेचा अभ्यास करणे.
२. शिवाजी महाराजांच्या व्यक्तिमत्त्व घडणीत जिजाऊंच्या नेतृत्वाचा प्रभाव विश्लेषित करणे.
३. राष्ट्रनिर्मितीच्या प्रक्रियेत स्त्री नेतृत्वाचे महत्त्व अधोरेखित करणे.
४. समकालीन समाजासाठी जिजाऊ मातांच्या विचारांची उपयुक्तता तपासणे.

संशोधन पद्धती:-

या संशोधनासाठी ऐतिहासिक व विश्लेषणात्मक पद्धतीचा अवलंब करण्यात आला आहे. प्राथमिक व दुय्यम स्रोतांचा वापर करण्यात आला असून त्यामध्ये बखरी, इतिहासग्रंथ, संशोधनात्मक लेख, संदर्भग्रंथ व आधुनिक अभ्यासकांचे लेखन यांचा समावेश आहे. प्राप्त माहितीचे तुलनात्मक आणि विवेचनात्मक विश्लेषण करून निष्कर्ष मांडण्यात आले आहेत.

राजमाता जिजाऊ यांचे जीवन आणि ऐतिहासिक पार्श्वभूमी:-

राजमाता जिजाऊ या मराठा इतिहासातील एक अत्यंत प्रभावी आणि दूरदृष्टीपूर्ण व्यक्तिमत्त्व म्हणून ओळखल्या जातात. त्यांचा जन्म इ.स. १५९८ मध्ये सिंदखेड राजा येथे झाला. त्या लखुजीराजे जाधव या

निजामशाहीतील ख्यातनाम सरदारांच्या कन्या होत. जाधव घराण्याची राजकीय, सामाजिक व लष्करी पार्श्वभूमी असल्यामुळे जिजाऊंच्या बालपणावर शौर्य, स्वाभिमान आणि धर्मनिष्ठा यांचे खोलवर संस्कार झाले.

समकालीन सामाजिक परिस्थितीत स्त्रीला मर्यादित भूमिका अपेक्षित असताना जिजाऊंच्या व्यक्तिमत्त्वात मात्र आत्मविश्वास, निर्णयक्षमता आणि नेतृत्वगुण दिसून येतात. धार्मिक ग्रंथ, महाकाव्ये आणि संतपरंपरेतील विचारधारा यांचा त्यांच्यावर विशेष प्रभाव होता. या सांस्कृतिक व नैतिक अधिष्ठानामुळे त्यांचे जीवनमूल्य स्पष्टपणे घडले.

जिजाऊंचा विवाह शहाजीराजे भोसले यांच्याशी झाला. शहाजीराजे हे दख्खनमधील विविध सत्तांमध्ये सक्रिय भूमिका बजावणारे पराक्रमी सेनानी होते. त्यांच्या राजकीय जबाबदाऱ्यांमुळे कुटुंबाचा भार प्रामुख्याने जिजाऊंवर पडला. विशेषतः शिवाजी महाराजांच्या संगोपनात त्यांनी सक्रिय व निर्णायक भूमिका पार पाडली.

इ.स. १६३० मध्ये शिवाजी महाराजांचा जन्म शिवनेरी किल्ल्यावर झाला. त्या काळातील राजकीय परिस्थिती अस्थिर होती. मुघल, आदिलशाही आणि निजामशाही यांच्या संघर्षांमुळे सामान्य जनतेवर अन्याय, शोषण व असुरक्षितता वाढली होती. अशा परिस्थितीत जिजाऊंनी शिवाजी महाराजांच्या मनात स्वराज्याची संकल्पना रुजवली. स्वराज्य ही संकल्पना केवळ राजसत्तेपुरती मर्यादित न ठेवता त्यांनी तिला धर्मरक्षण, सामाजिक न्याय आणि प्रजाहिताशी जोडले.

जिजाऊंचे मातृत्व हे भावनिकतेपुरते न राहता उद्देशपूर्ण आणि वैचारिक होते. त्यांनी शिवाजी महाराजांना अन्यायाविरुद्ध उभे राहण्याची प्रेरणा दिली तसेच आदर्श राज्यकर्त्यांचे गुण आत्मसात करण्यास प्रवृत्त केले. त्यांचे जीवन अनेक व्यक्तिगत व राजकीय संकटांनी भरलेले असतानाही त्यांनी मानसिक स्थैर्य, संयम आणि ध्येयाशी निष्ठा कायम ठेवली.

इतिहासाच्या अभ्यासातून असे स्पष्ट होते की राजमाता जिजाऊ या केवळ एका महान योद्ध्याच्या माता नव्हत्या, तर त्या राष्ट्रनिर्मितीच्या प्रक्रियेतील एक प्रभावी प्रेरक शक्ती होत्या. त्यांनी स्त्रीशक्तीचा वापर घराच्या चौकटीपुरता मर्यादित न ठेवता सामाजिक आणि राष्ट्रीय पातळीवर केला. त्यांच्या जीवनकार्यामुळे भारतीय इतिहासात मातृत्व आणि नेतृत्व यांचा अद्वितीय संगम घडून आला.

राजमाता जिजाऊंच्या मातृत्वाचा राष्ट्रनिर्मितीतील योगदान:-

भारतीय राष्ट्रनिर्मितीच्या प्रक्रियेत मातृत्व हा एक अत्यंत प्रभावी आणि मूल्याधिष्ठित घटक राहिला आहे. मातृत्व केवळ जैविक उत्तरदायित्व न राहता ते सामाजिक, सांस्कृतिक व नैतिक नेतृत्वाचे माध्यम ठरले आहे. या संदर्भात राजमाता जिजाऊ यांचे मातृत्व राष्ट्रनिर्मितीच्या दृष्टीने एक आदर्श नमुना म्हणून समोर येते. त्यांनी मातृत्वाचा उपयोग केवळ पुत्र संगोपनासाठी न करता, एका भावी राष्ट्रनायकाच्या वैचारिक, नैतिक व प्रशासकीय घडणीसाठी केला.

राजमाता जिजाऊंच्या मातृत्वाचे वैशिष्ट्य म्हणजे त्याचा उद्देशपूर्ण आणि दूरदृष्टीपूर्ण स्वरूप. शिवाजी महाराजांच्या बालपणापासूनच त्यांनी त्यांच्या मनावर स्वराज्याची संकल्पना बिंबवली. तत्कालीन राजकीय अस्थिरता, परकीय सत्तांचे वर्चस्व आणि जनतेवरील अन्याय यांची जाणीव त्यांनी कथांमधून, धार्मिक उदाहरणांमधून आणि ऐतिहासिक संदर्भांमधून करून दिली. या प्रक्रियेमुळे शिवाजी महाराजांच्या व्यक्तिमत्त्वात अन्यायाविरुद्ध संघर्ष करण्याची मानसिकता विकसित झाली.

जिजाऊंच्या मातृत्वात धर्मनिष्ठा आणि सामाजिक जबाबदारी यांचा समन्वय आढळतो. त्यांनी शिवाजी महाराजांना धर्मरक्षण ही केवळ धार्मिक बाब नसून ती सामाजिक न्याय आणि नैतिक व्यवस्थेची रक्षणप्रक्रिया असल्याची जाणीव करून दिली. रामायण, महाभारत, पुराणे आणि संतपरंपरेतील आदर्श व्यक्तिमत्त्वांचे दाखले देऊन त्यांनी शिवाजी महाराजांच्या विचारविश्वाची घडण केली. यामुळे त्यांच्या नेतृत्वात धर्माधिता नव्हे, तर सर्वसमावेशक न्यायभावना विकसित झाली.

राष्ट्रनिर्मितीच्या दृष्टीने जिजाऊंच्या मातृत्वाचे महत्त्व केवळ वैचारिक पातळीवर मर्यादित नव्हते, तर ते व्यवहारिक निर्णयक्षमतेतही दिसून येते. संकटाच्या काळात त्यांनी शिवाजी महाराजांना धैर्याने निर्णय घेण्याची प्रेरणा दिली. व्यक्तिगत दुःख, पुत्रवियोग आणि राजकीय अपमान सहन करत असतानाही त्यांनी ध्येयाशी तडजोड केली नाही. या मानसिक स्थैर्याचा प्रभाव शिवाजी महाराजांच्या नेतृत्वगुणांवर स्पष्टपणे दिसून येतो.

जिजाऊंच्या मातृत्वातून राष्ट्रनिर्मितीला मिळालेला आणखी एक महत्त्वाचा घटक म्हणजे स्वराज्याची नैतिक अधिष्ठाने. त्यांनी शिवाजी महाराजांना स्वराज्य म्हणजे केवळ सत्तास्थापना नसून ती प्रजाहित, सुशासन आणि जनतेच्या संरक्षणाची जबाबदारी असल्याची शिकवण दिली. या विचारातूनच पुढे शिवाजी महाराजांनी आदर्श प्रशासन, प्रजावात्सल्य आणि न्यायाधारित राज्यव्यवस्था उभी केली.

इतिहासाच्या दृष्टीने पाहता, राजमाता जिजाऊंचे मातृत्व हे स्त्रीशक्तीचे प्रभावी रूप आहे. त्यांनी पारंपरिक सामाजिक मर्यादा ओलांडून राष्ट्रनिर्मितीच्या प्रक्रियेत सक्रिय सहभाग घेतला. त्यांच्या मातृत्वामुळे राष्ट्राला एक सक्षम, मूल्याधिष्ठित आणि लोककल्याणकारी नेतृत्व मिळाले. त्यामुळे जिजाऊंचे योगदान हे केवळ व्यक्तिगत किंवा कौटुंबिक न राहता ते राष्ट्रीय पातळीवर विस्तारलेले दिसून येते.

समकालीन संदर्भात जिजाऊंच्या मातृत्वाचा अभ्यास केल्यास राष्ट्रनिर्मितीच्या प्रक्रियेत स्त्रियांची भूमिका अधिक स्पष्टपणे अधोरेखित होते. आजच्या नेतृत्वविकास, स्त्री सक्षमीकरण आणि मूल्यशिक्षणाच्या चर्चेत जिजाऊंचे मातृत्व एक मार्गदर्शक आदर्श ठरते. वात्सल्यपूर्ण नव्हते, तर ते उद्देशपूर्ण आणि दूरदृष्टीपूर्ण होते. त्यांनी रामायण, महाभारत, संतचरित्रे आणि हिंदवी स्वराज्याची कल्पना शिवाजी महाराजांच्या मनावर बिंबवली. अन्यायाविरुद्ध उभे राहण्याची प्रेरणा, धर्मरक्षणाची जाणीव आणि प्रजाहिताचा विचार हे मूल्यसंस्कार त्यांनी दिले.

राजमाता जिजाऊंच्या राष्ट्रनिर्माणातील नेतृत्वाचा आदर्श:-

भारतीय राष्ट्रनिर्मितीच्या प्रक्रियेत नेतृत्व ही संकल्पना केवळ सत्ताकेंद्रित नसून मूल्याधिष्ठित आणि लोककल्याणाभिमुख स्वरूपाची राहिली आहे. या परंपरेत राष्ट्रमाता जिजाऊ यांचे नेतृत्व एक आगळेवेगळे स्थान प्राप्त करते. त्यांनी प्रत्यक्ष राजसत्ता न भूषवता, दूरदृष्टी, नैतिक अधिष्ठान आणि ध्येयवादी विचारसरणीच्या माध्यमातून नेतृत्वाचा प्रभावी आदर्श घडविला. त्यांच्या नेतृत्वाचे स्वरूप अप्रत्यक्ष असले तरी त्याचा परिणाम राष्ट्रनिर्मितीच्या प्रक्रियेत दीर्घकालीन आणि निर्णायक ठरला.

जिजाऊंच्या नेतृत्वाचा पाया मूल्यसंवर्धनावर आधारित होता. त्यांनी शिवाजी महाराजांच्या व्यक्तिमत्त्वात स्वराज्याची संकल्पना रुजविताना केवळ पराक्रम किंवा सत्ता यांवर भर न देता न्याय, धर्मनिष्ठा आणि प्रजाहित या तत्त्वांचा आग्रह धरला. या मूल्याधिष्ठित नेतृत्वामुळे शिवाजी महाराजांचा कारभार लोकाभिमुख आणि नैतिक चौकटीत विकसित झाला. नेतृत्व म्हणजे केवळ आदेश देणे नव्हे, तर आदर्श आचरणातून दिशा देणे, ही संकल्पना जिजाऊंच्या वर्तनातून स्पष्ट होते.

जिजाऊंच्या नेतृत्वातील महत्वाचा पैलू म्हणजे त्यांची दूरदृष्टी. तत्कालीन राजकीय अस्थिरता, परकीय सत्तांचे वाढते वर्चस्व आणि सामाजिक असुरक्षितता यांचा विचार करून त्यांनी शिवाजी महाराजांना दीर्घकालीन राष्ट्रभारणीचे ध्येय दिले. स्वराज्य ही संकल्पना त्यांनी केवळ तत्कालीन संघर्षापुरती मर्यादित ठेवली नाही, तर ती सांस्कृतिक स्वातंत्र्य, सामाजिक न्याय आणि प्रशासनिक स्वावलंबनाशी जोडली. ही दूरदृष्टीच पुढे मराठा सत्तेच्या स्थैर्यास कारणीभूत ठरली.

नेतृत्वाच्या संदर्भात जिजाऊंची निर्णयक्षमता विशेष उल्लेखनीय आहे. वैयक्तिक दुःख, राजकीय अपमान आणि सततच्या संकटांमध्येही त्यांनी धैर्य आणि संयम राखला. संकटाच्या काळात योग्य निर्णय घेण्याची क्षमता ही प्रभावी नेतृत्वाची ओळख असते. जिजाऊंनी आपल्या आचरणातून ही क्षमता शिवाजी महाराजांमध्ये विकसित केली. त्यामुळे शिवाजी महाराजांनी अनेक निर्णायक प्रसंगी आत्मविश्वासाने आणि जबाबदारीने निर्णय घेतले.

जिजाऊंच्या नेतृत्वाचा आणखी एक महत्वाचा पैलू म्हणजे त्यांची नैतिक ताकद. त्यांनी अन्याय, अधर्म आणि अत्याचाराविरुद्ध ठाम भूमिका घेतली. हे नेतृत्व हिंसक आक्रमकतेवर आधारित नसून नैतिक अधिष्ठानावर आधारित होते. त्यांनी धर्मरक्षणाची संकल्पना संकुचित न ठेवता ती मानवी मूल्ये, सामाजिक न्याय आणि प्रजासुरक्षेशी जोडली. या नैतिक नेतृत्वामुळे शिवाजी महाराजांच्या कारकिर्दीत सर्वसमावेशक आणि लोकाभिमुख राज्यव्यवस्था आकाराला आली.

इतिहासाच्या दृष्टीने पाहता, राष्ट्रमाता जिजाऊंचे नेतृत्व स्त्रीशक्तीच्या प्रभावी अभिव्यक्तीचे उदाहरण आहे. त्यांनी पारंपरिक सामाजिक चौकटींमध्ये राहूनही नेतृत्वाच्या नव्या शक्यता उघडल्या. प्रत्यक्ष सत्तास्थानी नसतानाही राष्ट्राच्या भविष्याला दिशा देण्याची क्षमता त्यांनी सिद्ध केली. त्यामुळे त्यांचे नेतृत्व हे स्त्री सक्षमीकरणाच्या दृष्टीनेही अत्यंत प्रेरणादायी ठरते.

समकालीन काळात नेतृत्वविकास, नैतिक प्रशासन आणि मूल्याधिष्ठित राष्ट्रनिर्मिती यांचा विचार करता जिजाऊंचा नेतृत्व आदर्श अधिकच महत्वाचा ठरतो. आजच्या नेतृत्वाला आवश्यक असलेली दूरदृष्टी, नैतिकता, सामाजिक जबाबदारी आणि लोककल्याणाची भावना जिजाऊंच्या नेतृत्वातून स्पष्टपणे अधोरेखित होते.

समकालीन संदर्भात राष्ट्रमाता जिजाऊंचे महत्त्व:-

समकालीन सामाजिक, राजकीय आणि सांस्कृतिक परिस्थितीचा विचार करता राष्ट्रनिर्मितीच्या प्रक्रियेत मूल्याधिष्ठित नेतृत्वाची गरज अधिक तीव्रतेने जाणवते. अशा पार्श्वभूमीवर राष्ट्रमाता जिजाऊ यांचे जीवनकार्य आणि विचार आजही अत्यंत समर्पक व प्रेरणादायी ठरतात. त्यांचे योगदान ऐतिहासिक मर्यादित न राहता आधुनिक समाजातील नेतृत्वविकास, स्त्री सक्षमीकरण आणि मूल्यशिक्षणाच्या संदर्भातही मार्गदर्शक ठरते.

आजच्या काळात नेतृत्वाची संकल्पना प्रामुख्याने सत्ताकेंद्रित किंवा व्यवस्थापकीय चौकटीत पाहिली जाते. मात्र जिजाऊंचे नेतृत्व हे नैतिक अधिष्ठानावर आधारित होते. त्यांनी सत्तेपेक्षा मूल्यांना प्राधान्य दिले. समकालीन प्रशासन, राजकारण आणि सार्वजनिक जीवनात नैतिक अधःपतनाची चर्चा होत असताना जिजाऊंचा आदर्श नैतिक नेतृत्वाची दिशा दाखवतो. त्यांच्या विचारातून नेतृत्व म्हणजे जबाबदारी, प्रजाहित आणि न्याय यांचे एकात्म रूप असल्याचे स्पष्ट होते.

समकालीन स्त्री सक्षमीकरणाच्या चर्चेत राष्ट्रमाता जिजाऊ यांचे महत्त्व विशेषत्वाने अधोरेखित होते. त्यांनी प्रत्यक्ष राजसत्ता न भूषवता राष्ट्रनिर्मितीवर खोलवर प्रभाव टाकला. यामुळे स्त्री नेतृत्वाची संकल्पना केवळ

सत्तास्थानी असण्यापुरती मर्यादित न राहता मूल्यनिर्मिती आणि विचारप्रवर्तनाच्या पातळीवर विस्तारित होते. आधुनिक समाजात स्त्रियांना नेतृत्वाच्या विविध क्षेत्रांत संधी उपलब्ध करून देताना जिजाऊंचा आदर्श प्रेरक ठरतो. शिक्षणव्यवस्थेच्या दृष्टीने पाहता जिजाऊंचे महत्त्व अधिक ठळकपणे समोर येते. त्यांनी शिवाजी महाराजांच्या व्यक्तिमत्त्व घडणीत कथन, इतिहासबोध आणि नैतिक मूल्यांचा प्रभावी वापर केला. आजच्या शिक्षणपद्धतीत मूल्यशिक्षण, राष्ट्रभक्ती आणि सामाजिक जबाबदारी यांचा समन्वय साधण्याची गरज आहे. जिजाऊंच्या शिक्षणपद्धतीतून आधुनिक शिक्षणव्यवस्थेला दिशादर्शक तत्त्वे मिळू शकतात.

समकालीन सामाजिक परिस्थितीत असहिष्णुता, अन्याय आणि असमानतेच्या समस्या वाढताना दिसतात. अशा वेळी जिजाऊंच्या विचारातील सामाजिक न्याय, धर्मनिष्ठा आणि सर्वसमावेशकता यांचे महत्त्व अधोरेखित होते. त्यांनी धर्मरक्षणाची संकल्पना संकुचित न ठेवता ती नैतिक मूल्ये आणि मानवी प्रतिष्ठेशी जोडली. आधुनिक बहुसांस्कृतिक समाजात हा दृष्टिकोन अत्यंत उपयुक्त ठरतो.

राष्ट्रनिर्मितीच्या समकालीन प्रक्रियेत नागरिकत्वाची भावना, जबाबदार नेतृत्व आणि सामाजिक सलोखा यांची गरज आहे. जिजाऊंचे जीवनकार्य नागरिकांमध्ये कर्तव्यभावना, स्वाभिमान आणि राष्ट्रनिष्ठा निर्माण करण्यासाठी प्रेरणादायी ठरते. त्यामुळे त्यांचा आदर्श आजच्या युवा पिढीसाठी विशेष महत्त्वाचा आहे.

अशा प्रकारे पाहता, राजमाता जिजाऊ यांचे महत्त्व हे केवळ ऐतिहासिक गौरवापुरते मर्यादित नसून ते आधुनिक भारताच्या सामाजिक, राजकीय आणि सांस्कृतिक विकासाशी सुसंगत आहे. त्यांच्या विचारांचा आणि कार्याचा अभ्यास समकालीन राष्ट्रनिर्मितीच्या प्रक्रियेसाठी दिशादर्शक ठरतो.

निष्कर्ष:-

राजमाता जिजाऊ या केवळ शिवाजी महाराजांच्या माता नव्हत्या, तर त्या राष्ट्रनिर्मितीच्या प्रेरणास्थान होत्या. त्यांच्या मातृत्वातून नेतृत्वाची बीजे रोवली गेली आणि त्यातून हिंदवी स्वराज्याचा उदय झाला. भारतीय इतिहासात त्यांच्या योगदानाचे मोल अत्यंत उच्च असून आधुनिक काळातही त्यांचे विचार मार्गदर्शक ठरतात.

संदर्भ:-

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४. देशमुख, स. न. स्वराज्याची संकल्पना.
५. बखरी व समकालीन ऐतिहासिक साधने.

शिवकालीन कृषी व्यवस्थेचा आणि शेतकऱ्यांचा अभ्यास

मार्गदर्शक

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शिवकालीन कृषी व्यवस्था ही अत्यंत प्रगत आणि शेतकऱ्यांच्या हिताची होती. स्वराज्यात शेती व्यवसाय हा जनतेचा मुख्य व्यवसाय असल्याने तो वाढीस लागला पाहिजे व त्यातून शेतकरी सुखी झाला पाहिजे. अशी भावना छत्रपती शिवाजी महाराजांची होती. सर्व जगाला आश्चर्य वाटावे असा शिवरायांचा निर्णय म्हणजे – दुष्काळ पडला तर कर्ज सरसकट माफ. हा निर्णय अत्यंत महत्त्वाचा आहे. विविध सुधारणा करणे आणि विविध सवलती देवून उत्पन्न वाढविणे. याचा आदर्श शिवरायांनी साडेतीनशे वर्षांपूर्वी घालून दिला होता, तो आजही प्रेरणादायी आहे. शेतकऱ्यांच्या समस्या आणि त्यांच्यावर कोसळणाऱ्या आपत्ती याबाबत छत्रपतींनी अनेक नव्या योजना आखल्या होत्या, त्यापैकी एक म्हणजे पडीक असलेल्या जमिनी पुन्हा लागवडीखाली आणण्यासाठी शेतकऱ्यांना मोफत बैलजोडी, शेतीसाठी आवश्यक असलेली नांगर, कुदळ आदि अवजारे मोफत पुरवणे, उत्कृष्ट दर्जाचे बियाणे पुरवणे असे उपक्रम त्यांनी राबवले. अशा पद्धतीने देशातील निष्क्रिय झालेल्या समाज कार्याला जुंपून, त्यांच्या माध्यमातून पडीक जमीन पुन्हा लागवडीयोग्य बनवून रयतेचे आणि राज्याचे उत्पन्न वाढवले. आपल्या अधिकाऱ्यांकडून रयतेवर कोणत्याही प्रकारचा अन्याय होणार नाही याबाबत शिवाजी महाराज खूप सतर्क राहात असत. छत्रपती शिवाजी महाराजांच्या काळात कृषी व्यवस्था करमुक्त होती आणि शेतकऱ्यांचे हित सर्वोपरि होते. त्यांनी शेतकऱ्यांच्या कल्याणासाठी अनेक उपाय केले होते.

प्रस्तावना

हिंदुस्तान हा कृषिप्रधान देश असून राज्याचे विविध प्रकारचे उत्पन्न मुख्यतः शेतीतून मिळते. बहुसंख्य लोक शेतीवर अवलंबून आहेत. सतराव्या शतकातील स्वराज्यातील हीच परिस्थिती होती. छत्रपती शिवाजी महाराजांची कृषीविषयक धोरणे हे शेतकऱ्यांच्या कल्याणाला प्राधान्य देण्यासाठी आणि कृषी विकासाला चालना देण्यासाठी बहुआयामी होते. छत्रपती शिवाजी महाराजांनी शेतकऱ्यांना आर्थिक दृष्ट्या सक्षम करण्यासाठी सिंचन व्यवस्थेचा विकास केला. तसेच पीक विविधतेला प्रोत्साहन, वाजवी बाजारपेठांची स्थापना आणि पशुधन व्यवस्थापनाला प्रोत्साहन, न्याय, जमीन सुधारणा यासारख्या उपक्रमांची अंमलबजावणी केली. छत्रपती शिवाजी महाराजांची कारकीर्द त्यांच्या दूरदर्शी नेतृत्वासाठी आणि नाविन्यपूर्ण धोरणासाठी प्रसिद्ध आहे. शेतकऱ्यांचे जीवन सुधारणे आणि कृषी विकासाला चालना देणारे त्यांची कृषी धोरण हे त्यांचे सर्वात महत्त्वाची योगदान होते.

भारतात वैज्ञानिक व तांत्रिक प्रगती होऊनसुद्धा शेती ही मोसमी पावसावर अवलंबून आहेत. दुष्काळ; मग तो ओला असो की सुका, त्यामुळे सर्वांची तारांबळ उडे. त्यामधून भूकबळी व रोगराई ही संकटे निर्माण होत असे. दुष्काळ हे एक भयंकर संकट आहे. त्याचे स्वरूप भीषण असते. पण छत्रपती शिवाजी महाराजांनी कल्याणकारी राजाची भूमिका घेतल्यामुळे भूकबळी पडत नव्हते. महाराजांचे रयतेविषयीचे धोरण, तसेच शासनव्यवस्था राजेशाहीची असूनही त्यांनी मनमानी कारभार न करता प्रजेच्या कल्याणास्तव कल्याणकारी धोरण राबविले. त्यांच्या धोरणामागे रयत सुखी तर भरपूर शेती उत्पादन, भरपूर उत्पादनामुळे रयत सुखी आणि राज्यालासुद्धा अधिक

प्रमाणात महसूल, या महसूलवाढीमुळे राज्याची संरक्षण व्यवस्था वाढवून परचक्रापासून सुरक्षितता, त्या आधारे राज्याचे कल्याण असे महाराजांच्या राज्यकारभाराचे कल्याणकारी सूत्र होते.

उद्दिष्टे

1. शिवकालीन कृषी व्यवस्थेचा अभ्यास करणे.
2. शिवकालीन जमिनीचे प्रकार अभ्यासने.
3. छत्रपती शिवाजी महाराजांचे शेती व्यवस्थापन अभ्यासने.
4. शिवकालीन शेतकऱ्यांचा अभ्यास करणे.

शिवकालीन कृषीव्यवस्था

शेती

सतराव्या शतकात सामाजिक आणि आर्थिक व्यवहाराचा केंद्रबिंदू म्हणजे खेडे होय. खेड्यात शेती हाच उपजीविकेचा प्रमुख मार्ग असल्याने बहुतांशी लोक प्रामुख्याने शेतीवरच अवलंबून असत. त्यामुळे शिवकाळात खेड्यांना अग्रस्थान तर होतेच पण तेथील लोकसंख्येचे प्रमाणही आजच्या खेड्यांच्या मानाने जास्त होते. अशा खेड्यांमध्ये वतनदार, पाटील, वेठबिगार, कुलकर्णी, शेते, गहाजन, देशमुख, देशपांडे, बलुतेदार, कारागीर, सेवक वर्ग यासरखे अनेक घटक कार्यरत होते. खेड्यांमध्ये शेती हा प्रमुख व्यवसाय होता. शेती व्यवसाय हा कालांतराने फलदायी होणारा व्यवसाय असल्याने आज पेरले आणि उद्या उगवले असे होत नाही. त्यामुळे उत्पादनाची वाट पहात रहावे लागते, कारण लागवड व प्रत्यक्ष उत्पादन यातील कालावधी मोठा असतो. म्हणूनच शेती व्यवसाय सुरळीत चालू ठेवण्यासाठी व स्वतःच्या उदरनिर्वाहासाठी हवा असणारा पैसा शेतकरी गावच्या सावकाराकडून कर्जाने घेत असत. त्यासाठी प्रसंगी २५ टक्के व्याजदराने हा पैसा घेतला जाई. म्हणूनच शिवकाळात छत्रपती शिवाजी महाराजांनी अशा गरजू शेतकऱ्यांना सरकारी खजिन्यातून धान्य देण्याची व्यवस्था केली होती.

उत्पादन आणि जमिनीचे प्रकार:

शिवकालीन शेतीचे 'पांढरी' आणि 'काळी' असे दोन भाग पडले होते. 'काळी आई' म्हणजे पिकाची जमीन आणि 'पांढरी आई' म्हणजे वसाहतीची जमीन. 'काळी आई'चे प्रत्यक्ष लागवडीखाली असणारी पिकाची जमीन आणि नापीक पडीक जमीन असे दोन प्रकार होते.

सिंचन व्यवस्था:

- नदी-नाल्यांवर बंधारे बांधून पाण्याची व्यवस्था केली जात असे.
- मोटस्थल जमीन, फुग्याखालील जमीन आणि झऱ्याच्या पाण्याची योजना असणाऱ्या जमिनी असे सिंचनाचे प्रकार होते.

महसूल व्यवस्था:

- जमिनीची मोजणी करून तिची प्रत ठरवली जात असे.
- जमिनीच्या प्रकारानुसार कर आकारला जाई.
- नैसर्गिक आपत्तीत कर माफ करण्याची तरतूद होती.

शेती सुधारणा:

- शेतकऱ्यांसाठी विविध योजना राबवल्या गेल्या.
- नवीन तंत्रज्ञानाचा वापर करण्यात आला.
- शेतकऱ्यांना बी-बियाणे, बैलजोडी, अवजारे पुरवली जात असत.

छत्रपती शिवाजी महाराजांचे शेती व्यवस्थापन

छत्रपती शिवाजी महाराज हे लोकांचे, रयतेचे राजे होते. त्यांनी शेतकऱ्यांची व कुळांची अवस्था पाहिली होती. म्हणून त्यांनी स्वराज्यात शेती धोरणात आमूलाग्र सुधारणांद्वारे नवे परिवर्तन घडविण्याचे प्रयत्न सुरू केले. शिवाजी महाराजांनी आपल्या राज्यात नवे शेतसारा धोरण आखताना अवलंबिलेला दृष्टिकोन सर्व प्रजाजनांस, मग तो

कोणत्याही धर्माचा असो, समान तत्वाने वागवणारा होता. त्यांनी अन्याय व जुलूम जबरदस्ती करणारे शेंडीपट्टी, लग्नपट्टी, तेलपट्टी, तूपपट्टी, जंगमपट्टी आणि जिझीया कर असे इतर कर बंद केले. यामागे सर्व जातीधर्माच्या लोकांचे प्रेम आणि सहकार्य मिळावे, ही त्यांची इच्छा होती. बिघावणी म्हणजे बिघ्यांच्या परिमाणात जमीन मोजणी करून उत्पन्न निश्चित करण्यास सुरुवात केली. याबरोबरच पुण्याच्या अवतीभवती धरणे, बंधारे बांधून कालव्याने जमिनींना पाटाच्या पाण्याचा पुरवठा केला.

१६५६ चा दुष्काळ फारच मोठा होता, यासाठी कोरडवाहू शेतकऱ्यांना दिलासा देण्याकरिता काही योजना कार्यान्वित करण्यात आल्या होत्या. उदा. लहान विहिरीवरून दोन मोटेचे पाणी शेतीस मिळावे, याला 'मोटस्थळ' म्हणत. त्यामुळे शेतकऱ्यांना दुबार पीक घेणे शक्य झाले, तसेच राज्याचे उत्पादन वाढण्यास मदत झाली. या योजना राबविणाऱ्या शेतकऱ्यांचा व गावांचा पुरस्कार देऊन गौरव केला जात असे.

बैलजोडी ही व्यवसायाची महान शक्ती होती. परंतु गनीम आपली जनावरे उचलून नेईल, याची धास्ती विशेषतः गावापासून दूर राहणाऱ्या अथवा गनीमाच्या शिवेवरील गावकऱ्यांना नेहमी असे. जनावरे गेली म्हणजे सारा व्यवसायच मोडकळीस येई. या काळात गुरेढोरे पळविण्याचे प्रकार वारंवार होत असत. गरजू शेतकऱ्यांना बैलजोडी विकत घेण्यासाठी आवश्यक ते आर्थिक सहाय्य द्यावे, असे शिवाजी महाराजांच्या एका पत्रात त्यांनी म्हटले आहे. तसेच हे पैसे बिनव्याजी द्यावे आणि जेवढे दिले असतील तेवढेच शेतकऱ्यांच्या सवडीप्रमाणे हस्याहस्याने वसूल करावेत, असा आदेश अधिकाऱ्यांना राजांनी दिला होता.

शिवकालीन शेतकरी

१. शेतकरी वर्ग: शिवकाळात शेतकरी वर्ग हा प्रमुख वर्ग होता. शेतकऱ्यांना समाजात मानाचे स्थान होते.
२. आर्थिक स्थिती: शेतकऱ्यांची आर्थिक स्थिती सुधारण्यासाठी छत्रपती शिवाजी महाराजांनी अनेक प्रयत्न केले. त्यांनी शेतकऱ्यांना करात सवलती दिल्या जेणेकरून त्यांची आर्थिक स्थिती सुधारेल.
३. शेती: शेती हा शिवकालीन शेतकऱ्यांचा मुख्य व्यवसाय होता. ते भात, गहू, बाजरी, ज्वारी यासारखी पिके घेत असे.
४. पशुपालन: शिवकालीन शेतकऱ्यांनी पशुपालनही केले. ते गायी, म्हशी, बकरी, कोंबड्या यांसारख्या पशू पाळत असे.
५. सामाजिक स्थिती: शिवकालात शेतकऱ्यांची सामाजिक स्थिती सुधारण्यासाठी शिवाजी महाराजांनी अनेक प्रयत्न केले. त्यांनी शेतकऱ्यांना समाजात मानाचे स्थान दिले.

छत्रपती शिवाजी महाराज आणि शेतकरी

१) दुष्काळातील रयतेचे जीवन सुसह्य

दुष्काळामुळे शेतकऱ्यांवर भीषण संकट कोसळत असे. मुस्लिम राजकारणी दुष्काळाबाबत बेफिकिरपणे वागत. तथापि, महाराजांनी धान्य साठवण्यावर भर दिला. किल्ल्याच्या ठिकाणी अंवारखान्यातून दोन ते तीन वर्षे पुरेल एवढा धान्यसाठा केला जात होता. छत्रपती शिवाजी महाराजांनी पडीक जमीन लागवडीखाली आणण्यावर भर दिला. कालवे, पाटबंधारे बांधण्यावर भर दिला. पाणीपुरवठ्यासाठी पाटांची व्यवस्था, विहिरीतून मोटेने पाणी पुरविण्याची व्यवस्था अशा अनेक बाबी मोठ्या प्रमाणात कार्यान्वित केल्या.

२. शत्रूपासून संरक्षण

शिवकाळ हा सतत युद्धमोहिमांचा आणि धामधुमीचा होता. त्यामुळे शेती व शेती करणारी रयत धोक्यात येई. गावाचे संरक्षण कडेकोटपणे होण्यासाठी वतनदारांना, देशमुख, देशपांडे यांना सक्त सूचना दिल्या जात. इ.स. १६६२ ला मुघली सैन्याची रोहिडखोऱ्यात धाड येणार हे ऐकून तेथील देशमुखास तेथील पुरुष, स्त्रिया, मुले, बालके इत्यादी रयतेस सुरक्षितपणे घाटाखाली ठेवण्याच्या सक्त सूचना दिल्या गेल्या.

३) मुलकी अधिकाऱ्यांना सूचना

अधिकाराच्या बळावर स्वराज्यातील मुलकी अधिकारीही रयतेला त्रास देत. त्यांची पिळवणूक करीत. म्हणून महाराजांनी आपल्या आज्ञापत्रात रयतेवर जुलूम न करण्यासाठी मुलकी अधिकार्यांना कडक शब्दांत ताकीद दिली होती. यावरून महाराजांचे धोरण किती कल्याणकारी होते हेच स्पष्ट होते. म्हणूनच महाराजांना 'रयतेचा राजा' म्हटले जात होते.

३) लष्कराला ताकीद

शत्रू सैनिकाप्रमाणे आपल्या लष्करातील कित्येक सैनिकांकडून, अधिकार्यांकडून प्रजेला त्रास होत असे. लष्कराने रयतेला थोडाही त्रास देऊ नये म्हणून महाराजांनी सक्त सूचना आज्ञापत्रात केल्या आहेत.

४) रयतेला ताकीद

छत्रपती शिवाजी महाराज रयतेचा राजा जरी होता तरीही शिरजोर होऊन आगळीक करणाऱ्या रयतेला महाराज कडक शब्दांत सुनावत असत.

थोडक्यात, स्वराज्यात शेती व्यवसाय हा जनतेचा मुख्य व्यवसाय असल्याने तो वाढीस लागला पाहिजे व त्यातून शेतकरी सुखी झाला पाहिजे. अशी भावना छत्रपती शिवाजी महाराजांची होती. शिवरायांनी शेतकऱ्यांच्या कल्याणासाठी आणि शेतकऱ्यांना आर्थिक दृष्ट्या सक्षम करण्यासाठी अनेक उपाय केले होते. शेतकऱ्याला प्रामुख्याने पावसाच्या पाण्यावर अवलंबून रहावे लागे. पाऊस वेळेवर व प्रमाणशीर नाही पडला तर संपूर्ण साम्राज्यात दुष्काळाची झळ बसत असे. "शेती व्यवसाय वाढीस लागला पाहिजे. शेतकरी सुखी तर राजा सुखी; शेतकरी गरीब तर राजा गरीब, आणि राजा गरीब तर राज्य गरीब", अशी त्या काळाची अर्थनीती होती. छत्रपती शिवाजी महाराजांनी शेतकऱ्यांना अर्थिक सहाय्य देण्याचे धोरण आखले होते. याशिवाय शेतीच्या विकासासाठी छत्रपती शिवाजी महाराजांनी अनेक धोरणे राबविली. त्यामध्ये प्रामुख्याने पीकांच्या प्रकारानुसार सारा आकारणी करणे, पडीक जमीन लागवडीखाली आणणे, शेतकऱ्यांना शेतसाऱ्याच्या थकबाकीत सूट देणे, फक्त लागवड झालेल्या जमीनीवरच सारा आकारणी करणे, कालव्यांद्वारे पाटांद्वारे शेतीला पाणी पुरवठा करणे या सारख्या मार्गांचा अवलंब केला.

निष्कर्ष:

१. शिवकालीन कृषी व्यवस्था ही अत्यंत प्रगत आणि शेतकऱ्यांच्या हिताची होती.
२. शिवरायांनी शेतकऱ्यांना करमुक्त कृषी व्यवस्था दिली होती.
३. शिवरायांनी शेतकऱ्यांच्या कल्याणासाठी आणि शेतकऱ्यांना आर्थिक दृष्ट्या सक्षम करण्यासाठी अनेक उपाय केले होते.
४. छत्रपती शिवाजी महाराज शेतकऱ्यांना शेती करतांना अडचण येऊ नये म्हणून शेतकऱ्यांना कृषी साधनांची मदत करत असे.
५. छत्रपती शिवाजी महाराज शेतकऱ्यांना दुष्काळ, पाणीटंचाई, अपुरे सिंचन या समस्यांशी सामोरं जाण्यासाठी मदत करत असत.
६. शिवरायांनी शेतकऱ्यांच्या हितार्थ अनेक उपाय केले होते.
७. शिवरायांनी जमीन मोजणीसाठी 'काठी'चा वापर केला होता. या काठीला 'शिवशाहीकाठी' असे म्हणतात.

संदर्भ

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२. आगलावे प्रदीप, (सप्टेंबर २०१६), "सामाजिक संशोधन पद्धती शास्त्र व तंत्रे", श्री साईनाथ प्रकाशन, नागपूर.
३. मारकवार प्रगती आणि बागुल दिलीप (२०२३), छत्रपती शिवाजी महाराजांची कल्याणकारी धोरणे, सक्सेस पब्लिकेशन्स, पुणे.
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६. केळूसकर कृ. अ., (२०१७), छत्रपती शिवाजी महाराज यांचे चरित्र, सरस्वती पब्लिशिंग कंपनी प्रा.लि. कोल्हापूर

अहिल्यानगर शहरातील नागरी पतसंस्थांच्या सी. डी. रेशोचे चिकित्सक विश्लेषण

लेखकाचे नाव

श्री संजय चंद्रभान दराडे

संशोधक विद्यार्थी

संशोधन केंद्र : वसंतदादा पाटील कला, वाणिज्य व विज्ञान महाविद्यालय, पाटोदा, जि. बीड

1) गोषवारा (Abstract) :

अहिल्यानगर (पुर्वीचे अहमदनगर) जिल्ह्याने स्वातंत्र्योत्तर काळामध्ये महाराष्ट्राच्या सामाजिक, राजकीय व आर्थिक विकासात मोठी झेप घेतलेली आहे. हा जिल्हा सहकारी साखर कारखानदारी व दुध उत्पादनात राज्यात अग्रेसर आहे. त्याचबरोबर जिल्ह्यातील नागरी सहकारी पतसंस्थांची संख्या देखील मोठी असून या पतसंस्थांच्या माध्यमातून समाजातील छोटे व्यापारी, व्यावसायिक, कामगार व कारागीर वर्गाला यांना कर्जपुरवठा करून जिल्ह्याच्या अर्थव्यवस्थेला चालना देण्याचे कार्य केले आहे.

नागरी सहकारी संस्था या प्रामुख्याने नागरी किंवा शहरी भागात कार्य करतात, परिणामी त्यांची संख्या अहिल्यानगर शहरात जास्त आहे. त्यानुसार अहिल्यानगर शहरातील नमुन्यादाखल निवडलेल्या 13 नागरी सहकारी पतसंस्थांनी सन 2014-15 ते 2020-21 या 7 वर्षांमध्ये संकलीत केलेल्या ठेवी व त्यातून केलेले कर्ज वाटप याची माहिती घेऊन विश्लेषण केले आहे. अहिल्यानगर शहरातील नागरी सहकारी संस्थांनी मोठ्या प्रमाणावर ठेवी संकलीत करून त्या माध्यमातून कर्जवाटपाद्वारे पतनिर्मिती केली आहे. नागरी पतसंस्था या वित्तीय संस्था असल्यामुळे त्यांना विविध आर्थिक प्रमाणके लागू होतात. त्यापैकी नागरी पतसंस्थांनी स्विकारलेल्या ठेवी व त्यातून केलेला कर्जपुरवठा याला सी.डी.रेशो (कर्ज-ठेव प्रमाण) हे महत्वाचे आहे. सहकार विभाग व महाराष्ट्र राज्य बिगर कृषी पतसंस्था नियामक मंडळाच्या निकषानुसार आदर्श सी.डी.रेशो 60 ते 70 % च्या दरम्यान असणे आवश्यक आहे.

प्रस्तुत अभ्यासासाठी नमुन्या दाखल निवडलेल्या नागरी सहकारी पतसंस्थांचा 7 वर्षांचा सरासरी सी.डी.रेशो 76 % असून तो आदर्श प्रमाणापेक्षा जास्त आहे. यामुळे नागरी पतसंस्थांच्या कर्जवाटप क्षमतेत वाढ होऊन उत्पन्न देखील वाढले आहे. मात्र तरलता (Liquidity) कमी होऊन कर्ज थकबाकीची जोखीम देखील वाढली आहे. तसेच नोटबंदीचा ठेव संकलन व कर्जवाटपावर लक्षणीय प्रतिकूल परिणाम झाला नाही. कोव्हीड 19 च्या सन 2019-20 व 2020-21 चा एकत्रित विचार करता सी.डी.रेशोमध्ये वाढ झाली आहे. त्यामुळे कोव्हीड 19 महामारीचा देखील सी.डी.रेशोवर लक्षणीय प्रतिकूल परिणाम झालेला नाही.

2) सुत्रसंकल्पना (Key words) : अहिल्यानगर शहर, नागरी सहकारी पतसंस्था, सी.डी.रेशो.

3) प्रस्तावना (Introduction) : महाराष्ट्रातील अहिल्यानगर जिल्ह्यामध्ये सहकारी चळवळीने मोठे क्षेत्र व्यापले असून त्यामध्ये कृषी प्रकीया उद्योग, कृषी पतपुरवठा, कृषी पणन, बिगरकृषी पतपुरवठा, सहकारी बँकींग, साखर कारखानदारी व दुध उत्पादन याचा प्रामुख्याने समावेश करावा लागेल. या माध्यमातून सहकारी उद्योगांनी मोठ्या प्रमाणात ग्रामीण रोजगार उपलब्ध करून दिलेला आहे. अहिल्यानगर जिल्हा व शहराच्या आर्थिक वाटचालीत व

प्रगतीमध्ये नागरी सहकारी पतसंस्थांचा लक्षणीय वाटा असल्याने या संस्थांच्या नजीकच्या आर्थिक स्थितीचा अभ्यास करणे आवश्यक आहे.

अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी स्विकारलेल्या ठेवी व त्यातून केलेले कर्जवाटप हे या संस्थांच्या आर्थिक स्थितीवर परिणाम करणारे व नफा क्षमता ठरविणारे असल्याने कर्ज-ठेव प्रमाणाचे मुल्यमापन व विश्लेषण होणे आवश्यक आहे. कर्ज-ठेव प्रमाणाचे मुल्यमापन व विश्लेषण करण्यासाठी अहिल्यानगर महानगर पालिका क्षेत्र निवडले आहे. या अभ्यासासाठी अहिल्यानगर शहरातील 97 नागरी सहकारी पतसंस्थांपैकी निवडक 13 संस्थांनी सन 2014-15 ते 2020-21 अशा 7 आर्थिक वर्षांमध्ये केलेले कर्ज वाटप व ठेवींच्या प्रमाणाचे विश्लेषण करण्यात आले आहे.

सी.डी.रेशो काढण्याचे सहकार विभागाने ठरविलेले सूत्र कर्ज - कर्जवाटपास उपलब्ध स्वनिधी X 100 / ठेवी असे आहे. त्यामागील धारणा विचारात घेणे गरजेचे आहे. कारण नागरी सहकारी संस्थांनी संकलीत केल्या ठेवींमधून सर्वच रकमेचे कर्जवाटप केले तर संस्थेकडे तरलता (Liquidity) शिल्लक राहणार नाही. ठेवीदारांकडून ठेवीच्या मागणी झाल्यास संस्थेला अशी ठेव मुदतीत परत करता येणार नाही, कारण संस्थेने केलेले कर्जवाटप निश्चित अवधीसाठी केले असल्याने मुदत संपण्यापुर्वी वसूल करता येत नाही. तसेच संस्थेने कमी प्रमाणात कर्जवाटप केले तर संस्थेकडे जास्त तरलता राहिल मात्र कमी कर्जवाटपामुळे संस्थेचे उत्पन्न कमी होऊन संस्था तोट्यामध्ये जाऊ शकते.

सहकार विभागाने सदर सी.डी.रेशो आदर्श प्रमाण 60 ते 70 % दरम्यान असावे हे निश्चित केलेले आहे. या प्रमाणात सी.डी.रेशो असल्यास संस्थेची तरलता कायम टिकून राहण्यास मदत होते तसेच कर्जावरील व्याजापोटी चांगले उत्पन्न मिळून नफा योग्य प्रमाणात राहतो. एकंदरीत सी.डी.रेशो प्रमाण विहीत मर्यादित असल्यास संस्थांची आर्थिक स्थिती संतुलीत राहून प्रगती होते.

4) पुर्वाभ्यास (Review of literature) : आजपर्यंत बँकाचे व सहकारी पतसंस्थांचे सी.डी.रेशो संदर्भात अभ्यास करण्यात आला असून त्यामध्ये खालील संशोधन लेख व शोधनिबंधांचा समावेश आहे.

1. प्रो.त्रिलोकनाथ शुक्ला (2023) A Case Study on Low Credit to Deposit Ratio of Urban Co-operative Banks in West Bengal, Journal of Research in Business & Management

या शोधनिबंधामध्ये लेखकांनी पश्चिम बंगालमधील राज्यामधील विविध जिल्ह्यात असलेल्या नागरी सहकारी बँकांपैकी कमी सी.डी.रेशोचे प्रमाण असलेल्या बँका, कमी सी.डी.रेशोची कारणे व त्यावरील उपाय याबाबत विश्लेषण केले आहे. मात्र हा अभ्यास पं.बंगाल राज्यातील नागरी सहकारी बँकांपुरता मर्यादित आहे.

2. डॉ.जे.डेनीस राजकुमार (2023) Trends and behavioural patterns of Credit-Deposit Ratios of Scheduled Commercial Banks, NABARD Research and Policy Series No.12/2023

या लेखामध्ये लेखकांनी भारतातील अनेक राज्यामधील शेड्युल व्यापारी बँकांचे सन 1990-91 ते 2020-21 या कालावधीतील सी.डी.रेशोचा अभ्यास व विश्लेषण करून त्यावर उपाय देखील सुचविलेले आहेत. मात्र हा अभ्यास फक्त शेड्युल व्यापारी बँकांच्या संदर्भात आहे.

3. श्री तांबे निवृत्ती बाबुराव (2007) An appraisal of the performance of urban co-operative credit societies in Ahmednagar Dist: डॉ.बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ

या पीएच.डी संशोधनात संशोधकाने अहमदनगर जिल्ह्यातील कोपरगांव, पाथर्डी व राहुरी या तालुक्यातील 22 संस्थांचा 1194-95 ते 2004-05 या कालावधीतील सी.डी.रेशोसह इतर आर्थिक प्रमाणांचा अभ्यास केला आहे. सदर संशोधनात जिल्ह्यातील सर्वात मोठे नागरी क्षेत्र असलेल्या अहिल्यानगर शहराचा समावेश नाही.

4. श्री डि.एम.गुजराथी (2005) Working and progress of urban co-operative credit societies in Sangamner taluka : सावित्रीबाई फुले पुणे विद्यापीठ

या पीएच.डी संशोधनात संशोधकाने संगमनेर तालुक्यात कार्यरत असलेल्या 20 नागरी सहकारी पतसंस्थांचे 1998-99 ते 2002-03 या कालावधीतील कार्य, प्रगती, भांडवल व त्याचा विनियोग, विविध ठेव योजना, कर्जवाटप, इ. चा अभ्यास केला आहे. सदर संशोधन हे संगमनेर तालुक्यापुरते मर्यादीत आहे.

5) विषयाचे महत्व (Importance of topic) : नागरी सहकारी पतसंस्थांचा मुख्य उद्देश हा ठेवी स्विकारून त्यामधून कर्ज वाटप करणे हा आहे. त्या अनुषंगाने शासनाचा सहकार विभाग व महाराष्ट्र राज्य बिगर कृषी पतसंस्था नियामक मंडळाच्या परिपत्रकानुसार आदर्श सी.डी.रेशो प्रमाण 60 ते 70 % च्या दरम्यान असणे गरजेचे आहे. हे प्रमाण ठरविण्यामागील विचार देखील महत्वाचा आहे. जर नागरी सहकारी संस्थांनी त्यांच्याकडे आलेल्या ठेवींच्या सर्वच रकमेचे कर्जवाटप केले तर संस्थेकडे तरलता (Liquidity) शिल्लक राहणार नाही. या स्थितीत ठेवीदारांकडून ठेवीच्या रकमांची मागणी झाल्यास संस्थेकडे तीची पूर्तता करण्यासाठी रक्कम शिल्लक राहणार नाही. कारण कर्जवाटप विशिष्ट कालावधीसाठी केले जात असल्याने ते मुदतपूर्व वसूल करता येत नाही. याउलट जर कमी प्रमाणात कर्जवाटप केले तर संस्थेकडे जास्त तरलता राहिल मात्र कमी कर्जवाटपामुळे संस्थेचे व्याजाचे उत्पन्न कमी होऊन नफ्यावर त्याचा विपरीत परिणाम होऊन संस्था तोट्यामध्ये जाण्याची शक्यता निर्माण होते. सबब कर्ज-ठेव प्रमाण विहित प्रमाणात असल्यास संस्थेची तरलता व नफ्याचे प्रमाण योग्य राहून आर्थिक स्थिती चांगली राहण्यास मदत होते. त्यादृष्टीने विचार करता सी.डी.रेशो संस्थेच्या आर्थिक स्थितीवर परिणाम करणारा महत्वपूर्ण घटक असल्याने त्याचा अभ्यास व विश्लेषण होणे आवश्यक आहे.

6) उद्दिष्टे (Objectives): प्रस्तुत विषयांच्या अभ्यासासाठी खालील उद्दिष्टे विचारात घेतली आहेत.

1. अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाण 60 ते 70 % या शासन निकषाची पूर्तता करीत आहे किंवा कसे याचा शोध घेऊन विश्लेषण करणे.
2. अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांच्या सी.डी.रेशो प्रमाणावर सन 2016-17 मधील नोटबंदीमुळे झालेल्या परिणामांचा अभ्यास करणे.
3. अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांच्या सी.डी.रेशो प्रमाणावर सन 2019-21 मधील कोव्हीड 19 महामारीमुळे झालेल्या परिणामांचा अभ्यास करणे.

7) गृहितके (Hypothesis): अभ्यास विषयास अनुसरून खालील गृहितके ठेवण्यात आली आहेत.

1. अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाण 60 ते 70 % या शासन निकषाची पूर्तता करीत आहे. (शून्य गृहीतक)
अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाण 60 ते 70 % या शासन निकषाची पूर्तता करीत नाही. (पर्यायी गृहीतक)

2. अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाणावर नोटबंदीचा कोणताही विशेष प्रतिकूल परिणाम झालेला दिसून येत नाही. (शून्य गृहीतक)
अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाणावर नोटबंदीचा प्रतिकूल परिणाम झालेला दिसून येतो. (पर्यायी गृहीतक)
3. अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाणावर कोव्हीड 19 महामारीचा कोणताही विशेष प्रतिकूल परिणाम झालेला दिसून येत नाही. (शून्य गृहीतक)
अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाणावर कोव्हीड 19 महामारीचा प्रतिकूल परिणाम झालेला दिसून येतो. (पर्यायी गृहीतक)

8) संशोधन पद्धती (Research Methodology) : अभ्यासाठी अहिल्यानगर शहरातील दि.31.03.2021 अखेर असलेल्या एकुण 97 नागरी सहकारी पतसंस्थांपैकी निवडक 13 नागरी पतसंस्थांनी सन 2014-15 ते 2020-21 अशा 7 आर्थिक वर्षांमध्ये केलेले कर्ज वाटप व ठेवींची माहिती या संस्थांचे लेखापरीक्षण अहवाल म्हणजे द्वितीयक स्रोताद्वारे संकलीत केली आहे.

9) माहितीचे विश्लेषण (Analysis & Discussion) : अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांचे सी.डी.रेशो प्रमाण व त्याचे विश्लेषण खालीलप्रमाणे आहे.

(आकडे शेकडा प्रमाण %)

संस्था क्र.	सी. डी. रेशो प्रमाण %							संस्था निहाय सी.डी.रे शो %
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	
1	80	76	77	87	85	86	81	82
2	82	80	84	68	61	44	46	66
3	40	38	42	37	75	78	54	52
4	58	59	60	60	65	66	66	62
5	48	42	30	44	42	40	उ.ना.	41
6	73	82	88	81	63	48	52	69
7	58	56	55	57	61	60	55	57
8	54	61	70	62	58	56	21	55
9	52	42	56	58	58	76	76	60
10	90	74	97	81	76	88	87	85
11	79	96	79	93	76	0	0	60
12	उ.ना.	61	70	72	68	85	80	73
13	उ.ना.	170	185	207	230	257	278	221

सरा सरी	65	72	76	77	78	76	81	76
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(1. माहिती स्रोत – संस्थांचे वैधानिक लेखापरीक्षण अहवाल 2. उ.ना.- माहिती उपलब्ध नाही)

तथ्य- 1. सन 2014-15 चा सी.डी.रेशो 65 % आदर्श प्रमाणात आहे, मात्र सन 2015-16 ते सन 2020-21 या कालावधीत सी.डी.रेशोचे प्रमाण 77 % इतके जास्त आहे. सन 2014-15 ते 2020-21 या वर्षातील सर्व संस्थांचा सरासरी सी.डी.रेशो 76 % इतका असून तो आदर्श प्रमाणापेक्षा जास्त आहे.

तथ्य- 2. नोटबंदीच्या कालावधीत सन 2016-17 मध्ये सी.डी.रेशो 76 % इतका जास्त आहे.

तथ्य- 3. कोव्हीड 19 महामारीच्या कालावधीत सन 2019-20 मध्ये सी.डी.रेशो 76 % तर सन 2020-21 मध्ये वाढून 81 % इतका झाला आहे.

गृहीतक सिध्दता :

- अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाण 60 ते 70 % या शासन निकषाची पूर्तता करित आहे. (शून्य गृहीतक)
अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाण 60 ते 70 % या शासन निकषाची पूर्तता करित नाही. (पर्यायी गृहीतक)
एकल नमुना टी-चाचणीनुसार पी-मुल्य 0.043 येत असून ते पी-मुल्य 0.05 पेक्षा कमी असल्याने शून्य गृहीतक नाकारले असून पर्यायी गृहीतक स्विकारले आहे. म्हणजेच संस्थाकडून सी.डी.रेशो आदर्श प्रमाणाची पूर्तता झालेली नाही.
- अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाणावर नोटबंदीचा कोणताही विशेष प्रतिकूल परिणाम झालेला दिसून येत नाही. (शून्य गृहीतक)
अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाणावर नोटबंदीचा प्रतिकूल परिणाम झालेला दिसून येतो. (पर्यायी गृहीतक)
नोटबंदीचा कालावधी सन 2016-17 मध्ये सी.डी.रेशोचे प्रमाण 76 % इतके जास्त असल्याने शून्य गृहीतक स्विकारले असून पर्यायी गृहीतक नाकारले आहे. म्हणजेच सी.डी.रेशो प्रमाणावर नोटबंदीचा कोणताही विशेष प्रतिकूल परिणाम झालेला नाही.
- अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाणावर कोव्हीड 19 महामारीचा कोणताही विशेष प्रतिकूल परिणाम झालेला दिसून येत नाही. (शून्य गृहीतक)
अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी ठेवलेले सी.डी.रेशो प्रमाणावर कोव्हीड 19 महामारीचा प्रतिकूल परिणाम झालेला दिसून येतो. (पर्यायी गृहीतक)
कोव्हीड 19 काळातील सन 2019-20 ते 2020-21 चा सरासरी सी.डी.रेशो हा 78 % इतका सरासरी पेक्षाही जास्त आहे. त्यामुळे शून्य गृहीतक स्विकारले असून पर्यायी गृहीतक नाकारले आहे. म्हणजेच सी.डी.रेशो वर कोव्हीड 19 महामारीचा कोणताही विशेष प्रतिकूल परिणाम झालेला नाही.

10) निष्कर्ष (Conclusion) :

1. अहिल्यानगर शहरातील नागरी सहकारी पतसंस्थांनी सी.डी.रेशोचे प्रमाण 60 ते 70 % न ठेवता सरासरी 76 % म्हणजे जास्त ठेवल्याने कर्जवाटप व व्याज उत्पन्न वाढले आहे, मात्र तरतलेचे प्रमाण कमी होऊन कर्ज थकबाकीची जोखीम निर्माण केली आहे.
2. अहिल्यानगर शहरातील नागरी पतसंस्थांनी ठेव संकलनापेक्षा कर्जवाटपावर जास्त भर दिला आहे त्यामुळे नागरी पतसंस्थांनी कर्जवाटप आणि तरलता यांच्यामध्ये योग्य संतुलन राखलेले नाही.

11) संदर्भ (References) : सदर शोधनिबंधासाठी खालील संदर्भ साहित्य, अहवाल व संकेतस्थळावरील माहितीचा आधार घेतला आहे.

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उपनिषद् शिक्षणाचे स्वरूप आणि ध्येय

प्रा. अभय स. पाटील

पुण्यश्लोक अहिल्यादेवी होळकर महाविद्यालय, राणीसावरगाव ता.गंगाखेड, जि.परभणी

प्रस्तावना

या जगात अनेक समस्या आहेत. त्यांचा परिणाम फक्त दुःखच असतो आणि कोणालाही दुःख किंवा पीडा नको असते. म्हणून, समस्यांचे निराकरण केले पाहिजे.

समस्यांचे वर्गीकरण आणि स्वरूपाचे निर्धारण

सर्व समस्यांचे अज्ञान, अन्याय, अभाव आणि अकर्मण्यता (आळस) या चार मूलभूत समस्यांमध्ये वर्गीकरण करता येते. तिथे सुद्धा अन्याय, अभाव आणि अकर्मण्यता या तीन समस्या एकाच मूळ समस्येत समाविष्ट होतात, ती मूळ समस्या म्हणजे 'अज्ञान' होय. कारण या तिन्ही मूलभूत समस्या अज्ञानातूनच निर्माण होतात. अज्ञानच या सर्वांची जननी (माता) आहे.

या जगातील अनेक समस्यांची मूळ समस्या किंवा 'बीज समस्या' अज्ञानच आहे. ज्याप्रमाणे एका मोठ्या वटवृक्षाचा आधार त्याची मुळे असतात, आणि त्या मुळांचे किंवा वृक्षाचे कारण त्याचे अणूमात्र सूक्ष्म बीज असते. वटवृक्षाच्या बीजाचा नाश करणे सोपे असते; परंतु जेव्हा तेच बीज एका विशाल वटवृक्षाचे रूप घेते, तेव्हा त्याचा नाश करणे कठीण होते. त्याचप्रमाणे या लोकात अनेक समस्या आहेत. 'अज्ञान' ही बीज-समस्या विविध रूपे धारण करून असंख्य समस्यांसारखी भासते. या सर्व समस्यांचे (स्वतंत्रपणे) समाधान करणे अशक्य आहे. म्हणूनच, जर चार मूलभूत समस्यांचे निराकरण झाले, तर इतर समस्या आपोआप दूर होतात.

या मूलभूत समस्या दूर करण्यासाठी आपल्या वैदिक संस्कृतीत 'वर्णाश्रम' व्यवस्था दिसून येते. ब्रह्मचर्याश्रम, गृहस्थाश्रम, वानप्रस्थाश्रम आणि संन्यासाश्रम असे चार आश्रम आहेत. त्यापैकी ब्रह्मचर्याश्रमात शिक्षणाची व्यवस्था केलेली आहे. म्हणूनच, या शोधनिबंधात वैदिक शिक्षणाचे स्वरूप आणि त्याच्या ध्येयावर विचार केला आहे.

शिक्षण

शिक्षणाद्वारे ज्ञानाची प्राप्ती होते. 'शिक्षण म्हणजे काय?' या जिज्ञासेपोटी म्हटले जाते की— ज्याद्वारे शिकले जाते, बोध घेतला जातो किंवा जाणले जाते, ते 'शिक्षण' होय. कोणत्याही प्रयोजनाशिवाय (उद्देशाशिवाय) मंद बुद्धीचा माणूस देखील कार्यात प्रवृत्त होत नाही, मग 'शिक्षणाचे उद्देश काय असावेत?' असा प्रश्न विचारला असता:

शिक्षणाचे उद्देश

१. ओ३म् अग्रये समिधमाहर्ष... : हे अग्ने! ज्याप्रमाणे तू समिधांनी प्रदीप्त होतोस, त्याचप्रमाणे मी सुद्धा आयुष्य, मेधा (बुद्धी), तेज, पशु, ब्रह्मवर्चस्व आणि अन्नाने प्रदीप्त व्हावे. माझा आचार्य (गुरु) दीर्घायुषी होवो आणि मी मेधवी (बुद्धिमान), यशस्वी आणि तेजस्वी होऊन ब्रह्मवर्चस्वाने युक्त व्हावे.
२. आधत्त पितरो गर्भ... : (यजुर्वेद २.३३) या मंत्राद्वारे उत्तम पिढी आणि सुसंस्कारित संततीची संकल्पना मांडली आहे.

वेदांच्या आणि उपनिषदांच्या अभ्यासातून तेथील प्रगत शिक्षण परंपरा आणि शिक्षणाचे स्वरूप दिसून येते. 'विद्या कशी प्राप्त होते?' किंवा 'ज्ञान देण्यासाठी शिक्षण व्यवस्था कशी असावी?' याचे वर्णन तैत्तिरीयोपनिषदातील 'शिक्षाध्याया'त पाच महासंहितांपैकी एका संहितेमध्ये केले आहे.

अथाधिविद्यम् (विद्येविषयी)

आचार्यः पूर्वरूपम् अन्तेवास्युत्तररूपं विद्यासन्धिः प्रवचनं सन्धानम्। इत्यधिविद्यम्॥३॥

(आचार्य हे पूर्वरूप आहेत, शिष्य हे उत्तररूप आहेत, विद्या हा त्यांचा सांधा (जोडणारा दुवा) आहे आणि प्रवचन (अध्यापन) हे संधान (जोडण्याची प्रक्रिया) आहे. हे विद्येविषयीचे विवरण आहे.)

या संहितेमध्ये शिक्षणाची पूर्णता किंवा विद्येची प्राप्ती आचार्य, अन्तेवासी (शिष्य), विद्या आणि प्रवचन या चार घटकांमुळे होते असे वर्णन केले आहे. ज्याप्रमाणे संहितेमध्ये वर्णांची जवळीक असते, त्याचप्रमाणे या चार घटकांच्या निकटतेमुळे शिक्षण पूर्ण होते. जगात शिक्षणासाठी हे घटक अनिवार्य आहेत.

ज्ञानी असलेला आचार्य ज्ञान देण्यासाठी एका बाजूला असतो, तर ज्ञानाच्या इच्छेने असलेला जिज्ञासू शिष्य ज्ञानप्राप्तीसाठी दुसऱ्या बाजूला असतो. या दोघांचा संयोग केवळ विद्येसाठीच होतो. तसेच अध्यापनात निपुण असलेला आचार्य प्रवचनाच्या माध्यमातून ज्ञानाचे संप्रेषण (प्रसार) करतो. तेव्हाच विद्याप्राप्ती होते.

आचार्यः कस्मात्? (आचार्य कशामुळे?)

आचारं ग्राह्यति, आचिनोति अर्थम्, आचिनोति बुद्धिमिति वा ॥४॥

(जो आचार शिकवतो, जो अर्थाचा संग्रह करतो किंवा जो बुद्धीचा विकास करतो, तो आचार्य होय.)

१. आचार्यः आचारं ग्राह्यति (आचार्य सदाचार शिकवतात)

आचार्य स्वतः सदाचारी, धार्मिक, नैतिक आणि तपस्वी राहून आपल्या शिष्याला आचार शिकवतात. वस्तुतः आचार्यांच्या सानिध्यात राहून, त्यांचे वर्तन पाहून कोणत्याही उपदेशाशिवाय शिष्य तसे वागण्यास प्रवृत्त होतात. आचार हा केवळ आचरणानेच शिकवला जातो, उपदेशाने नाही. यामुळे विद्यार्थ्यांना जीवनात कसे वागावे हे समजते. ते सदाचार, शिष्टाचार, लोकव्यवहार आणि सामाजिकता शिकतात. विद्यार्थ्यांमध्ये सामाजिक आणि व्यावहारिक गुणांचा विकास होतो. काय करावे आणि काय करू नये, धर्म-अधर्म, योग्य-अयोग्य हे त्यांना समजते आणि ते त्याप्रमाणे वागण्याची इच्छा धरतात.

२. आचार्यः आचिनोति अर्थम् (आचार्य अर्थाचे संकलन करतात)

आचार्य 'बहुश्रुत' (ज्याने खूप ऐकले/शिकले आहे असा) असावा. तो विविध विद्या, कला आणि शिल्पांमध्ये निपुण असावा. जगात सर्व प्रकारच्या ज्ञान-विज्ञानाचे शिक्षण शब्दांद्वारे होते. शब्द आणि त्यांचे अर्थ परस्परांशी संबंधित असतात. महाभाष्यातही 'सिद्धेशब्दार्थ सम्बन्धे' यातून शब्द आणि अर्थाचा नित्य संबंध सूचित केला आहे. आचार्य योग्य शब्दांच्या द्वारे विविध पदार्थांचा आणि विषयांचा बोध करून देतात. शब्दांमुळेच अर्थाचे ज्ञान होते. शब्दांद्वारेच विविध विद्या, विज्ञान, कला आणि शिल्पे ओळखली जातात. बहुश्रुत आचार्य अनेक विद्या आणि शिल्पे शिकवतात व विविध कलांमध्ये नैपुण्य मिळवून देतात. यामुळे शैक्षणिक आणि कलाकौशल्यांचा विकास होतो.

३. आचार्यः आचिनोति बुद्धिम् (आचार्य बुद्धीचा विकास करतात)

आचार्यांनी शिष्याची बुद्धी प्रगल्भ करणे असा होतो.)

आचार्य आणि शिष्य

आचार्य: शिष्यामध्ये सुप्त असलेल्या शक्तींना आचार्य जागृत करतात; बुद्धीचा विकास करतात, मानसिक शक्ती वाढवतात आणि बुद्धीला सृजनशील कार्यात व विद्यांमध्ये नियोजित करतात. ते शिष्याला सन्मार्गावर प्रेरित करतात. यामुळे शिष्याचा बौद्धिक, मानसिक आणि आंतरिक सुप्त शक्तींचा विकास होतो.

वेदांमध्ये आणि उपनिषदांमध्ये आचार्यांना 'यम' (मृत्यू) असे म्हटले आहे. ज्याप्रमाणे मृत्यूच्या सानिध्यात अहंकार गळून पडतो आणि नष्ट होतो, त्याचप्रमाणे आचार्यदेखील मृत्यूसारखेच आपल्या अहंकाराचा नाश करतात आणि आपल्याला सत्य तत्त्वाची जाणीव करून देतात. आचार्यांच्या जवळ स्वतःचा अहंकार सोडून, निष्पापपणे आणि विनयाने ज्ञानार्जन केले पाहिजे. कारण उपनिषदात निर्देश दिला आहे की— "हातात समिधा घेऊन श्रोत्रिय आणि ब्रह्मनिष्ठ गुरूकडे जावे."

गुरु श्रोत्रिय असावा. श्रोत्रिय म्हणजे वेदांचा ज्ञाता. तसेच जो वेदांचा अभ्यास करतो तो श्रोत्रिय होय. गुरु ब्रह्मनिष्ठ असावा, म्हणजेच ज्याला परब्रह्माचे ज्ञान आहे. गुरु हा 'परा विद्या' आणि 'अपरा विद्या' या दोन्हीमध्ये निपुण असावा. तो शिष्याचा 'परा विद्ये'द्वारे आध्यात्मिक विकास करतो आणि 'अपरा विद्ये'द्वारे लौकिक विद्या व कलांमध्ये प्रगती घडवून आणतो. यामुळे शिष्याचा सर्वांगीण विकास होतो.

आचार्य स्थूलाकडून सूक्ष्माकडे ज्ञान देतात, ते याप्रमाणे:

अन्नमयकोश: हे स्थूल शरीराचे संपूर्ण ज्ञान आहे. याचा परिणाम शरीरात समतोल आणि निरामयता (निरोगीपणा) येण्यात होतो.

प्राणमयकोश: शरीरात असलेल्या प्राणांचा परिचय. प्राणावर नियंत्रण मिळवणे (प्राणनिग्रह), संयम आणि प्राणायामाद्वारे दोषांचा नाश होऊन विवेक प्राप्त होतो.

मनोमयकोश: मनाचा परिचय आणि मनःनिग्रह. यासाठीचे उपाय, मानसिक शक्तींची प्राप्ती, मनाची एकाग्रता आणि विभूती (सिद्धी) प्राप्त करणे.

विज्ञानमयकोश: अहंकाराचा नाश, तात्त्विक ज्ञान, अज्ञानाचा क्षय आणि आत्मज्ञान प्राप्त करणे.

आनंदमयकोश: आत्मानुभूती आणि आनंदाची प्राप्ती.

अधिकारी शिष्य (पात्र शिष्य):

जो आचार्यांच्या जवळ राहून सेवा-शुश्रूषा करत विद्या प्राप्त करतो, तो अन्तेवासी (शिष्य) होय. पण तो शिष्य कसा असावा? तो 'अधिकारी' (पात्र) असावा. जर अपात्र व्यक्तीला ज्ञान दिले तर ते कल्याणाऐवजी अहितकारक ठरते. म्हणून आचार्य प्रथम ही व्यक्ती या विद्येसाठी पात्र आहे की नाही, याची परीक्षा घेऊनच ज्ञान देतात.

जसे प्रश्नोपनिषदात भारद्वाज, सत्यकाम, गार्ग्य, आश्वलायन, भार्गव आणि कात्यायन हे सहा ऋषी हातात समिधा घेऊन भगवान पिप्पलाद ऋषींकडे गेले. तेव्हा ऋषी त्यांना म्हणाले, "तुम्ही पुन्हा एक वर्ष तप, ब्रह्मचर्य आणि श्रद्धेने येथे राहा, त्यानंतर तुमच्या इच्छेनुसार प्रश्न विचारा. जर मला माहित असेल, तर मी तुम्हाला सर्व काही सांगेन."

याचा अर्थ असा की, एक वर्षापर्यंत तप आणि श्रद्धेने निवास करणे आवश्यक होते. यावरून शिष्याच्या पात्रतेची परीक्षा घेतली जात असे. जो शिष्य तप, ब्रह्मचर्य आणि श्रद्धेने युक्त असतो, त्याला दिलेले ज्ञान फलद्रूप होते. अन्यथा, फुटलेल्या पात्रात (भांड्यात) ओतलेल्या दुधाप्रमाणे ते व्यर्थ जाते.

(विद्यार्थी/शिष्य) च्या गुणांचे वर्णन

ज्ञानप्राप्तीसाठी आवश्यक गुण

ज्ञान तेव्हाच आत्मसात होते जेव्हा ते तप, ब्रह्मचर्य आणि श्रद्धेने प्राप्त केले जाते. योगसूत्राच्या भाष्यात म्हटले आहे की— "दीर्घकाळ, निरंतर आणि आदराने (सत्काराने) केलेली साधना ही अभ्यासाची भक्कम पायरी (दृढभूमी) असते." तप, ब्रह्मचर्य, विद्या आणि श्रद्धेशिवाय ज्ञान प्राप्त करणे कठीण आहे; आणि जर ते प्राप्त झाले तरी ते स्थिर किंवा फलद्रुप होत नाही.

१. ब्रह्मचारी

विद्यार्थी हा 'ब्रह्मचारी' असावा. जो ब्रह्मामध्ये (ज्ञानात) रमतो तो ब्रह्मचारी. 'ब्रह्म' म्हणजे वेद किंवा परम तत्व. जो आपली इंद्रिये, मन आणि बुद्धी यांवर ताबा मिळवून, आपली अंतर्निहित शक्ती वेदांच्या अभ्यासात किंवा सत्याच्या शोधात लावतो आणि विषयांच्या विकारांपासून दूर राहून पवित्र जीवन जगतो, तोच खरा ब्रह्मचारी.

२. जिज्ञासू

विद्यार्थी हा जिज्ञासू असावा. ज्याला परम तत्व जाणून घेण्याची तीव्र इच्छा असते, तो जिज्ञासू. खऱ्या जिज्ञासेशिवाय साधे व्यावहारिक ज्ञानही नीट मिळत नाही, मग अध्यात्मिक सूक्ष्म ज्ञानाची तर गोष्टच वेगळी. म्हणूनच वेदान्त दर्शनाच्या पहिल्या सूत्रात 'अथातो ब्रह्मजिज्ञासा' (आता आपण ब्रह्माबद्दल जाणून घेण्याची इच्छा करूया) असे म्हटले आहे. जोपर्यंत विद्यार्थ्याची स्वतःची जिज्ञासा तीव्र नसते, तोपर्यंत त्याला ज्ञान प्राप्त होत नाही.

३. श्रद्धावान्

विद्यार्थी श्रद्धावान् असावा. श्रद्धेशिवाय ज्ञान मिळवणे अशक्य आहे. गीतेत म्हटले आहे:

"श्रद्धावान् लभते ज्ञानं तत्परः संयतेन्द्रियः । ज्ञानं लब्ध्वा परां शान्तिमचिरेणाधिगच्छति ॥"

अर्थ: ज्याच्याकडे श्रद्धा आहे, जो तत्पर आहे आणि ज्याने आपल्या इंद्रियांवर विजय मिळवला आहे, असा मनुष्यच ज्ञान प्राप्त करतो आणि ज्ञान मिळाल्यावर त्याला लवकरच परम शांती लाभते.

४. प्रशान्तचित्त (शांत मन)

विद्यार्थी शांत चित्त असलेला असावा. असा व्यक्तीच ब्रह्मविद्येचा खरा अधिकारी होतो. उपनिषदात म्हटले आहे की— ज्याचे मन शांत आहे आणि जो इंद्रियनिग्रही आहे, त्यालाच गुरुने ब्रह्मविद्या शिकवावी.

पुढील श्लोकात म्हटले आहे:

"यस्तु विज्ञानवान् भवति समनस्कः सदाशुचिः । स तु तत्पदमाप्नोति यस्माद् भूयो न जायते ॥"

अर्थ: जो बुद्धिमान आहे, ज्याचे आपल्या मनावर नियंत्रण आहे आणि जो सदैव पवित्र आहे, तोच त्या परम पदाला (मोक्षाला) प्राप्त करतो, जिथून पुनर्जन्म होत नाही.

परंतु जो अशांत आहे, ज्याचे मन एकाग्र नाही, तो सत्याला जाणून घेऊ शकत नाही. दुराचारापासून अलिप्त न झालेला आणि अशांत मनाचा माणूस कधीही ज्ञानी होऊ शकत नाही.

विद्या (शिक्षण)

उपनिषद काळातील शिक्षणात ऐहिक (लौकिक) आणि आध्यात्मिक (पारलौकिक) अशा दोन्ही विद्यांचा उत्कर्ष दिसून येतो. त्यावेळी पराविद्या आणि अपराविद्या अशा दोन प्रकारच्या विद्या होत्या.

मुण्डकोपनिषदामध्ये म्हटले आहे:

"ब्रह्मवेत्ते (ब्रह्माचे ज्ञान असणारे) म्हणतात की, दोन प्रकारच्या विद्या जाणण्यासारख्या आहेत - एक परा आणि दुसरी अपरा."

अपराविद्या: यामध्ये ऋग्वेद, यजुर्वेद, सामवेद, अथर्ववेद, तसेच शिक्षा, कल्प, व्याकरण, निरुक्त, छंद आणि ज्योतिष यांचा समावेश होतो.

पराविद्या: ज्याद्वारे त्या 'अक्षर' (अविनाशी) ब्रह्माची प्राप्ती होते, ती पराविद्या होय.

छान्दोग्योपनिषदात अपराविद्येचे सविस्तर वर्णन मिळते. नारद मुनी सनत्कुमारांकडे जाऊन म्हणतात— "हे भगवन, मी ऋग्वेद, यजुर्वेद, सामवेद आणि चौथा अथर्ववेद, पाचवा इतिहास-पुराण, वेदांचा वेद (व्याकरण), पितृविद्या, राशी (गणित), दैव (उत्पातज्ञान), निधी (अर्थशास्त्र), वाकोवाक्य (तर्कशास्त्र), एकायन (नीतिशास्त्र), देवविद्या, ब्रह्मविद्या, भूतविद्या, क्षत्रविद्या, नक्षत्रविद्या, सर्पविद्या आणि देवजनविद्या (ललित कला) या सर्वांचे अध्ययन केले आहे. परंतु, मी फक्त मंत्रवेत्ता (शब्दांचा जाणकार) आहे, आत्मवेत्ता (आत्मज्ञान असलेला) नाही."

विद्यांची यादी आणि अर्थ:

१. ऋग्वेद, २. यजुर्वेद, ३. सामवेद, ४. अथर्ववेद ५. इतिहासपुराण
 ६. पित्र्यम् – शुश्रूषा विज्ञान (सेवा किंवा पूर्वजांशी संबंधित ज्ञान) ७. राशि – गणित
 ८. दैवम् – उत्पात विज्ञान (भविष्य किंवा नैसर्गिक घटनांचे ज्ञान) ९. निधिम् – अर्थशास्त्र
 १०. देवविद्या – निरुक्त ११. ब्रह्मविद्या – दर्शनशास्त्र / शास्त्रीय ज्ञान
 १२. भूतविद्या – भौतिकशास्त्र, रसायनशास्त्र, प्राणीशास्त्र १३. क्षत्रविद्या – धनुर्वेद / सैनिक शिक्षण
 १४. नक्षत्रविद्या – ज्योतिष १५. सर्पदेवजनविद्या – सर्पविषावरील उपचार आणि ललित कला.
- नारद म्हणतात की, मी या सर्व विद्या प्राप्त केल्या आहेत, पण मला अजून आत्मज्ञान झालेले नाही.

अध्यापनशैली (शिकवण्याची पद्धत)

अध्यापनाच्या संदर्भात अथर्ववेदातील काही मंत्र दिले आहेत, जे गुरु-शिष्य परंपरेतील एकाग्रता आणि ज्ञानाचे महत्त्व अधोरेखित करतात:

"हे धनाचा स्वामी (ईश्वर), माझ्यामध्ये जे ज्ञान आहे ते स्थिर राहू दे." (अथर्व. १.१.२)

"आम्ही जे काही ऐकले (शिकलो) आहे, त्या ज्ञानाशी आम्ही जोडले जावे आणि त्या ज्ञानापासून आमचा कधीही वियोग होऊ नये." (अथर्व. १.१.४)

"ज्याप्रमाणे धनुष्याची दोरी (ज्या) ताणलेली असते, त्याप्रमाणे हे ज्ञान माझ्या बुद्धीत विस्तारू दे."

"वाणीचा स्वामी माझ्यामध्ये श्रुत (ऐकलेले ज्ञान) प्रस्थापित करो." (अथर्व. १.१.३)

"ज्याप्रमाणे आकाश आणि पृथ्वी गंभीर आणि विशाल आहेत, त्याचप्रमाणे आचार्यांनी दिलेले ज्ञान व्यापक आणि खोल असावे." (अथर्व. १.१.५.८)

प्रवचनम् – (येथे विषयाची सुरुवात होत असल्याचे सूचित केले आहे.)

प्रश्नोत्तर पद्धती (Question-Answer Method):

प्रश्नोत्तर पद्धतीमध्ये प्रश्नांच्या माध्यमातून अध्यापन केले जाते.

उपनिषदांमध्ये या पद्धतीचा मोठ्या प्रमाणावर वापर केला गेला आहे.

'प्रश्नोपनिषद' मध्ये थेट प्रश्नोत्तर पद्धतीद्वारे सूक्ष्म तत्वांचे शिक्षण दिलेले आढळते.

व्याख्या पद्धती (Explanation/Lecture Method):

उपनिषदांमध्ये व्याख्यान पद्धतीचा प्रयोग खूप ठिकाणी दिसतो.

या पद्धतीद्वारे विषयाचे सविस्तर स्पष्टीकरण केले जाते.

जसे की, "ओम् इत्येतद् अक्षरमुद्गीथमुपासित..." या मंत्रात 'उपव्याख्यान' या शब्दावरूनच येथे व्याख्या विधीचा वापर झाला आहे असे समजते.

उदाहरण: "पृथ्वी हा सर्व भूतांचा रस (सार) आहे, पृथ्वीचा रस पाणी आहे, पाण्याचा रस औषधी (वनस्पती) आहे, औषधीचा रस पुरुष आहे, पुरुषाचा रस वाणी आहे, वाणीचा रस ऋग्वेद आहे, ऋग्वेदाचा रस सामवेद आहे आणि सामवेदाचा रस उद्गीथ (ओम) आहे."

वादविवाद विधी किंवा शास्त्रार्थ पद्धती (Debate/Discourse Method):

- "वादे वादे जायते तत्त्वबोधः" (वादातूनच तत्त्वाचा बोध होतो) असे वचन ऐकायला मिळते.
- तत्त्व निर्णयासाठी संवाद, वाद, वादविवाद आणि शास्त्रार्थ अपेक्षित असतो.
- कोणीतरी काहीतरी सांगितले म्हणून ते प्रमाण मानले जात नाही, तर ते पुराव्यासह सिद्ध करावे लागते, तिलाच 'शास्त्रार्थ पद्धती' म्हणतात.

उपनिषदांमध्ये शास्त्रार्थ पद्धतीचे अनेक पुरावे आहेत.

- जसे की, जनक राजाच्या सभेत याज्ञवल्क्य आणि उषस्त चाक्रायण यांच्यातील शास्त्रार्थः
- उषस्त चाक्रायणाने याज्ञवल्क्यांना विचारले, "जे साक्षात आणि अपरोक्ष ब्रह्म आहे आणि जो सर्वांच्या अंतर्गामी असलेला आत्मा आहे, त्याचे मला स्पष्टीकरण द्या."
- याज्ञवल्क्य म्हणाले, "हा तुखा आत्मा आहे जो सर्वांच्या आत आहे."
- पुन्हा विचारले असता याज्ञवल्क्य म्हणाले, "जो प्राणाने श्वास घेतो तो तुझा आत्मा आहे, जो अपानाने कार्य करतो तो तुझा आत्मा आहे..."
- शेवटी याज्ञवल्क्य सांगतात की, जो पाहणाऱ्याचा पाहणारा आहे, जो ऐकणाऱ्याचा ऐकणारा आहे, त्याला तू पाहू किंवा ऐकू शकत नाहीस. तोच तुझा आत्मा आहे.
- यावरून याज्ञवल्क्य आणि उषस्त यांच्यातील शास्त्रार्थ विधी स्पष्टपणे दिसून येतो.

विद्याधिगमाय सोपानानि (शिक्षणाचे टप्पे):**ज्ञानप्राप्तीचे टप्पे**

श्रवण, मनन, निदिध्यासन आणि साक्षात्कार: या उपायांनी खऱ्या अर्थाने विद्या प्राप्त होते आणि तत्त्वबोध (सत्याचे ज्ञान) होतो. जसे की:

"आत्मा वारे द्रष्टव्यः श्रोतव्यो मन्तव्यो निदिध्यासितव्यः" (बृहदारण्यक उपनिषद)

अर्थात: आत्म्याचे दर्शन घेतले पाहिजे, त्यासाठी (त्याच्याबद्दल) ऐकले पाहिजे, मनन केले पाहिजे आणि ध्यान (निदिध्यासन) केले पाहिजे.

- श्रवण: ऐकणे (श्रोतव्यः)
- मनन: विचार करणे (मन्तव्यः)
- निदिध्यासन: सखोल ध्यान करणे (निदिध्यासितव्यः)

- साक्षात्कार: प्रत्यक्ष अनुभव घेणे (द्रष्टव्यः)

या प्रमाणावरून हे समजते की उपनिषदांमधील 'बोध' म्हणजे केवळ विषयाची ओळख किंवा माहिती नसून अनुभूती (अनुभव) प्रधान आहे. जेव्हा ज्ञान आत्मसात केले जाते आणि ते आपल्या अस्तित्वाचा भाग बनते, तेव्हाच ज्ञानप्राप्ती पूर्ण होते. केवळ शब्दांची ओळख महत्त्वाची नसून तत्त्वाचा अनुभव महत्त्वाचा आहे. या अनुभवामुळे अज्ञानाचा पडदा दूर होतो आणि मनुष्य "अहं ब्रह्मास्मि" (मी ब्रह्म आहे) या सत्याप्रत पोहोचतो. यथार्थ अनुभवामुळे माणसाच्या विचारात आणि वागण्यात बदल होतो.

वारुणी विद्या (भृगू आणि वरुण यांचा संवाद)

भृगू हा वरुणाचा मुलगा होता. तो आपले वडील वरुणाकडे गेला आणि म्हणाला, "हे भगवन, मला ब्रह्माबद्दल शिकवा." वरुणाने त्याला अन्न, प्राण, चक्षु (डोळे), श्रोत्र (कान), मन आणि वाणी याबद्दल सांगितले. ते म्हणाले: "ज्यातून हे सर्व जीव निर्माण होतात, ज्याच्यामुळे ते जिवंत राहतात आणि शेवटी ज्यात विलीन होतात, ते ब्रह्म आहे; ते जाणून घेण्याचा प्रयत्न कर."

भृगूने तपश्चर्या केली. तपश्चर्या केल्यावर त्याला समजले की 'अन्न' हेच ब्रह्म आहे, कारण अन्नापासूनच सर्व जीव जन्मतात आणि अन्नावरच जगतात. हे समजल्यानंतर तो पुन्हा वरुणाकडे गेला...

येथे वारुणी विद्येमध्ये पंचकोशांचा (अन्नमय, प्राणमय, मनोमय, विज्ञानमय आणि आनंदमय) क्रम अनुभवाद्वारे ज्ञानप्राप्तीसाठी दर्शविला आहे. जो गुरुंचे उपदेश ऐकतो, तप करतो आणि अनुभव घेतो, तोच खरा ब्रह्मज्ञानी होतो. असा ज्ञानी माणूस केवळ शब्दांचा जाणकार नसून अंतर्दृष्टी तृप्त असतो. तो ऐहिक विषयांच्या मागे धावत नाही आणि लोककल्याणासाठी (परोपकारासाठी) झटतो.

शिष्याने (अन्तेवासी) कसे वागावे?

प्रश्न उपनिषदात पिप्पलाद ऋषींनी म्हटले आहे: "तपसा, ब्रह्मचर्येण, विद्यया, श्रद्धया च संवत्सरं संवत्स्यथ"

अर्थात: तप, ब्रह्मचर्य, विद्या आणि श्रद्धा यांच्यासह एक वर्ष निवास करा.

तप, ब्रह्मचर्य, विद्या आणि श्रद्धा ही तत्वे ब्रह्मविद्या प्राप्त करण्यासाठी अत्यंत मूलभूत आहेत.

महत्त्वाचा विचार: तपाशिवाय लौकिक किंवा पारलौकिक कोणतेही ज्ञान प्राप्त होत नाही. म्हणून तप (मेहनत/साधना) करणे आवश्यक आहे.

उपनिषदिक शिक्षण आणि उपदेश

ब्रह्मचर्य:

विषयांपासून (इंद्रिय सुखांपासून) दूर होऊन जेव्हा माणूस ब्रह्मज्ञानाशी जोडला जातो, तेव्हाच त्याला यथार्थ बोध (खरे ज्ञान) प्राप्त होतो. ब्रह्मचर्य म्हणजे इंद्रिये आणि मनावर नियंत्रण मिळवणे होय.

श्रद्धा:

श्रद्धावान व्यक्तीलाच ज्ञान प्राप्त होते. ज्याच्याकडे श्रद्धा नाही, तो काहीही साध्य करू शकत नाही किंवा मिळवू शकत नाही. श्रद्धाहीन जीवनात स्थिरता नसते. अश्रद्धा माणूस नेहमी संशयाने ग्रासलेला असतो. 'संशयात्मा विनश्यति' (संशय घेणाऱ्याचा नाश होतो). म्हणूनच उपनिषदात "हे सौम्य, खूप श्रद्धा ठेव" असा उपदेश वारंवार आढळतो.

आचार्य आणि शिष्याचा संबंध:

गुरु आणि शिष्यामध्ये पिता-पुत्रासारखे नाते असते. असे म्हटले जाते की, आचार्य शिष्याला स्वतःच्या पुत्राप्रमाणे मानतात. आचार्य आपल्या शिष्याच्या सर्वांगीण कल्याणासाठी सतत प्रयत्नशील असतात.

अनुशासन (शिस्त):

आचार्य आणि शिष्य दोघेही अनुशासनात राहतात. दोघेही तपश्चर्या करतात आणि ब्रह्मचर्याचे पालन करतात. कठोर व्रतांचे पालन करून ते आपले जीवन पवित्र करतात. तैत्तिरीय उपनिषदाच्या 'शिक्षाध्याया'त शिक्षणाच्या शेवटी 'दीक्षान्त उपदेश' (Convocation Message) अनुशासनाच्या रूपाने दिला जातो, तो असा: "नेहमी सत्य बोला. धर्माचे आचरण करा. स्वाध्यायामध्ये (अभ्यासात) कधीही आळस करू नका. आचार्यांना प्रिय असलेले धन अर्पण करून गृहस्थाश्रमात प्रवेश करा आणि वंशपरंपरा खंडित होऊ देऊ नका. सत्यापासून, धर्मापासून आणि कल्याणाच्या मार्गापासून कधीही विचलित होऊ नका. देव आणि पितरांच्या कार्यात हयगय करू नका. आई, वडील, गुरु आणि अतिथी यांना देवाप्रमाणे माना. जी कर्मे निष्कलंक आहेत, त्यांचेच सेवन करा, इतरांचे नाही. आमची जी चांगली चरित्रे (वर्तन) आहेत, त्यांचेच तुम्ही अनुसरण करा."

हाच आदेश आहे, हाच उपदेश आहे आणि हेच वेदांचे सार आहे. अशा प्रकारे शिस्तबद्ध आणि सदाचारी जीवनासाठी हे अनुशासन सांगितले आहे.

लक्ष्य (ध्येय):

उपनिषदिक शिक्षणाचे अंतिम लक्ष्य 'आत्मानुभूती' (स्वतःला ओळखणे) हे आहे.

- "आत्म्याचे दर्शन घ्यावे, त्याबद्दल ऐकावे, त्यावर मनन करावे आणि त्याचेच निदिध्यासन (ध्यान) करावे."
- जर या जन्मात त्याला जाणले तरच जीवनाचे सार्थक आहे, अन्यथा मोठे नुकसान आहे.
- सर्व भूतांमध्ये (प्राणिमात्रांत) त्या परमात्म्याला ओळखून धैर्यवान पुरुष या जगातून मुक्त होऊन अमर होतात.
- "प्रणव (ॐ) हे धनुष्य आहे, आत्मा हा बाण आहे आणि ब्रह्म हे त्याचे लक्ष्य आहे."

स्त्री चळवळीत डॉ. गेल ऑम्ब्रेट यांचे योगदान

प्रा. डॉ. ज्ञानेश्वर चव्हाण

समाजशास्त्र विभागप्रमुख, शारदा महाविद्यालय, परभणी

डॉ. गेल ऑम्ब्रेट अंतरराष्ट्रीय समाजशास्त्रज्ञ यांचा जन्म 2 ऑगस्ट 1941 अमेरिकेत जरी झाला असला तरी त्यांनी आपले संपूर्ण आयुष्य भारतीय स्त्री चळवळ, दलित चळवळ व शेतकरी चळवळ अर्पण केले. पुणे विद्यापीठात समाजशास्त्राच्या प्राध्यापिका म्हणून त्यांनी काम केले. अमेरिकन वंशाची मुलगी संशोधनाच्या कामासाठी अमेरिकेतून भारतात आलेल्या गेल भारतातील खेड्यापाड्यात फिरल्या व त्यातून त्यांचे भारतीय मातीशी नाते जुळले. स्त्रीमुक्ती चळवळीत त्यांची नाळ जोडली गेली. जातविरोधी आंदोलन, दलित राजकारण आणि महिला, महिलांच्या हक्कांविषयी चळवळी, परित्यक्त स्त्रियांच्या चळवळी संशोधन करीत असताना डोव्या चळवळीतील लोकांच्या संपर्कात आल्या. जसे लाल निशान पक्ष, नवमार्क्सवादी गट, फुले-आंबेडकर गट, बॉमसेफ, ओबीसी आणि स्त्रीमुक्ती चळवळ यांचा जवळचा संबंध आला. संत साहित्याच्या गाढ्या अभ्यासक गौतम बुद्ध, महात्मा ज्योतीराव फुले, डॉ.बाबासाहेब आंबेडकर, कार्ल मार्क्स यांचा प्रभाव डॉ.गेलवर दिसून येतो. श्रमीक मुक्तीदलाच्या माध्यमातून त्यांनी डॉ.भारत पाटनकर यांना आयुष्यभर समर्थपणे साथ दिली. 1976 मध्ये डॉ.गेल यांनी भारतीय वंशाच्या डॉ.पाटनकर यांच्याशी विवाह केल्या व कायमच्या भारतात स्थायिक झाल्या. 1983 मध्ये त्यांनी भारतीय नागरिकत्व स्विकारलं. अमेरिकेतून आलेल्या गेल महाराष्ट्रातील तासगाव तालुक्यात काशीगाव या छोट्याशा खेड्यात त्या पाटनकर सोबत राहिल्या. व पूर्ण आयुष्यभर स्त्री चळवळीसाठी काम केले.

संशोधनाची उद्दिष्टे

1. डॉ.गेल ऑम्ब्रेट यांच्या स्त्री चळवळीतील योगदानाचा अभ्यास करणे.
2. दलित स्त्रीवादाबाबत त्यांच्या भूमिकेचे विश्लेषण करणे.
3. फुले-आंबेडकर विचारांचा स्त्रीमुक्तीशी असलेला संबंध स्पष्ट करणे.
4. भारतीय स्त्री चळवळीवरील त्यांच्या विचारांचा प्रभाव समजून घेणे.

1975 हे वर्ष संयुक्त राष्ट्र संघाने आंतरराष्ट्रीय महिला वर्ष म्हणून घोषित केले. ऑक्टोबर 1975 पुणे शहरात संयुक्ती स्त्रीमुक्ती परिषद घेण्यात आली. 1971-72 हा काळ महाराष्ट्रात तीव्र दुष्काळाचा काळ होता. परंतु या चळवळीत पुरुषापेक्षा स्त्रियांचा सहभाग जास्त होता. डॉ. गेल स्त्रीमुक्ती विचारांची बीजं समाजात पेरत होत्या. याच काळात श्रमिक संघटना मागोवा गुपच्या पुढाकाराने वाढत गेली. कासेगाव या संघटनेचे प्रमुख गाव होते. 1983 नंतर सांगली आणि सातारा जिल्ह्याच्या परिसरात स्त्रीमुक्ती चळवळ सर्वदूर पसरत गेली. या चळवळीत डॉ. गेल, इंदूताई पाटनकर, उषाताई निकम, नागमणी राव, कुंदा प्र.नि. यासारख्या कार्यकर्त्यांनी स्त्री चळवळीत सहभाग घेतला. 1985 ला विटा जि.सांगली येथे स्त्रीमुक्ती संघर्ष चळवळ एका मोठ्या मेळाव्यात स्थापन झाली. यानंतर लगेचच 1 मे 1988 ला स्त्रियांचे आंदोलन शेती आणि पिण्याच्या पाण्याची खात्री करण्यासाठी उभे राहिले. 18 ऑक्टोबर 1989 ला परित्यक्त स्त्रियांचे बेमुदत आंदोलन सांगली जिल्हाधिकारी कार्यालयावर काढण्यात आले. या आंदोलनामुळे परित्यक्त स्त्रियांना स्वतंत्र रेशनकार्ड, घर बांधणीसाठी मोफत भूखंड मिळाला. नंतर औरंगाबाद जिल्ह्यातील सिल्लोड तालुक्यात स्त्री आंदोलन उभे राहिले. नंतर 9 डिसेंबर 1991 ला कराड तालुक्यातील इंदोली गावात उषाताई निकम यांच्या पुढाकाराने स्त्री आणि शेती प्रशिक्षण शिबीर झाले. या सर्व आंदोलनाला डॉ.गेल यांचीच प्रेरणा होती. जून 1990 रोजी अखिल भारतीय महिला फेडरेशन बरोबर आघाडी करून मंत्रालयावर भव्य मोर्चा निघाला यावेळी समाजकल्याण मंत्री रामदास आठवले यांनी डॉ.गेल यांच्याशी चर्चा करून परित्यक्त स्त्रियांना ज्यादा सवलती देण्यात आल्या. बिहारमध्ये पाटण्यात देशपातळीवरची स्त्रीमुक्ती परिषद संघटित करण्यात आली. या परिषदेत डॉ.गेलच्या पुढाकाराने स्त्रियांसाठी आंदोलन छेडण्यात आले. त्यानंतर डॉ. गेल यांनी स्त्रीमुक्ती चळवळीच्या संदर्भात देशभर दौरे केले. स्त्रीविषयी चर्चासत्र, परिषदा, व्याख्याने दिली व त्यांनी आपल्या लेखणीतून 25 पेक्षा जास्त पुस्तकातून स्त्री चळवळीवर प्रकाश टाकण्याचा प्रयत्न केला. आज डॉ. गेल आपल्यात जरी नसल्या तरी त्यांनी केलेल्या कामाचा वस्सा

स्त्री चळवळीत दिसून येतो. अशा महान समाजशास्त्रज्ञ, इतिहासकार, समाजसेविकेचे 25 ऑगस्ट 2021 रोजी वृद्धापकाळाने निधन झाले.

निष्कर्ष

डॉ. गेल यांचे कार्य केवळ संशोधन करण्यापूरते मर्यादित नसून त्यांचे विचार व कार्य सामाजिक परिवर्तनाचे साधन व हत्यार होते. त्यांनी भारतीय समाजातील दुर्बल घटक, स्त्री, दलित शेतकरी प्रश्नांना वाचा फोडण्याचे काम केले. आंतरराष्ट्रीय समाजशास्त्राच्या इतिहासात आजही त्यांचे स्थान महत्त्वाचे आहे.

संदर्भग्रंथ

- 1) कांबळे संजयकुमार, डॉ.गेल ऑम्ब्रेट समजून घेताना, डायमंड पब्लिकेशन, पुणे.
- 2) दै.महाराष्ट्र टाईम्स, दि.29/08/2021
- 3) दै. लोकसत्ता, 29/08/2021
- 4) दै.लोकसत्ता, दि.15/11/2025
- 5) Gender & Technology.

कृष्णाकाठ : प्रत्येक ग्रंथालयात संग्रही ठेवावे असे आत्मचरित्र

डॉ. किशन कोंडिबा तेलगाने

ग्रंथपाल,

स्वामी विवेकानंद महाविद्यालय, शिरूर ताजबंद, ता. अहमदपूर, जि. लातूर.

यावर्षी स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ नांदेड यांनी बी. ए. द्वितीय वर्षासाठी मराठी विषयातील मेजर अभ्यासपत्रिकेसाठी यशवंतराव चव्हाण लिखित कृष्णाकाठ हे आत्मचरित्र अभ्यासक्रमासाठी नेमले आहे. महाविद्यालयीन तरुणांनी प्रस्तुत पुस्तकाचे अध्ययन करून यशवंतराव चव्हाण यांची राजकीय कारकिर्द समजून घेणे अपेक्षित आहे. ग्रंथालये विविध संदर्भ ग्रंथांनी शोभून दिसतात तद्वत सरस आणि सकस साहित्यकृतींनी ग्रंथालयाचे वैभव वाढते. विशेषतः महाविद्यालयातील ग्रंथालये अशा पुस्तकांनी समृद्ध असायला हवीत. इथे कृष्णाकाठ या यशवंतराव चव्हाण लिखित आत्मचरित्र अभ्यासू. राजकारणातील आदर्श नेतृत्वात जे जे नावे घ्यावे लागतात त्यातील एक व्यक्तिमत्व म्हणजे यशवंतराव चव्हाण हे एक आहे. बुद्धी, नीती, राजनीती, साहित्य, संस्कृती यात त्यांचे असलेले योगदान भारत देशाच्या वैभवात भर टाकणारेच आहे. त्यांच्या व्यक्तिमत्त्वात असलेली कुशलता ही अतिशय महत्त्वाची होती. त्यास जोड प्रसंगावधानाचे असल्यामुळे त्यांचे जीवन आदर्शाच्या उच्च टोकाकडे घडत जाताना आढळते. यशवंतराव चव्हाण यांच्या अंगी असलेली गुणसंपन्नता हीच त्यांच्या संबंध व्यक्तिमत्त्वास आकार देताना दिसते. धाडस, सुसंवाद, युद्धनीतीचा अभ्यास या पैलूंनी त्यांचे जीवन समृद्ध असल्यानेच त्यांना जीवनात यश मिळाल्याचे दिसत आहे.

आत्मचरित्र हा साहित्यप्रकार मानवी जीवनानुभवांचे अत्यंत प्रामाणिक, थेट आणि आत्मकथनात्मक रूप सादर करणारा महत्त्वाचा प्रकार आहे. लेखक स्वतःच्या आयुष्यातील घटनांचा, संघर्षांचा, विचारांचा आणि भावविश्वाचा मागोवा घेतो. त्यामुळे आत्मचरित्र हे केवळ वैयक्तिक जीवनकथा न राहता एका काळाचे, समाजाचे आणि संस्कृतीचेही दस्तऐवज ठरते. आत्मचरित्र हा साहित्यप्रकार व्यक्तीच्या जीवनकथनाच्या माध्यमातून समाजाचे व्यापक दर्शन घडवतो. मराठी साहित्यात आत्मचरित्रांनी सामाजिक वास्तव, संघर्षशील जीवन आणि आत्मपरीक्षणाची समृद्ध परंपरा निर्माण केली आहे. म्हणूनच आत्मचरित्र हे मराठी साहित्याचे केवळ एक अंग नसून त्याच्या वैचारिक आणि सामाजिक जडणघडणीचा महत्त्वाचा आधारस्तंभ ठरले आहे.

उद्दिष्टे -

1. महाविद्यालयस्तरावरील ग्रंथालयांचे स्वरूप अभ्यासणे.
2. आत्मकथन या साहित्य प्रकाराचे महत्त्व आणि वेगळेपण अभ्यासणे.
3. कृष्णाकाठ या यशवंतराव चव्हाण लिखित आत्मकथनाचा आशय समजून घेणे.
4. यशवंतराव चव्हाण यांच्या सामाजिक, राजकीय, कौटुंबिक परिस्थितीचा आढावा घेणे.

गृहितके -

1. मराठी साहित्य समृद्ध असून विविध साहित्य प्रकारांनी नटलेले आहे.
2. मराठी साहित्यात कृष्णाकाठ हे महत्त्वाचे आत्मचरित्र आहे.

3. यशवंतराव चव्हाण यांच्या राजकीय कारकिर्दीचे अध्ययन करणे प्रस्तुत आत्मकथनामुळे शक्य आहे.
4. आत्मचरित्र हा साहित्य प्रकार वाचकांसाठी प्रेरणादायी असून वाचनीय आहे.

विषयप्रवेश -

यशवंतराव चव्हाण हे कुशाग्र बुद्धिमत्तेचे जसे होते तसेच उच्चदर्जाच्या प्रतिभावलाचे धनी होते. ते महाराष्ट्र राज्य विकासाच्या जडणघडणीत अपूर्व योगदान देणारे सिद्धहस्त राजकीय नेते होते. त्यांचे महाराष्ट्र राज्य व भारत देशाच्या विकासाचे उंची वाढवणारे योगदान सर्वांनी मान्य करावे लागते; अशाच आदर्शाच्या उंचीचे आहे. भारत देशातील आर्थिक, राजकीय, साहित्य, सांस्कृतिक, सामाजिक, संरक्षण विषयक, आंतरराष्ट्रीय संबंध विषयीचे कार्य, कार्यकर्त्याला नेता बनविणारे आदर्श कृतिशील कार्य, महाराष्ट्राला विकासात वैभव मिळवून देणारे व भारत देशाची जागतिक पातळीवर उंची वाढविणारे यशवंतराव चव्हाण यांचे विचार व प्रत्येक कार्य हे आजही सर्वांसाठीच आदर्श आहे. प्रस्तुत कृष्णाकाठ हे आत्मचरित्र त्यांच्या एकूण व्यक्तिमत्वाची, स्वातंत्र्यपूर्व तसेच स्वातंत्र्योत्तर कालखंडातील संघर्षाची कहाणी कथन करते, हे मान्य करायला हवे

अ) आत्मचरित्राचे स्वरूप -

आत्मचरित्र म्हणजे लेखकाने स्वतःच्या जीवनाची स्वतःच केलेली मांडणी. यात लेखक स्वतः नायक असतो आणि तोच कथनकर्ता असतो. स्व चे अनुभव स्वतःच मांडणे असे आत्मचरित्राचे स्वरूप असते. सर्वप्रथम आत्मचरित्र या साहित्यप्रकाराचे स्वरूप समजून घेऊ.

1. स्वानुभवाधिष्ठित लेखन -

आत्मचरित्राचे मूळ स्वतःच्या अनुभवांत असते. बालपण, शिक्षण, कौटुंबिक जीवन, सामाजिक संघर्ष, अपयश-यश, मानसिक घडामोडी यांचे चित्रण यात येणे अपेक्षित असून ते अधिकाधिक वस्तुनिष्ठ असावे लागते.

2. प्रामाणिकपणा आणि आत्मपरीक्षण -

आत्मचरित्रात लेखक स्वतःच्या गुण-दोषांचे, चुका-मर्यादांचे प्रांजळपणे विश्लेषण करतो. आत्मस्तुतीपेक्षा आत्मपरीक्षणाला महत्त्व असते. स्वतःला स्वीकारण्याची तयारी असेल त्यांनीच आत्मचरित्र लिहावे.

3. कालानुक्रमिक मांडणी -

कालबद्ध मांडणी हे आत्मचरित्राचे महत्त्वाचे वैशिष्ट्य आहे. बहुतेक आत्मचरित्रे जन्मापासून ते लेखनकाळापर्यंतच्या घटनांची क्रमवार मांडणी करतात, जरी काही ठिकाणी आठवणींच्या आधारे मागे-पुढे येणारी रचना दिसते. जन्म ते कथन करण्यापर्यंतचा काळ हे आत्मचरित्राचे कथानक असते.

4. सामाजिक आणि ऐतिहासिक संदर्भ -

आत्मचरित्र हे व्यक्तीचे असले तरी त्यामध्ये त्या काळातील सामाजिक, आर्थिक, राजकीय परिस्थितीचे प्रतिबिंब उमटते. समकालीन सर्वांगीण जीवनाचे संदर्भ त्यात येणे अपेक्षित असते.

5. साहित्यिकता आणि साधेपणा -

भाषा सहसा साधी, थेट आणि संवादात्मक असते. अलंकारिकतेपेक्षा अनुभवाची तीव्रता महत्त्वाची ठरते. भाषा अनुभव व्यक्त करणारी असणे अपेक्षित असते.

वरील प्रमाणे स्वरूप विचारात घेता यशवंतराव चव्हाण यांचे कृष्णाकाठ हे मराठी साहित्यातील एक महत्वाचे वाचनीय आत्मचरित्र आहे, हे मान्य करावे लागते. प्रस्तुत आत्मकथनात त्यांनी आपल्या जीवनप्रवासाचा, विचारांचा आणि सामाजिक-राजकीय जाणिवांचा अत्यंत प्रांजळ व संयत शैलीत आलेख मांडला आहे.

ब) बालपण व ग्रामीण जीवनाचा प्रभाव -

प्रस्तुत कृष्णाकाठचा आशय अजून घेताना यशवंतराव चव्हाण यांचे बालपण आणि ग्रामीण जीवन अभ्यासणे गरजेचे ठरते. त्यांचे बालपण सातारा जिल्ह्यातील कृष्णा नदीच्या काठी गेले. ग्रामीण परिसर, शेतीप्रधान समाज, दुष्काळ, गरिबी, जातीय विषमता यांचा त्यांच्या मनावर खोल प्रभाव पडला. कृष्णा नदी ही त्यांच्या जीवनाची, संस्कारांची आणि भावविश्वाची प्रतीक बनते. ग्रामीण माणसाच्या दुःख-आनंदाशी असलेली आपुलकी येथे प्रकर्षाने दिसते.

1. कुटुंब, संस्कार व शिक्षण -

विठाबाई आणि बळवंतराव या आई-वडिलांकडून मिळालेले नैतिक संस्कार, कष्टाचे महत्त्व, स्वाभिमान आणि सामाजिक जबाबदारीची जाणीव लेखकाने ठळकपणे मांडली आहे. वास्तविक वडील लवकर वारल्यामुळे त्यांच्या संगोपनाची संपूर्ण जबाबदारी आईवर पडली. शिक्षणासाठी केलेली धडपड, अडचणींवर मात करण्याची वृत्ती आणि वाचन-चिंतनातून घडलेली व्यक्तिमत्त्वाची जडणघडण हा ग्रंथाचा महत्वाचा भाग आहे.

2. स्वातंत्र्य चळवळीतील सहभाग -

कृष्णाकाठमध्ये चव्हाण यांचा स्वातंत्र्यलढ्यातील सहभाग, कारावासाचे अनुभव, काँग्रेस चळवळीशी झालेली बांधिलकी आणि त्या काळातील कार्यकर्त्यांचे जीवन वास्तववादी पद्धतीने उलगडले आहे. स्वातंत्र्यप्राप्ती ही केवळ राजकीय घटना नसून सामाजिक परिवर्तनाची प्रक्रिया आहे, हा दृष्टिकोन येथे ठळक आहे.

3. सामाजिक जाणिवा व मूल्यदृष्टी -

ग्रंथात सामाजिक समता, शेतकरी-कामगारांचे प्रश्न, दुष्काळ निवारण, शिक्षणाचे महत्त्व यांबाबतची लेखकाची तळमळ दिसते. राजकारणाकडे सत्तेचे साधन म्हणून नव्हे, तर सेवेचे माध्यम म्हणून पाहण्याची भूमिका त्यांनी स्पष्ट केली आहे.

4. आत्मपरीक्षण व नम्रता -

प्रस्तुत आत्मचरित्र हे आत्मस्तुती करणारे नाही. आपल्या मर्यादा, चुका, संभ्रम यांचे प्रामाणिक आत्मपरीक्षण लेखक करतो. यामुळे ग्रंथाला सच्चेपणा आणि विश्वासाहर्ता प्राप्त होते. अतिशय नम्रपणे स्वतःच्या जगण्याचे परीक्षण करून एक लेखक म्हणून यशवंतराव चव्हाण यांनी आपले लेखन कौशल्य सिद्ध केले असल्याचे लक्षात येते.

5. शैली व भाषेचे सौंदर्य -

कृष्णाकाठची भाषा साधी, प्रवाही व संवेदनशील आहे. ग्रामीण जीवनाची चित्रणे, निसर्गवर्णने आणि भावनिक अनुभव यांमुळे हा ग्रंथ केवळ राजकीय आत्मचरित्र न राहता एक साहित्यिक अनुभव बनतो.

यशवंतराव चव्हाण यांचे कृष्णाकाठ हे आत्मचरित्र त्यांच्या जीवनाचा केवळ राजकीय नाही तर मानवी, भावनिक आणि सामाजिक प्रवास उलगडून दाखवते. या ग्रंथात त्यांनी आपल्या बालपणाचे अत्यंत साधे, प्रांजळ आणि वास्तववादी चित्रण केले आहे.

क) कृष्णा नदीकाठचे बालविश्व -

यशवंतराव चव्हाण यांचे बालपण कृष्णा नदीच्या काठी असलेल्या कराड परिसरात गेले. कृष्णा नदी ही त्यांच्या बालपणाची साक्षीदार आहे. नदी, माळराने, शेतजमीन, गावचे रान, निसर्ग यांच्याशी त्यांचे बालपण घट्ट जोडलेले होते. कृष्णा नदीच्या काठावर त्यांचे जीवन बहरत गेले. नदीच्या प्रवाहाशी सुसंगत त्यांचे जीवन राहिले आहे. त्यांनी त्या परिसरातील निसर्गाशी असलेली ही नाळ अतिशय हळुवार शब्दांत मांडली आहे.

1. गरिबी व संघर्षमय जीवन -

त्यांचे बालपण आर्थिक अडचणींनी भरलेले होते. वडिलांचे छत्र लहानपणीच हरपल्यामुळे कुटुंबावर जबाबदाऱ्यांचे ओझे आले. साधे कपडे, मर्यादित साधनसामग्री, कष्टाचे जीवन या सगळ्यांचा उल्लेख ते तक्रार न करता, उलट आत्मपरीक्षणाच्या सुरात करतात.

2. आईचे संस्कार व कष्ट -

बालपणाच्या वर्णनात आईचे स्थान अतिशय महत्वाचे आहे. आईचे कष्ट, तिची जिद्द, संस्कारशील वर्तन, यामुळेच आपले व्यक्तिमत्त्व घडले, हे त्यांनी स्पष्टपणे मान्य केले आहे. आई ही त्यांची पहिली गुरू ठरली, असे सूचक वर्णन आढळते.

3. शिक्षणाची ओढ -

अडचणी असूनही शिक्षणाबद्दलची ओढ त्यांच्या बालपणात दिसते. शाळेतील अनुभव, शिक्षकांचा प्रभाव, वाचनाची आवड यामुळे विचारशीलता आणि नेतृत्वगुणांची बीजे बालपणातच रोवली गेली, असे ते सांगतात.

4. मूल्यसंस्कार -

बालपणातील अनुभवांतून त्यांच्यात कष्टाची सवय, आत्मसन्मान, सामाजिक जाणिव, सहानुभूती हे गुण निर्माण झाले. पुढील राजकीय व सार्वजनिक जीवनाची बीजे या बालपणातच रुजली, हे त्यांनी सूचित केले आहे.

निष्कर्ष -

कृष्णाकाठमधील बालपणाचे वर्णन हे केवळ आठवणी नाहीत, तर एका महान नेतृत्वाच्या जडणघडणीची कथा आहे. साधेपणा, संघर्ष, आईचे संस्कार आणि निसर्गसन्निध्य या घटकांतून यशवंतराव चव्हाण यांचे व्यक्तिमत्त्व कसे घडले, हे प्रभावीपणे उमटते. प्रस्तुत आत्मचरित्र ही केवळ एक कलाकृती नसून संस्काराची शिंदोरी आहे. चव्हाण यांच्या राजकीय तसेच सामाजिक कार्याची सुरुवात बालवयात झालेल्या संस्कारातून लक्षात येते. त्यांचे बालपण कष्टप्रद असले तरी संस्कारिक होते. कृष्णा नदीच्या काठावर आणि सोनहिन्याच्या कुशीत ते घडत गेले, असे म्हटल्यास वावगे ठरत नाही.

कृष्णाकाठ हा केवळ यशवंतराव चव्हाण यांच्या जीवनकथेचा आलेख नसून, तो महाराष्ट्राच्या सामाजिक-राजकीय इतिहासाचा दस्तऐवज आहे. ग्रामीण संस्कृतीतून घडलेल्या एका थोर नेतृत्वाची विचारसरणी, मूल्ये आणि जीवनदृष्टी समजून घेण्यासाठी हा ग्रंथ अत्यंत महत्वाचा आहे. राजकारण आणि समाजकारण सांभाळून आत्मचरित्र लेखनासाठी आवश्यक प्रामाणिकपणा चव्हाण यांनी जपला आहे. राज्य आणि देशाच्या राजकीय पटलावर अनेकवर्ष आपल्या कर्तृत्वाचा ठसा उमटविल्यानंतर ही साहित्याशी स्वतःला त्यांनी जोडून घेतले होते. प्रस्तुत आत्मचरित्र ही त्यांच्या जीवनाची कथा असून त्यातून स्वातंत्र्यपूर्व आणि स्वातंत्र्योत्तर कालखंडातील महत्वाचे संदर्भ सहज अभ्यासता येतात, हे विशेष आहे. महाविद्यालयीन तरुणांनी प्रस्तुत आत्मचरित्र अभ्यासणे नितांत आवश्यक असून

त्यातून प्राप्त परिस्थितीत उभे राहण्याचे बळ येते. नांदेड विद्यापीठाने प्रस्तुत आत्मचरित्र अभ्यासक्रमास ठेवून एकप्रकारे मराठी साहित्य तसेच इतरही ज्ञानशाखेच्या विद्यार्थ्यांना एक दर्जेदार पुस्तक उपलब्ध करून दिले आहे. यशवंतराव चव्हाण संयुक्त महाराष्ट्राचे पहिले मुख्यमंत्री असल्यामुळे मागील पाच ते सहा दशकातील महाराष्ट्राच्या सामाजिक, धार्मिक, आर्थिक, राजकीय, सांस्कृतिक जीवनाची जडणघडण यातून सहजपणे अभ्यासता येणे शक्य आहे.

संदर्भ सूची -

1. मराठी संज्ञा संकल्पना कोश - जी. आर. भटकळ व इतर
2. कृष्णाकाठ - यशवंतराव चव्हाण
3. मी पाहिलेले यशवंतराव - संपादिका डॉ. सरोजिनी बाबर
4. भूमिका - यशवंतराव चव्हाण

भारतीय ज्ञान प्रणाली: एक तात्विक अध्ययन

प्रा. डॉ. खलील न. सय्यद

विभागप्रमुख तथा मार्गदर्शक
तत्वज्ञान विभाग, पं. दि.उ.महा.देवणी जि. लातूर

सारांश (Abstract)

भारतीय ज्ञान प्रणाली (IKS) ही भारताच्या बहुआयामी सांस्कृतिक, वैज्ञानिक आणि तत्वज्ञानपर परंपरेचा मूलस्तंभ आहे. वेद, उपनिषद, बौद्ध-जैन साहित्य, आयुर्वेद, योग, खगोलशास्त्र, गणित, कृषिविज्ञान, कला, साहित्य या विविध ज्ञानशाखांचा समन्वय करणारी ही प्रणाली हजारो वर्षांपासून भारतीय समाजाचे बौद्धिक व आध्यात्मिक मार्गदर्शन करत आली आहे. राष्ट्रीय शिक्षण धोरण 2020 नंतर IKS ला पुन्हा शैक्षणिक व संशोधन क्षेत्रात नवे स्थान मिळाले आहे. प्रस्तुत संशोधन पेपरमध्ये भारतीय ज्ञान प्रणालीची ऐतिहासिक उगमस्थाने, मूलतत्त्वे, प्रमुख घटक, विज्ञान-आधारित दृष्टिकोन, आधुनिक उपयोगिता आणि शैक्षणिक क्षेत्रातील उपयोज्यता यांचा अभ्यास केला आहे. या अभ्यासासाठी गुणात्मक संशोधन पद्धती वापरली असून महत्त्वपूर्ण ग्रंथ, अहवाल आणि उपलब्ध संशोधन साहित्याचा तुलनात्मक अभ्यास करण्यात आला आहे. शेवटी IKS च्या आधुनिक पुनर्मूल्यांकनाची आणि संशोधनाची आवश्यकता अधोरेखित करण्यात आलेली आहे.

प्रस्तावना (Introduction)

भारतीय संस्कृती ही विश्वातील सर्वात प्राचीन आणि समृद्ध संस्कृतींपैकी एक आहे. या संस्कृतीचा विशेष गुणधर्म म्हणजे तिची ज्ञानप्रधानता. ज्ञानाला “विद्या अमृतम्” मानणाऱ्या भारताने अनेक क्षेत्रांत अनोखे योगदान दिले – गणितातील शून्याची संकल्पना, आयुर्वेदातील चिकित्सा पद्धती, योगमार्ग, खगोलशास्त्रीय गणित, नृत्यशास्त्र, काव्यशास्त्र पासून ते पर्यावरण-जन्य जीवनशैलीपर्यंत. अशा विविध ज्ञानशाखांचा एकत्रित परिणाम म्हणजे भारतीय ज्ञान प्रणाली (Indian Knowledge System) ही संकल्पना. IKS ही केवळ प्राचीनतेचा गौरव करणारी प्रणाली नाही; तर ती आधुनिक जगातील अनेक समस्यांचे वैज्ञानिक आणि मानवी मूल्यांवर आधारित समाधान सुचवण्याची क्षमता बाळगते. विशेषतः शिक्षण, आरोग्य, पर्यावरण, कृषी आणि मानसशास्त्र या क्षेत्रांत IKS ची उपयुक्तता पुन्हा अधोरेखित होत आहे. राष्ट्रीय शिक्षण धोरण 2020 नुसार, IKS ला शालेय आणि उच्च शिक्षणात महत्त्वाचे स्थान देण्यात आले आहे. त्यामुळे या प्रणालीचा सखोल शैक्षणिक अभ्यास आणि पुनर्मूल्यांकन करणे आज अत्यावश्यक ठरते.

संशोधन पद्धती (Research Methodology)

या संशोधनासाठी गुणात्मक (Qualitative) संशोधन पद्धती अवलंबण्यात आली आहे. पुढील घटकांचा अभ्यास करण्यात आला:

३.१ ग्रंथाधारित पद्धती (Textual Analysis)

वेद, उपनिषद, आयुर्वेद ग्रंथ, योगसूत्र, नाट्यशास्त्र इत्यादींचा संक्षिप्त अभ्यास
भारतीय गणित, खगोलशास्त्र, साहित्य यावरील विद्वानांचे संशोधन

३.२ तुलनात्मक पद्धती (Comparative Study)

प्राचीन भारतीय ज्ञान प्रणाली आणि आधुनिक विज्ञान यांची तुलना

पाश्चिमात्य शिक्षणपद्धती व NEP 2020 मधील IKS च्या संकल्पनांची तुलना

३.३ द्वितीयक डेटा विश्लेषण (Secondary Data Analysis)

सरकारी अहवाल, संशोधन पेपर्स, जर्नल लेख, UNESCO व NCERT कडील साहित्य

३.४ संकल्पनात्मक विश्लेषण पद्धती

योग, आयुर्वेद, गणित, संस्कृत, कला यांसारख्या प्रमुख घटकांचे संकल्पनात्मक विश्लेषण

संशोधनाची उद्दिष्टे (Objectives of the Study)

1. भारतीय ज्ञान प्रणालीची ऐतिहासिक, तत्त्वज्ञानिक आणि सांस्कृतिक पार्श्वभूमी समजून घेणे.
2. IKS मधील प्रमुख ज्ञानशाखांचा सखोल अभ्यास करणे.
3. IKS ची वैज्ञानिकता आणि आधुनिक जगातील उपयुक्तता विशद करणे.
4. राष्ट्रीय शिक्षण धोरण 2020 नुसार भारतीय ज्ञान प्रणालीचे पुनर्मूल्यांकन तपासणे.
5. IKS च्या अभ्यासातील मर्यादा आणि आगामी संशोधन दिशा ओळखणे.

भारतीय ज्ञान प्रणालीची ऐतिहासिक पार्श्वभूमी

IKS ची सुरुवात वेदकाल पासून झालेली दिसून येते. ऋग्वेद, यजुर्वेद, सामवेद आणि अथर्ववेद या ग्रंथांनी भारतीयांची धार्मिक, वैज्ञानिक आणि तात्त्विक विचारसरणी घडवली. उपनिषदांनी आत्मज्ञान, ब्रह्म, कर्म, मोक्ष यांचा सखोल उहापोह केला. बौद्ध आणि जैन साहित्याने नैतिकता, तर्क, अहिंसा, जीवनशैलीविषयक विचार समृद्ध केले. नंतरच्या काळात आर्यभट्ट, वराहमिहिर, भास्कराचार्य, नागार्जुन, चरक, सुषुत, पतंजली अशा आचार्यांनी विज्ञान, गणित, औषधशास्त्र, योग, खगोलशास्त्र यांना नवीन दिशा दिली. नाट्यशास्त्र, कामसूत्र, अर्थशास्त्र, संगम साहित्य, तमिळ सिद्ध परंपरा या ग्रंथांनी कला, राज्यशास्त्र, संस्कृती आणि सामाजिक रचनेचे दस्तावेजीकरण केले.

भारतीय ज्ञान प्रणालीचे प्रमुख घटक

६.१ आयुर्वेद

त्रिदोष सिद्धांत – वात, पित्त, कफ

पंचकर्म चिकित्सा

वनौषधी, आहार-विहार यांवर भर

आयुर्वेद ही holistic medicine चे उत्कृष्ट उदाहरण आहे.

६.२ योग व अध्यात्म

पतंजली योगसूत्रांनी शारीरिक, मानसिक आणि आध्यात्मिक स्वास्थ्याचा मार्ग दाखवला.

योगाचे आठ अंग – यम, नियम, आसन, प्राणायाम, प्रत्याहार, धारणा, ध्यान, समाधी – हे आधुनिक मनोविज्ञानाशी सुसंगत दिसतात.

६.३ भारतीय गणित व खगोलशास्त्र

आर्यभट्ट – π चे मूल्य, पृथ्वीची गती

ब्रह्मगुप्त – शून्य आणि ऋणसंख्यांचे नियम

भास्कराचार्य – बीजगणित आणि कॅल्क्युलससदृश तत्त्वे

६.४ कला व नाट्यशास्त्र

भरतमुनींच्या नाट्यशास्त्राने रस, अभिनय, संगीत, नृत्य यांचा शास्त्रीय पाया घातला.

६.५ पर्यावरण व जीवनशैली

निसर्गाशी सुसंवाद, पंचमहाभूत सिद्धांत, जैविक शेती, वसुधैव कुटुंबकम् ही महत्त्वाची तत्त्वे.

भारतीय ज्ञान प्रणालीची वैज्ञानिकता

अलीकडील संशोधन IKS च्या वैज्ञानिकतेला पुष्टी देते. योगावर न्यूरोसायन्स व बायोलॉजीत संशोधन, आयुर्वेदातील औषधी वनस्पतींचे आधुनिक फॉर्मिकॉलॉजीशी सुसंगत परिणाम, वास्तुशास्त्रातील ऊर्जा वहन सिद्धांत आधुनिक ग्रीन आर्किटेक्चरशी जुळतो, भारतीय गणितातील शून्याची संकल्पना आधुनिक संगणक विज्ञानाचा पाया, यामुळे IKS केवळ अध्यात्म किंवा परंपरा नाही; तर विज्ञानाधारित ज्ञानप्रणाली आहे.

आधुनिक शिक्षण आणि NEP 2020 मधील IKS

राष्ट्रीय शिक्षण धोरण 2020 ने IKS ला नवीन शैक्षणिक ओळख दिली.

मुख्य मुद्दे:

1. शालेय शिक्षणात – योग, वैदिक गणित, भारतीय कला, संस्कृत
 2. उच्च शिक्षणात – IKS चे संशोधन केंद्र, प्रमाणपत्र व पदवी अभ्यासक्रम
 3. पेडॅगॉजी व कौशल्य शिक्षणात – पर्यावरणीय मूल्ये, नीतिशिक्षण, holistic learning
- या धोरणामुळे IKS चे पुनरुज्जीवन होण्याची संधी उपलब्ध झाली आहे.

IKS च्या अभ्यासातील मर्यादा

1. प्रमाणित संशोधनाची कमतरता
2. ग्रंथांचे तांत्रिक भाषांतर उपलब्ध नसणे
3. फेक माहितीमुळे IKS बदल गैरसमज
4. पाश्चिमात्य शिक्षणपद्धतीतील वर्चस्व
5. संशोधनात निधी व पायाभूत सुविधा कमी

निष्कर्ष:

भारतीय ज्ञान प्रणाली ही अत्यंत व्यापक, वैज्ञानिक आणि मूल्याधिष्ठित परंपरा आहे. तिचे आधुनिक जगातील महत्त्व वाढत आहे. आरोग्य, योग, पर्यावरण, तंत्रज्ञान, शिक्षण अशा अनेक क्षेत्रांत IKS चे तत्त्वज्ञान मार्गदर्शक ठरत आहे. NEP 2020 ने IKS ला दिलेल्या महत्त्वामुळे आगामी पिढी भारतीय वारशाबद्दल सजग आणि संशोधननिष्ठ होऊ शकते. IKS चा सखोल अभ्यास, संशोधन आणि जागतिकीकरण ही भारताच्या ज्ञान-समृद्ध भविष्यासाठी आवश्यक आहे.

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लोकशाही टिकवण्यात सर्वोच्च न्यायालयाची भूमिका: आजचे वास्तव.

संजु देवराव तोडासे

(प्राथमिक शिक्षक)

जि.प. प्राथ. शाळा लालगुडा, केंद्र गडचांदूर

प्रस्तावना,

लोकशाही ही केवळ निवडणूक घेण्याची प्रक्रिया नसून ती विचार स्वातंत्र्य, मत भिन्नतेचा सन्मान, कायद्याचे राज्य आणि संस्थात्मक संतुलन याचा संगम आहे. भारतीय लोकशाही ही जगातील सर्वात मोठी लोकशाही म्हणून ओळखली जाते. मात्र तिची ताकद केवळ लोकसंख्येत नसून संविधानिक मूल्यांमध्ये आहे. या मूल्यांचे संरक्षण करणारी प्रमुख संस्था म्हणजे सर्वोच्च न्यायालय होय. आजच्या राजकीय, सामाजिक आणि आर्थिक बदलांच्या पार्श्वभूमीवर लोकशाहीवर अनेक संकटे येत असताना सर्वोच्च न्यायालयाची भूमिका अधिक व्यापक, अधिक जबाबदार आणि अधिक निर्णायक बनलेली आहे. लोकशाही ही केवळ निवडणुकीपुरती मर्यादित संकल्पना नाही, तर ती नागरिकांचे मूलभूत अधिकार, स्वातंत्र्य, समानता, न्याय आणि जबाबदारी या मूल्यावर उभी असलेले व्यापक व्यवस्था आहे. लोकशाही टिकवण्यासाठी केवळ संसद आणि कार्यपालिका पुरेशी नसून न्यायपालिकेची भूमिका अत्यंत निर्णायक असते. भारतात सर्वोच्च न्यायालय ही लोकशाहीची अंतिम राखणदार संस्था मानली जाते. संविधानाचे संरक्षण, मूलभूत हक्कांचे रक्षण, सत्तेचा समतोल आणि कायद्याचे राज्य अभाधित ठेवणे ही जबाबदारी सर्वोच्च न्यायालयावर आहे. आजच्या राजकीय, सामाजिक आणि आर्थिक वास्तव्यात सर्वोच्च न्यायालयाची भूमिका अधिक महत्वाचे आणि आव्हानात्मक बनली आहे.

भारतीय संविधान आणि न्यायपालिकेची संकल्पना

भारतीय संविधानाने सत्तेचे विभाजन केलेले आहे. विधिमंडळ, कार्यपालिका आणि न्यायपालिका. या तिन्ही स्तंभांमध्ये परस्पर संतुलन आणि नियंत्रण ही लोकशाहीची खरी ताकद आहे. न्यायपालिका स्वतंत्र राहिल, कोणत्याही राजकीय दबावापासून मुक्त राहिल अशी तरतूद भारतीय संविधान निर्मात्यांनी केली आहे. सर्वोच्च न्यायालयाला नाईक पुनर्विलोकनाचा अधिकार देण्यात आला आहे. ज्या द्वारे संसद किंवा सरकारचे निर्णय संविधान विरोधी ठरल्यास ते रद्द करण्याचा अधिकार न्यायालयाला आहे. हा अधिकार लोकशाहीसाठी संरक्षक ठरतो.

सर्वोच्च न्यायालय

सर्वोच्च न्यायालयाचे भूमिका केवळ कायद्याची व्याख्या करण्यापूर्वी मर्यादित नाही. ती संविधानातील मूल्य जिवंत ठेवण्याचे काम करते. अभिव्यक्ती स्वातंत्र्य, वैयक्तिक स्वातंत्र्य, धार्मिक स्वातंत्र्य, समानतेचा हक्क हे सर्व अधिकार जेव्हा धोक्यात येतात, तेव्हा नागरिकांची शेवटची आशा ही सर्वोच्च न्यायालय असते. अनेक ऐतिहासिक निकालांनी न्यायालयाने हे सिद्ध केले आहे की लोकशाहीत टिकवण्यासाठी कधीकधी सत्ताधारांच्या विरोधात उभे राहणे आवश्यक असते.

न्यायिक पुनर्विलोकन आणि सत्तेवर नियंत्रण

न्यायिक पुनर्विलोकन हा सर्वोच्च न्यायालयाचा सर्वात प्रभावी अधिकार आहे. संशोधनी केलेले कायदे, सरकारचे अध्यादेश किंवा धोरणात्मक निर्णय हे संविधानाशी सुसंगत आहे का? याची तपासणी न्यायालय करते. केशवानंद भारती प्रकरणाचा मूलभूत रचना सिद्धांत मांडून सर्वोच्च न्यायालयाने संसदेलाही अमर्याद अधिकार नाही, हे स्पष्ट केले. हा निर्णय भारतीय लोकशाहीचा मोलाचा दगड मांडला जातो त्यामुळे संविधानाच्या आत्म्याचे संरक्षण झाले.

मूलभूत हक्कांचे संरक्षण

लोकशाहीत नागरिकांचे मूलभूत हक्क सुरक्षित असणे आवश्यक आहे. अटक, नजर कैद, इंटरनेट बंदी, अभिव्यक्ती वर निर्बंध, अशा अनेक प्रकरणात सर्वोच्च न्यायालयाने नागरिकांच्या बाजूने उभे राहत सरकारला जाब विचारला

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कार्यपालिका विरुद्ध न्यायपालिका

आजच्या वास्तव्यात कार्यपालिका आणि न्यायपालिका यांच्यातील तणाव वारंवार चर्चेत येतो. काही वेळा सरकार न्यायालयीन निर्णयांना न्यायिक अतिरेक मानते. तर न्यायालय सरकारच्या हस्तक्षेपावर नाराजी व्यक्त करते. हा संघर्ष लोकशाहीसाठी घातक नसून, योग्य मर्यादित राहिला तर तो पूरक ठरतो कारण तोच सत्तेचा समतोल राहतो.

राजकीय दबाव आणि न्यायालयाचे वास्तवता

आज सर्वोच्च न्यायालयासमोर मोठे आव्हान म्हणजे राजकीय दबाव, न्यायाधीशांच्या नियुक्ती, बदल्या, या सगळ्या मुद्द्यावर प्रश्नचिन्ह उपस्थित केले जाते. न्यायालयाचे विश्वासहारात टिकवण्यासाठी त्यांची स्वायत्तता अबाधित राहणे गरजेचे आहे. नागरिकांचा विश्वास हीच न्यायपालिकेची खरी शक्ती आहे.

लोकहित याचिका, जनहित याचिका

लोकहित याचिका ही भारतीय न्यायव्यवस्थेची अनोखी देणगी आहे. गरीब, वंचित, दुर्लक्षित घटकांच्या हक्कासाठी सर्वोच्च न्यायालयाने या माध्यमातून हस्तक्षेप केला आहे. पर्यावरण संरक्षण, भ्रष्टाचार, मानवी हक्क, प्रशासनातील हलगर्जीपणा अशा अनेक विषयावर लोकहित याचिकेने लोकशाही अधिक सशक्त केली आहे.

प्रसार माध्यमे,

लोकशाहीत माध्यमांची भूमिका महत्वाची असते. पण माध्यमावरील निर्बंध, खटले, दबाव यामुळे अभिव्यक्ती स्वातंत्र्यावर गदा येते. अशावेळी सर्वोच्च न्यायालयाने प्रसार माध्यमांचे स्वातंत्र्याचे संरक्षण करणे ही लोकशाहीसाठी आवश्यक बाब आहे. न्यायालयाने वेळोवेळी स्पष्ट केले आहे की टीका ही लोकशाहीची आत्मा आहे.

आजचे वास्तव: प्रश्न आणि अपेक्षा

आजच्या काळात सर्वोच्च न्यायालयाकडून अपेक्षा प्रचंड वाढल्या आहे. राजकीय ध्रुवीकरण, संस्थात्मक दुर्बलता, कायद्याचा गैरवापर, तपास यंत्रणांचे राजकीय करण या सगळ्या पार्श्वभूमीवर न्यायालयाची भूमिका अधिक कठीण झाली आहे. काही प्रकरणात विलंब, काही निर्णय यावर मोन, यामुळे टीका होते. मात्र तरीही लोकशाहीच्या संरक्षणासाठी सर्वोच्च न्यायालय हे शेवटचे मजबूत व्यासपीठ आहे.

भविष्यातील दिशा

लोकशाही टिकवण्यासाठी सर्वोच्च न्यायालयाने केवळ कायद्याच्या चौकटीत राहून नाही तर संविधानाच्या आत्म्याला अनुसरून निर्णय देणे गरजेचे आहे. पारदर्शकता, वेळेवर न्याय, स्वायत्तता आणि निर्भयता या मूल्यावर न्यायालय उभे राहिले तर लोकशाही अधिक मजबूत होईल.

न्यायालयीन सक्रियता आणि लोकशाही

लोकशाही टिकवण्यात सर्वोच्च न्यायालयाने केवळ निष्क्रिय पंचांची भूमिका न घेता अनेकदा सक्रिय हस्तक्षेप केला आहे. न्यायालयीन सक्रियतेमुळे अनेक सामाजिक प्रश्नांना वाचा फुटली. बंदी प्रत्यक्ष करण, पर्यावरण रक्षण, महिला हक्क, आदिवासी हक्क, कामगारांचे प्रश्न अशा अनेक विषयावर सर्वोच्च न्यायालयाने पुढाकार घेतला. काही वेळा ही सक्रियता आवश्यक ठरली कारण विधिमंडळ आणि कार्यपालिका अपयशी ठरत असल्याचे दिसून आले. परंतु न्यायालयीन सक्रिय तेवर टीकाही झाली आहे. काही राजकीय प्रश्न आणि सरकारी याला न्यायालयाचा अतिरिक्त मानतात, मात्र जेव्हा लोकशाही संस्थाच दुर्बल होतात तेव्हा न्यायालयाचा हस्तक्षेप हा लोकशाही वाचवण्याचा उपाय ठरतो.

आणिबाणीचा अनुभव आणि न्यायालयाचे आत्मपरीक्षा

1975 च्या आणीबाणीचा काळ भारतीय लोकशाहीसाठी काळा अध्याय मानला जातो. या काळात सर्वोच्च न्यायालयाने ए डी एम जबलपूर प्रकरणात दिलेला निर्णय आजही वादग्रस्त मानला जातो. या निर्णयातून न्यायालय

अपयशी ठरल्याची कबुली नंतर स्वतः न्यायालयाने दिली. हा अनुभव न्यायपालिकेसाठी आत्मपरीक्षणाचा ठरला आणि त्यानंतर न्यायालय अधिक सजग झाली. याच अनुभवातून पुढे मूलभूत हक्क, वैयक्तिक स्वातंत्र्य आणि अभिव्यक्ती स्वातंत्र्याच्या बाबतीत न्यायालय अधिक ठाम भूमिका घेताना दिसते.

केंद्र राज्य संबंध आणि सर्वोच्च न्यायालय

भारतीय संघराज्य रचनेत केंद्र आणि राज्यांमधील संघर्ष अटळ आहे. राज्य सरकारी बरखास्त करणे, राष्ट्रपती राजवट लागू करणे, राज्यपालाची भूमिका या सर्व मुद्द्यावर सर्वोच्च न्यायालयाने महत्वाचे निर्णय दिले आहेत. एस आर बॉम्बे प्रकरणात न्यायालयाने स्पष्ट केले आहे की बहुमताची चाचणी विधानसभेतच झाली पाहिजे, राजभवनात नाही, हा निर्णय संघराज्य लोकशाहीसाठी मोलाचा दगड ठरला. अजय राज्यपालाच्या भूमी करून वाद निर्माण होतात आणि अशावेळी सर्वोच्च न्यायालयाची भूमिका निर्णायक ठरते.

निवडणूक प्रक्रिया आणि लोकशाही

लोकशाहीचा पाया म्हणजे मुक्त आणि निपक्ष निवडणुका, निवडणूक आयोगाची स्वायत्तता, राजकीय पक्षांचे अर्थकरण, निवडणूक खर्च, आचारसंहिता या सर्व बाबतीत सर्वोच्च न्यायालयाने हस्तक्षेप करून लोकशाही मजबूत करण्याचा प्रयत्न केला आहे. निवडणूक रोख्याबाबत दिलेला निर्णय हा अलीकडील काळातला महत्वाचा राजकीय संदर्भ मानला जातो.

तपास यंत्रणा आणि राजकारण

ई डी, सीबीआय, एन आय ए, यासारख्या तपास यंत्रांचा वापर राजकीय विरोधका विरोधात होत असल्याचा आरोप वारंवार होतो. अशावेळी सर्वोच्च न्यायालयाने संतुलित भूमिका घेत हस्तक्षेप केला आहे. मात्र काही प्रकरणात न्यायालयाच्या मनावर प्रश्न उपस्थित झाले. तपास यंत्रणांची स्वायत्तता लोकशाहीसाठी अत्यंत महत्वाची असून त्यावर नियंत्रण ठेवण्याची जबाबदारी न्यायालयावरच असते.

माध्यम स्वातंत्र्य, सोशल मीडिया आणि न्यायालय

आजच्या डिजिटल युगात अभिव्यक्ती स्वातंत्र्य केवळ वर्तमानपत्रे, आणि टीव्ही पुरते मर्यादित राहिले नाही. सोशल मीडियावरील पोस्ट, आयटी कायदे, देशद्रोहाची गुन्हे, या सगळ्याचा लोकशाहीवर थेट परिणाम होतो. सर्वोच्च न्यायालयाने अनेक वेळा स्पष्ट केले आहे की सरकारवर टीका करणे हा गुन्हा नाही.

धार्मिक धुवीकरण आणि संविधानिक मूल्य

धर्माच्या आधारावर राजकारण करणे, अल्पसंख्याकांचे हक्क. हे आजच्या राजकारणातील संवेदनशील मुद्दे आहे. सर्वोच्च न्यायालयाने वेळोवेळी संविधानिक धर्मनिरपेक्षतेची बाजू घेतली आहे. मात्र काही निर्णयावरून न्यायालयावर टीका झाली आहे. तरीही संविधानिक मूल्य जपण्याची जबाबदारी सर्वोच्च न्यायालयावरच आहे.

आर्थिक धोरणे आणि सामाजिक न्याय

आर्थिक सुधारणा, खाजगीकरण, आरक्षण, सामाजिक न्याय, या विषयावर न्यायालयाने संतुलन राखण्याचा प्रयत्न केला आहे. आरक्षणाबाबतचे निर्णय, ई डब्ल्यू एस आरक्षण, ओबीसी आरक्षण, हे सर्व राजकीय दृष्ट्या संवेदनशील विषय असून न्यायालयाचे भूमिका अत्यंत महत्वाची ठरते.

नागरिकांचा विश्वास आणि न्यायालयाची विश्वासार्थता

लोकशाहीत न्यायालयाचे खरी ताकद म्हणजे नागरिकांचा विश्वास, हा विश्वास ढासळला तर लोकशाही धोक्यात येते. त्यामुळे न्यायालयाने केवळ न्याय देणे नव्हे तर तो न्याय दिसणे ही तितकेच आवश्यक आहे. पारदर्शकता, सार्वजनिक सुनावण्या, कारण मीमांसा या सगळ्या बाबी लोकशाहीसाठी महत्वाच्या आहेत.

आजचे वास्तव: टीका: अपेक्षा आणि जबाबदारी

आज सर्वोच्च न्यायालयावर टीका होणे हेही लोकशाहीचे लक्षण आहे. प्रश्न विचारले जात आहे. निर्णय तपासले जात आहे. ही प्रक्रिया लोकशाहीसाठी पूरक आहे. मात्र न्यायालयाने त्या कडे दुर्लक्ष न करता आत्मपरीक्षण करणे हे ही आवश्यक आहे.

भविष्यातील आव्हाने

कृत्रिम बुद्धिमत्ता, डिजिटल साहित्य, डाटा गोपनीयता, राष्ट्रीय सुरक्षा, विरुद्ध वैयक्तिक स्वातंत्र्य. या नव्या आव्हानावर सर्वोच्च न्यायालयाला भूमिका घ्यावी लागणार आहे. भविष्यात लोकशाही टिकवण्यात न्यायालयाची भूमिका अधिकच निर्णायक असेल.

निष्कर्ष

लोकशाही टिकवण्यात सर्वोच्च न्यायालयाची भूमिका ही केवळ कायदेशीर मर्यादित अडकलेली नसून ती संविधानाच्या आत्म्याशी जोडलेली आहे. आजच्या राजकीय वास्तव्यात सत्तेचे केंद्रीकरण, संस्थावरील दबाव आणि लोकशाही मूल्य वरील आघात वाढताना दिसतात. अशा काळात सर्वोच्च न्यायालय हे लोकशाहीचे शेवटचे मजबूत संरक्षण कवच आहे. निर्भय, स्वतंत्र आणि सक्रिय न्यायपालिका हीच सशक्त लोकशाहीची खरी हमी आहे. नागरिक, समाज आणि न्यायालय या तिन्हींचा संयुक्त प्रयत्नातून भारतीय लोकशाही टिकून राहू शकते.

संदर्भ ग्रंथ

- 1) भारतीय संविधान.
- 2) सर्वोच्च न्यायालय.
- 3) आपली संसद.