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Dear Esteemed Authors, Reviewers, Colleagues, and Readers,

Greetings and welcome to the inaugural issue of 'Shodh Saraswati'. As the Editor-in-Chief of this distinguished publication, I feel an overwhelming sense of gratification in welcoming you all.

On behalf of the Editorial Board, it is with great pride and sincere privilege that I am writing this message to present 'Shodh Saraswati' International Multidisciplinary Multilingual, Peer-Reviewed & Refereed Research Journal. Launching 'Shodh Saraswati' would not have been possible without the great and much-appreciated contributions from the editorial and technical team. The robust intellectual support and well-timed contribution of researchers/ authors deserve special appreciative applause. Our team expects a similar sort of sincere dedication from the researchers in the near future.

'Shodh Saraswati' not only serves as a platform for knowledge-sharing, collaboration, and inspiration, but also as a platform for the diverse perspectives and experiences shared by our researchers. We aim to provide a wealth of resources that ignite fresh ideas, spark meaningful discussions, and offer practical insights that can inspire action within the education fraternity. The aim of 'Shodh Saraswati' is to publish high-quality papers containing fresh, cutting-edge ideas in different disciplines that especially merit timely publication. Clearly, timely publication is extremely critical for the overall success of the research. Articles focus upon concepts, practices, and research in multiple disciplines. The journal invites articles in multiple languages. All articles undergo initial editor screening, peer review, and review by the editorial board.

The publication of 'Shodh Saraswati' is a long process; hence, all essential steps to make it a high-caliber scientific publication were taken. We are relying on the alliance of all our researchers, editors, and contributors to make it up to date, vibrant, and relevant publication. We hope you will enjoy reading our inaugural issue. We invite you to submit your best articles for publication.

A warm welcome to all!

Prof. Pramod Yadav
Editor in Chief

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Nanoparticles in Forensics: Recommendations for Protecting DNA Integrity During Latent Blood Fingerprint Development

➢ **Ritesh K Shukla**[1]

ABSTRACT

Forensic science is not exempt from the fast-expanding field of nanotechnology, which presents novel concepts in science and technology. Different kinds of nanoparticles have recently found application in forensic science fields, such as paint, inks, security documents, and the creation of latent fingerprints. These nanoparticle-containing materials are subject to forensic analysis since they are frequently discovered as evidence. In fingerprint research, nanoparticles have been used to disclose latent fingerprints on a variety of surfaces by lowering background color, which enhances fingerprint quality and creates a good contrast image. Although the future of nano-fingerprinting appears bright, there are several alarming problems. Health, particularly DNA, may be adversely affected by both deliberate and inadvertent exposure to various nanoparticle sizes, shapes, and compositions. Thus, this essay seeks to address both the advantages and disadvantages of employing nanoparticles. Additionally, it looks for ways to lessen their negative effects on the environment and people, making them safer for use in forensic applications

Keywords: Nanoparticles, Forensic, DNA, Latent fingerprint

Introduction

The rapidly expanding subject of nanotechnology opens up new avenues for scientific and technological advancement. Numerous fields, including electronics, engineering, the physical sciences, materials sciences, and medicinal sciences, have made use of it. These days, nanotechnology is also helping forensic science. Forensic science benefits from nanotechnology in two ways. First, it is capable

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of nanoscale sample detection and analysis. This implies that crucial evidence that was previously impossible to gather due to restrictions in detection tools can now be examined and applied in investigations. Second, the special physical and chemical characteristics of nanomaterials make it easier to gather and identify evidence that was previously impossible. Numerous forensic science fields have recently employed different kinds of nanoparticles, including paint, inks, security documents, trace amounts of gunshot residues, heavy metals, explosives, and DNA on fingerprints or palm prints. Latent fingerprint development is another use for them (Cantu 2008). Materials that contain these nanoparticles are frequently used as evidence and are examined by forensic experts. Nanoparticles have been introduced in the field of fingerprint science to improve the development of latent fingerprints on various surfaces. They improve the print quality by lowering the background color, which produces a more pronounced contrast (Menzal 2001, Sametband et al., 2007).

Although nanoparticles with unidentified qualities can sometimes be hazardous to the environment, nanotechnology offers enormous potential to improve society. Their interactions with humans, as well as their effects on humans and their behavior in the environment, are largely unknown. Sadly, just a small portion of nanoparticle research is concerned with environmental dangers or hazards to human health and safety. Thus, even though nano-fingerprinting has bright prospects, there is growing concern that human exposure to various nanoparticle sizes, shapes, and compositions, whether intentional or unintentional, may have serious health effects, especially on DNA, as many previous studies have reported (Dhawan et al, 2009; Gonzalez et al, 2008; Sharma et al, 2009 and 2011; Shukla et al, 2011 a & b). The advantages and disadvantages of employing nanoparticles in fingerprinting are covered in this work. In order to make them safer for forensic applications, it also seeks to address their detrimental effects on forensic staff and the environment.

Positive Aspects of Nanotechnology in Fingerprint

Latent Fingerprint Enhancement

In order to enhance latent fingerprint detection, Menzal first described in 2001 the use of photoluminescent CdS semiconductor nanocrystals capped with dioctyl sulfosuccinate. The plan was to apply a fluorescent nanocrystal dye to objects that had already been treated with cyanoacrylate ester and to the sticky side of electrical tape that had not. Since then, numerous studies have shown that latent fingerprints on a variety of surfaces can be enhanced by nanoparticles of different sizes and types. As previously impossible, this not only produces sharper fingerprint photos but also lessens distracting background colors (Jones et al, 2010 & 2012; Sametband et al, 2007). Researchers and forensic scientists are now interested in fingerprint analysis on bloody

prints because of these notable developments in latent fingerprint development.

Bloody Fingerprint

At crime scenes, blood is frequently used as a medium to transfer fingerprints. Occasionally, there is enough color in the residue to take straight photos. But more often than not, the residue is so weak that it is difficult to capture its color and contrast with normal light, unless the surface is transparent or extremely reflective. For many years, residual blood fingerprints have been successfully enhanced using chemical techniques. A dark dye complex is produced by the chemical reaction of leucomalachite green, amido black, and ninhydrin with blood components. These substances have worked well on translucent or light-colored surfaces. Because they can run off and distort the print or fail to react before the detail can be taken, leucomalachite green and ninhydrin are not appropriate for non-porous surfaces, despite having low background colors (Haan et al., 1997). The high background color of Amido Black, which ranges from light to medium blue, lessens contrast on porous surfaces where the stain cannot be washed out. However, Amido Black is extremely sensitive and works well on non-porous surfaces. None of these color-producing reagents consistently yields prints visible on dark surfaces. The transient chemiluminescence that luminol produces is faint, hard to capture on camera, and obscures fine ridge detail; therefore, attempts to use it have not been very successful. Forensic scientists and researchers are encouraged to use nanoparticles to enhance faint blood prints on diverse surfaces after recent breakthroughs in creating latent fingerprints on various surfaces (Sametband et al., 2007; Jones et al., 2010 & 2012).

Negative Aspects of Nanotechnology in Fingerprint

Although nanoparticles can improve the formation of latent fingerprints on a range of odd surfaces, such as semi-porous, non-porous, and wet surfaces, they are ineffective on surfaces that contain blood. This is because the biological molecules on such surfaces—especially DNA—can be harmed by nanoparticles (Kang et al, 2008). Because of their small size, powdered nanoparticles have been shown to be able to enter human cells and attach to a variety of organelles, including the nucleus (Shukla et al, 2011a & b). Nanoparticles can harm or degrade our genetic material (DNA) by breaking its strands when they interact with the nucleus (Shukla et al, 2011b). DNA degradation is a major problem in forensic research that can affect amplification, DNA yield, and the loss of bigger alleles (Chung et al, 2004). Numerous theories have been put out to explain DNA degradation, including radiative crosslinking, bacterial breakdown, and the release of nucleases from decomposing cells. DNA molecules can also become unstable and break as a result of hydrolytic reactions such as oxidation, deamination, depurination, and others. Of them, metal oxide nanoparticles are

especially well-known for oxidizing DNA to cause breakage, which produces the DNA adduct 8-oxo-7,8-dihydro-2′-deoxyguanosine (8-OHdG) (Sharma et al, 2011). A typical autosomal short tandem repeat (STR) profile may be destroyed by this oxidative damage, which would ultimately produce inaccurate or ambiguous DNA fingerprinting results (Hall et al, 2004). Personal identification may be hampered by such deceptive outcomes. Forensic specialists must therefore use caution while working with nanoparticles. They need to understand that these nanoparticles may be harmful to DNA, as well as to the environment and to themselves. I stress the significance of comprehending these risks in this review.

Precautions

1. When it comes to using nanoparticles for developing latent fingerprints in the field, it's best to steer clear. These tiny particles can disperse rapidly and linger in the air for quite a while. So, it's crucial to handle nanpowders in a closed fume hood or a glove box to prevent aerosol formation. If you don’t have access to a closed fume hood and must work in an open one, make sure to wear a suitable mask (like an FFP3, which is equivalent to the American P100).
2. The following crucial actions should be taken if you're thinking of employing nanoparticles in the field:

The appropriate personal protection equipment should be worn by all individuals handling the evidence (the target substrate) and administering the formulation. To prevent nanoparticles from coming into contact with the skin, this comprises a disposable lab coat, a respiratory mask, protective gloves, goggles with side shields, protective clothes, face shields, and closed-toed shoes.

When using the formulation and working with evidence that is "wet" or "fresh," respiratory protection is crucial. Make sure the respiratory protection you select has HEPA filters if you want to purify the air.

Any evidence handling or personal protective equipment that seems to be contaminated with the formulation or is likely to be so should be cleaned in a controlled laboratory setting or bagged and disposed of as hazardous waste.

Notifications on the kind of nanoparticles used in evidence processing and the general risks associated with exposure should be prominently displayed by the law enforcement organization in charge of the crime scene.

3. Strict enforcement of hand washing and refraining from hand-to-mouth activities is necessary.
4. To safely move bottles containing nanoparticles from the storage area to the testing facilities or crime scene, use the proper containers.
5. Disposing of nanoparticles is a crucial process, as it directly impacts the environment. The ecosystem and human health may be seriously endangered if the disposal is not done correctly. Any

substance that has come into contact with artificial nanoparticles ought to be handled as though it were a waste stream that contained nanoparticles.

Waste containing nanoparticles should be kept in plastic bags or sealed containers before being disposed of. Include any accessible information regarding the known and suspected characteristics of the nanoparticles, together with a detailed description on the trash container's label. Tightly close the bag or container after filling it.

Powdered nanoparticles should ideally be made into a suspension and then immobilized in a 1% agar solution for disposal. Any other solutions that come into contact with the nanoparticles ought to be gathered in containers and dumped in a pit designated for the disposal of radioactive waste.

Recommendations:

The precautions mentioned above are fundamental, and it's also essential to conduct a primary toxicity assessment of nanoparticles before using them in forensic applications.

Instead of using bare nanoparticles, opt for surface-coated nanoparticles.

For the coating materials, choose compounds that enhance biocompatibility and stability of the nanoparticles.

Nanoparticles in suspension should be preferred over those in powdered form.

Conclusion:

Every technology has its pros and cons. Through this review, I've aimed to highlight areas of nano-fingerprinting that have been overlooked. While using nanoparticles to enhance latent blood impressions seems to be an effective tool for forensic analysis, we cannot ignore their potential impact on DNA.

The forensic community has a responsibility—both ethically and legally—to safeguard the health of its professionals and the public it serves. To achieve this, the methods, procedures, and tools used for processing evidence must be chosen and applied in a way that prioritizes the health and safety of everyone involved.

Current toxicological data suggests that nanoparticles pose certain risks, making their use at crime scenes or in other uncontrolled settings a concern for both law enforcement professionals and the evidence being collected, like blood fingerprints. Therefore, before employing nanoparticles to enhance blood fingerprints, forensic scientists and researchers need to take necessary precautions. This is crucial not only to avoid false or inconclusive results but also to protect themselves and their environments from potential indirect exposure to these nanoparticles.

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Satwavajaya: Unveiling the Secrets of Patient-Centric Approach in Ayurveda

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ABSTRACT

The treatment approach is an integral part of the *Chikitsa Chatuspaad*, which emphasizes the patient-doctor relationship. The complete transfer of information from the patient to the physician is crucial in this context. Ayurveda has long embraced this patient-centric model, where the physician's decision-making holds a pivotal role. As per Acharya charak, the treatment framework highlights the importance of *Satwavajaya Chikitsa*, which helps to increase the faith of the patients; therefore, patients can share their personal information with the physician, like a family member, without fear. Once this relationship is established, the exchange of vital information regarding the treatment naturally flows; this information helps to generate a suitable treatment protocol. The proposed review study primarily focuses on *Satwavajaya* as a patient-centric approach and emphasizes its significance in holistic patient care.

Key words*:* Chikitsa Chatuspaad, holistic Patient Care, Satwavajaya

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Introduction

Acharya Charak had described the supremacy of the doctor among *chikitsa chatuspaad*[1]Vaidya is the prime source who collects the reliable data from the patient. The collection of information must be a collective effort of all who are directly or indirectly associated with the patient, which further helps in diagnosis & effective management of patient care.

A comprehensive grasp of the patient's current condition is essential for making an accurate diagnosis. A physician must cultivate a deep sense of trust with the patient, reassuring them that they are under expert care and alleviating any concerns regarding their health issue.

In general practice, physicians struggle to gather comprehensive information from every patient due to a lack of time and effective skills. This makes it necessary to rely on their skills, experience, and modern tools and technology to collect accurate data and make sound decisions within a short timeframe. Although modern tools and technology can yield positive outcomes, they are not immune to the potential for mistakes. The balance between subjective and objective approaches must be carefully managed by the clinician. the subjective criteria must be given more priority than the objective ones. This promotes the holistic approach to productive patient care technique.

As per Ayurveda, *Satwavajaya*[2] can be considered as an integral part of the Holistic approach, which propagates patient-centric common guidelines with its maximum outcome. In other contemporary sciences, Ayurvedic, emphasizes a more subjective approach (patient-centric approach)[3]. This highlights a greater focus on patient-centered outcomes that maximize the benefits of patient care. In Ayurveda classics, Physicians are guided to extract information using their experience and clinical examination techniques (*trividh pariksha*)[4] i.e., *Darshan* (observation), *Sparshan* (touch), and *Prashna* (inquiry), to systematically assess the patient. Proper history-taking is an art, essential for collecting accurate data from patients. This requires a correlation (*Vyapti*)[5] between cause and effect, either through *Anvaya Vyapti* (where exposure is directly associated with the outcome) or *Vyatireka Vyapti* (where exposure is irrelevant and thus discarded).

The physician must thoroughly explore all possible aspects of the information, systematically and step by step, ensuring careful attention to sensitive questions. Their expertise is vital in obtaining accurate responses, and they must avoid repeated questions or leading questions that could bias or distort the information. These precautions help in identifying the *Sadhetu*[6] (actual cause), which ensures an accurate diagnosis and appropriate treatment. These are the evidence or findings which lead to the inference of *sadhya*. The characteristics of *Sadhetu*[7] are:

1. *Pakshasatva* – In a patient where the sites (disease representation area) are suspected /to be tested. Site May or may not be present.

2. *Sapakshasatva* – A real-time presence of *sadhya* (disease) with its representation area. Certainly, the site of presentation of disease with *sadhya* (disease) present.

3. *Vipakshasatva* – nor disease, not disease presentation site present. certainly absent.

4. *Abadhit Vishayatva* – There should not be any reason for confirmation of disease. all supportive facts are available.

5. *Asatpratipakshatva* – The counterpart of confirmation should not exist.

If the *Sadhetu* is not identified correctly, it leads to *Ahetu*[8] (fallacious reason).

According to Acharya Sushruta, health is a harmonious state of physical, mental, social, and spiritual well-being, and all these aspects must be considered together.[9] The primary causes of disease, as described in Ayurveda (*Trividh Rogayatan*), are *Pragyaparadh* (misuse of intellect), *Asatmendriya Samyog* (improper use of senses), and *Parinaam* (effects of time and season). *Satwavajaya* helps an individual regulate their mind, preventing or controlling further adverse effects. The mind (*Satva*) is the guiding force of the body and soul, possessing the properties of *Anutva* (subtlety) and *Ekattva* (unity)[10]. These qualities mean the mind can be controlled through spiritual practices, but it can also easily deviate, requiring active effort to guide it toward positive actions. The mind, influenced by *Satva*, *Rajas*, and *Tamas*, plays a key role in all actions, both positive and negative.

Achieving any goal, including health, requires proper planning. Ayurveda's *Purusharth Chatushtaya*[11] outlines life's ultimate goals. To achieve these, one must first attain short-term goals of life while maintaining own health (*Swastha Avastha*), for the majority of their life. Therefore, keeping the *Satva* in its highest, healthiest state is paramount, and this can be accomplished through *Satwavajaya*.

Accurate health information is assessed based on the mind's state during data collection from both primary (patient) and secondary (other related) sources. Maintaining the purity and authenticity of this information is essential for correct diagnosis and treatment planning.

Discussion

The effectiveness of information gathered from a patient is contingent upon an appropriate methodology that encompasses various elements. Classical Ayurvedic texts offer comprehensive insights into the essential components for successful patient data collection, reflecting the thorough observations made by scholars and practitioners. Ayurveda prioritizes subjective experiences over objective measures, underscoring its unique perspective that emphasizes personalized care and a high degree of reliability index[12].

The phrase *"Purusham Purusham Veekshya"*[13], meaning a patient-centered approach, reflects the unique individual needs of each person, emphasizing that every individual

has their own identity and constitution. The *Panchamahabhutas* (~five great elements) manifest through the *Tridoshas* (*Vata, Pitta & Kapha*), functioning together in both physiological and psychological contexts. Each patient's signs and symptoms may indicate different underlying causes, as Ayurveda focuses on *Hetu Parak Chikitsa*[14] (Cause-oriented treatment). Therefore, identifying the *Hetu* (root cause) and understanding the *Samprapti* (Disease pathology) are crucial for planning a treatment regimen tailored to the patient's condition. If the *Vyadhi Bala* (Disease strength) is high, the treatment plan may vary accordingly, but the preservation of the *RogiBala* (patient's strength) should always be prioritized.

In some cases, decisions might be taken that are not typically indicated but are necessary for the patient's immediate needs. Ayurvedic texts allow the physician to make such decisions based on the situation. The principle of "*Atmavat Satat Pashyeta*"[15] guides the physician to empathize with the patient's pain as if it were their own. This requires the physician to use their experience and senses to make swift, informed decisions when needed.

The concept of "*Putravat Paalan*"[16] emphasizes compassionate patient care, whether at the outpatient level (*Vatatpik*) or inpatient level (*Kutipraveshik*). Acharya Charaka's guidance in *Upakalpaniya Adhyaya* suggests that rooms should be well-equipped, and services should be provided by skilled personnel, ensuring that patients receive timely and appropriate care.[17]

Patient-Centered Treatment Approach[18]:

The patient-centered model in Ayurveda prioritizes the patient's individual needs, values, and preferences. It involves several components:

1. Collaboration: Ayurveda promotes a *Maitreepurna*[19](friendly) relationship among the patient, their family, and healthcare providers. These groups work together to create a customized care plan, ensuring mutual understanding and support for the patient's treatment. Everyone involved shares responsibility for the patient's recovery and outcome.

2. Respect[20]: The patient's preferences, values, cultural traditions, and socioeconomic conditions are respected. Emergencies are treated with real-time attention, ensuring prompt, respectful care by all involved.

3. Information Sharing[21]: Patients and their families receive complete, timely information to help them make informed decisions. Clear communication between the physician and the patient creates a comfortable space for better decision-making.

4. Education: Patients are encouraged to explain their condition, embodying *Jyapakatwa*[22] (self-awareness) as described in Charaka's teachings. Modern tools such as mobile apps, videos, and social media campaigns help raise awareness about health risks and benefits, enhancing patient knowledge and communication.

5. Emotional Support[23]: Emotional support plays a crucial role in the recovery of the patient. A positive environment built on emotional backing instills confidence and enhances the overall health outcomes of the patient.

6. Compassionate Environment[24]: A compassionate and supportive environment, aided by skilled staff and service providers, ensures timely assistance for the patient and their family. On-time support helps create a caring atmosphere, contributing to the patient's well-being.

7. Holistic View[25]: Rather than focusing solely on medical conditions, this approach looks at the patient's physical comfort, mental well-being, and long-term health goals. Pre-consent is essential before any treatment, with clear communication about the risks and benefits to ensure the patient's informed participation.

With its emphasis on individualised care, Ayurveda's patient-centred approach, in which "the physician tries to enter the patient's world, to see the illness through the patient's eyes," is in line with modern clinical practice models that aim to improve patient outcomes[26].

Conclusion- This patient-centered approach significantly enhances the quality of patient care, aligning with the evolving needs of modern healthcare. Skilled physicians, equipped with this model, are better able to achieve accurate diagnoses through a holistic understanding of the patient. The success of this approach relies on the strong trust and rapport between the patient and physician, ensuring the credibility and confidentiality of the information shared. Moreover, clinical correlation plays a crucial role in validating the diagnosis and guiding appropriate treatment, reinforcing the importance of personalized care in achieving optimal health outcomes.

Conflicts of Interest

The authors declare that there are no conflicts of interest related to this study

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The Man from Chhinnamasta: A Protest Against Animal Sacrifice

➢ **Dr. Priyanka Shrivastava**[1]

ABSTRACT

'The Man from Chinnamasta', is the magnum opus of Indira Goswami. It has received the Jnanpith award in 2000 and the Sahitya Academy Award in the year 1983. The novel records the events between 1921 and 1932. The story has several hints of the freedom movement and provides details of colonial policy in Assam. Indira ji has engraved many colorful paintings on a big plank in this novel after studying Kamrup Kamakhya's history, traditions, and folk tales there with a blend of magic realism. 'Chinnamasta' is the true story of the social and cultural background of Kamrup and its people, surrounded by poverty, illiteracy, ignorance, and superstitions, amidst the conflicts of two opposing ideologies- Ahimsa and violence. Indira Goswami writes about the glorious history of Kamrup. She mentions that before British rule, Kamrupa used to be a famous Prosperous Kingdom. it was well-known for textiles, sandals, and aloe. She informs that Assam's regional trade was at its peak during the rule of Captain Welsh in 1792.

Keywords: Indira Goswami, Myth, History, Religion, Kamakhya Temple, Animal Sacrifice, Tradition, Modernity, Jatadhari, Dorothy

"Discard your bloodstained robe, Ma Chhinamasta!" ---Goswami

Introduction

The Man from Chhinnmasta by Indira Goswami was first published in 2005 in the Assamese language as **Chhinanmasta Monuhuto**. Indira Goswami has raised a serious protest to ban the ancient practice of animal sacrifice in the famous Kamakhya temple. Later, Prashant Goswami translated this novel into

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English in 2016. Set against the backdrop of the Freedom Movement, this novel brings out the clash between the two opposing ideologies. The ancient priest clan of Asam was given the responsibility of performing rituals at the Kamakhya temple. They favour animal sacrifice and consider it an ancient belief system practiced by ancestors in the Shakti tradition of worshipping Maa Durga. Assamese culture, traditions, and rituals are very intricately woven into the narratives. Goswamy unfolds the myth and mystery associated with the Ma Kamakhya. She talks about **Deodhas** and their contribution and role in the religious ceremony. Deodhas are persons who represent the Goddess's voice or spirit.

The image of the Bramhputra river is polarized as a machete and its blood red water, reeking of the raw smell of murdered flesh. "…Mighty Bramhputra just where it veered off its course, to take the shape of a sacrificial machete" (17). The authorial voice repeatedly urges to worship Ma Chhinnamasta with flowers instead of blood. She writes: "You can earn greater blessings by offering flowers than by offering blood." (130) The pain and suffering of animals are depicted throughout the narrative. Goswami writes, "Seuli flowers cast forth their distracted fragrance to soften the raw odour of butchered flesh." (5) Poor animals seem as helpless and destined to suffer as human beings under the rule of the British Government. "The sound of Buffalo hooves rose over the Jatadhari and hermit. The animal tried to break free as it was being hauled away to the slaughterhouse. "…shoving, yelling, prodding." (15) The sense of freedom and fight against injustice is the main theme of the novel. Animals' escape is vividly portrayed: "Jatadhari's historical knowledge is deep and extensive. The character of Jatadhari is highly symbolic. He is depicted as a saviour, hero, a Messiah, yet imbued with reality. His mystical persona binds the interests of the audience till the end of the story. "To his devotees, Chhinnamasta Jatadhari was a conundrum...People claim that he crawls into the belly of dead elephants." (8) Jatadhari seems to be a connecting bridge between the old and the new. He is humble and calm, listens to the stories of people who approach him, and provides solutions. Jatadhari is a man of great learning. he tries to decipher the new meaning of Sanskrit, Vedas, and existing rituals. he offers alternate solutions for all, irrespective of cast, creed, and religion; his prayers magically resolve devotees' maladies. He says flowers please Ma Kamakhya with their fragrance and beauty, and offers 'a house of flowers' on special occasions. There is one instance when the old woman comes to Jatadhari for help, as her son accidentally stumbles upon a skull. Jatadhari dispels her superstition and clears her doubt regarding the ill faith of her son. She becomes his disciple. He protects Dorothy and says," I will protect you as my shadow." (26) Goswami. He gifted her a Rudraksh mala and said This will protect you from all types of evils. He calls it Mahashankhmala. These beads (Rudraksh)

sprouted from the teardrop of Lord Shiva after he saw the cruelty on the earth.

Goswami has portrayed the character of Jatadhari, a magnanimous yet mysterious character who strongly opposes the practice of *Bali Pratha* and believes that the goddess can be appeased by offering flowers as well. He seems to be an incarnation of Lord Pashupati, a protector of all animals. He is bestowed with immense power. Goswami beautifully depicts his physical strength. Jatadhari is an ardent ascetic and Patriot who has revolutionized the youth of Assam to rise against animal sacrifice. Jatadhari is known as a healer who helps people around the Kamakhya temple resolve their problems. He listens to their problems and provides solutions. He is depicted as an earnest worshipper, a Yogi, a man of indomitable courage; he seems to be the healer of great learning. it is a rumour among diabetics that Jatadhari is not a normal human, as many snakes visit and stay inside his dreadlocks. For hours, he can be seen meditating inside the Brahmaputra River and can easily swim across the Brahmaputra during floods. Ratnadhar says about Jatadhari: “But to which deity had he offered his prayers? No one knew.” (7)

Jatadhari is shown as a leader who has a convincing voice and can attract people among his great followers. we have a painter, Ratna Dhar, who has been cured by his magical powers. Ratnadhar, a veteran artist, had a loyal following among disciples. “Delicate hands. A trim figure. A chiselled nose.” (7) His thick and black hair informs his aristocratic bearing. He was struggling with depression. When no doctor could cure him, he took the help of Jatadhari, and since then, he became his follower.

Dorothy Brown, a British woman, is educated and sensitive. She comes into contact with Jatadhari as his disciple; her relationship with Jatadhari is not clear. People around Temple create rumours that she is separated from her husband, who is posted as the head of a college and living with a tribal Khasi woman. Dorothy seems to have joined the movement against the British in Assam and becomes a confidante of Ratnadhar and Jatadhari. Dorothy helps people who are in need by giving them silver coins.

A note on magic realism in Man from Chhinnamasta unfolds the special moments of Jatadhari. Dambaru asked Ratna Dhar I have heard a lot about this Jatadhari. Is it true that he has magical powers? Jatadhari's powers can settle the ‘restless magpie’ and inspire it to sing melodies.

Ratnadhar unlocks the story of Bidhibala, a young, beautiful girl, which is the sub-plot of the novel. Bidhibala, daughter of Singhdutta, represents a girl being forced to marry a man who is many years older than her. Ratnadhare here informs about his broken relationship with a girl of a neighbouring village. Ratnadhar confessed to Dambaru, his marriage was fixed with a girl; he said gifts were sent to the girl's family, and the wedding date was finalized. Now he wants to marry Bidhibala despite the question

of her maturity. Ratnadhar is an educated person with critical thinking. Ratnadhar protests against the Buffalo sacrifice by Singhdatta. He says: "If the girl doesn't want to get married, why sacrifice the buffalo at all? If no one marries Bidhbala, I shall marry her." (122)

Dorothy's first appearance is described by Goswami as an abandoned woman in search of salvation and justice.

"All eyes turned toward her. A white woman. Her auburn hair cascaded below her shoulders…Her chest heaved like the fluttering wings of a dove being taken to the sacrificial altar." (11) She wore her long skirt much like a *Mekhla,* like any other Assamese woman. Her skin colour is compared with a skin gourd. Her eyes are luminous as the water of the Brahmaputra. Dorothy wants to make a will, and she has discussed it with Jatadhari, who seems to be he confidante. I have two promissory notes that I want you to encash. I wish to make a will about my property. She also informs William Smith, her friend, about the will. Dorothy in Darbhanga House is shown collecting signatures of students with the help of Ratnadhar and Jatadhari. "Countless names and addresses, nothing was more precious for her. Signature in Bengali, Hindi, and even in English. Dorothy's feelings for Jatadhari are revealed in one of her letters that she wrote in his absence. "My heart is sad for I have…" (52 Goswami intentionally presents personal moments when she feels dejected and at a loss. She is in search of Jatadhari reaches the temple where Jatadhari is praying: "Softly she went down the steps, her nightgown coming unbuttoned, …in the muted light, the shadows crisscrossed her face. A hapless fish ensnared in the boatman's net" (117) Goswami. Dorothy's relationship with Jatadhari is shrouded in mystery until after her Death, he becomes one of the priests advocating and praising the method of worship without animal sacrifice. The whole story is replete with the bloodstain of the helpless creature being sacrificed in the name of superstition. Mystery and myth, and magic realism have a brilliant blend in the narrative of Chhinamasta.

Indira Goswami presents the Brahmaputra River's everlasting natural beauty in contrast with the blood and sacrifices of the Kamakhya temple. The ever-flowing river symbolizes human history and the witness of human cruelty as millions of animals are sacrificed at her bank. Dorothy records the pain in these words. Bidhbala, who secretly helps animals and is represented as an instrument of change, empathizes with the suffering of women in these words:" Bidhbala's father appears to be a fanatic who is advocating orthodox belief and system. He has little concern for her daughter's sentiment.

Animals have no escape. Nor can they protest. Bidhibala, who has hardly spoken publicly, becomes a voice of protest for the helpless creature. At the end of the story, we see Bidhibala joining the Prostitutes of Shekhadari, where she lives like an ascetic, waiting for her death. There, she fasted for a month. She

protested against the societal norms and expressed her love for Ratnadhar. The author delves into the psyche of many of the devotees who come to the Jatadhari. Dorothy Ratnadhar and Bidhibala gave a supreme sacrifice to stop animal sacrifice. Jatadhari provides a reasoned answer and cites an example of Chandi drinking the blood of the Asuras as she wanted to stop the lineage of Asuras who were multiplying from the drop of the blood from the Asura's body. She advocates that gratified for a hundred years with the blood of a single buffalo, the Goddess can be appeased with an offering of one Karvi flower. She writes that flowers are the finest offering. The status of flowers is higher than blood. (128)

The author provides vivid details of the Ambubachi fair, and the Devadhani festival is celebrated in a special month when it is believed the Goddess is considered to have completed her menstruation cycle. Water for the three days turned copper red, which they call Ambubachi. In this period doors of the temple were kept closed. And devotees throng Assam from all parts of the state and wait for the fourth day to offer prayers. Goswami writes that Manobhaba, the mother Goddess, is enshrined within the cave in the form of a red stone. Touching the stone grants freedom from the cycle of rebirth. Goswami provides poignant details of devotees coming in search of penance and salvation. She writes the ascetic from Chhinnamasta cut through the surging mass of devotees --- the asthma victims, the deranged, the gastric patients, the fathers of marriageable daughters." (10)

A separate tank was constructed by the king of Darbhanga State. The water of this tank amazingly turned a coppery hue (85). She mentions the festival of Deodhani. According to local belief, the daughter of Lord Shiva and Goddess Parvati was also worshipped. A great deal of animal sacrifice took place on this occasion. It is mentioned that human sacrifice is considered to be more auspicious than animal. Tantrik priests are shown to invite people to offer a drop of blood to fulfil all their desires. Goswami's candid attempt to capture the ritual, tradition, and culture of Assamese people is commendable. She has given a voice to the voiceless, reasoning with illogical customs and food for thought while restoring the sense of justice for the animals.

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शास्त्रीय नृत्य के विविध रूप

➢ **डॉ चित्रा चौरसिया[1]**

सारांश

प्राणी मात्र के हृदय में जब सोए हुए भाव जाग्रत होते हैं तो वे वाणी या चेष्टाओं (क्रियाओं) के द्वारा अभिव्यक्ति पाते हैं और जिस माध्यम से वे अभिव्यक्त होते हैं, उस माध्यम को ही संगीत कला की संज्ञा दी गई है। भरतमुनि का नाट्य-शास्त्र शास्त्रीय नृत्य पर एक प्राचीन ग्रंथ है, जो नाटक, नृत्य और संगीत की कला का स्रोत है। समय के साथ-साथ, नृत्य या अपने आप को नाट्य से अलग कर स्वतंत्र और अलग कला के रूप में प्रसिद्ध हुआ। नृत्य या भारत में सैकड़ों वर्षों तक विकसित हुआ। उन्हें अपने अलग-अलग तरीकों से उस विशिष्ट क्षेत्र की संस्कृति प्राप्त हुई; हर एक ने अपनी अलग पहचान बनाई। वस्तुतः विभिन्न प्रमुख 'कला' शैली का उदय हुआ; आज हम भरतनाट्यम कथकली, कुचीपुड़ी, कथक, सोलंकी और ओडिसी कहते हैं।

मूल शब्द: नृत्य, शैली, घराना, वर्णम, कलाकार

प्रस्तावना

मन में उठी सुख और दुःख की अनुभूतियाँ जब गीत बनकर गूंजने लगती है तो उन्हीं को विभिन्न नामों से पुकार कर किसी राग का नाम दे दिया जाता है ठीक, उसी प्रकार जब चेष्टाओं द्वारा हृदय की अनुभूतियाँ व्यक्त होती हैं तो उन्हें विविध मुद्राओं और अंगहारो का नाम दे दिया जाता है, गीत और नृत्य की सृष्टि इसी प्रकार हुई है।भारत में नृत्य की परंपरा वैदिक काल के पहले से पायी जाती है सिन्धु सभ्यता में नृत्याभिनय वाली मूर्तियाँ इस बात को प्रमाणित करती है कि उस समय नृत्य कला सामान्य जनता के मनोरंजन का माध्यम थी।भरतकृत नाट्यशास्त्र में संगीत, नाट्य एवं नृत्यकला को विस्तार से समझाया है। नाट्यशास्त्र से पूर्व भी नृत्य सम्बन्धी ग्रन्थ उपलब्ध थे इनको 'नटसूत्र' के नाम से जानते थे।

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नृत्य की शैलियाँ

भारत के अलग-अलग प्रांतों में शास्त्रीय आधार पर जिन तत्वों को ग्रहण किया गया, उनमें शास्त्रीयता के साथ-साथ लोक तत्वों के मिश्रण से कुछ नई शैलियों का जन्म दिया।जैसे भरतनाट्यम, ओडिसी, मोहनीअट्टम, कथकलि, मणिपुरी और कथक आदि जो कि सम्पूर्ण भारतवर्ष में प्रचलित है, जिनका परिचय यहाँ दिया जा रहा है।

1. भरतनाट्यम्

यह दक्षिण के तंजौर, तुरनेपाली आदि क्षेत्रों में शताब्दियों से प्रचलित रहा। इनमें नृत्य और अभिनय की प्रधानता रहती है। दक्षिण-भारतीय मंदिरों में देवाराधन के लिए प्रस्तुत किए जाने वाले इस नृत्य को शास्त्रीय क्रम के अनुसार प्रयोग में लिया जाता है। इनकी शिक्षा देने वाले नटुवन नामक लोग नृत्य का परम्परागत रुप से पेशा करते थे।इस नृत्य में इसकी गति के अनुसार जाति स्वरम्, शब्दम, वर्णम और तिल्लाना इत्यादि का प्रयोग होता है। संगीत के समस्त अंगों और उपांगो का प्रयोग इसमें विधिवत् किया जाता है। प्रारम्भ में संगीत केवल देवदासियों द्वारा मन्दिरों की चार दीवारी के अंदर तक सीमित था, और तब उसे "देव-दासी अट्टम्" कहा जाता था। अब वह पुरुष और स्त्रियों द्वारा संर्वत्र प्रचार में है, जिसम चारी, अंगहार और मंडलों का उत्कृष्ट प्रयोग देखने को मिलता है।

भरतनाट्यम् भावाभिव्यंजन के लिए प्रसिद्ध है। यह प्रायः स्त्रियों के लिए उपयुक्त माना गया इसमें राधा-कृष्ण तथा अन्य देवी-देवताओं अनेक लीलांओं को मार्मिक ढंग से प्रस्तुत किया जाता है।मंदिरों में देवाराधन के लिए प्रस्तुत किए जाने वाले इस नृत्य को शास्त्रीय क्रम के अनुसार प्रयोग में लिया जाता है। इनकी शिक्षा देने वाले नटुवन नामक लोग नृत्य का परम्परागत रुप से पेशा करते थे।इस नृत्य में इसकी गति के अनुसार जाति स्वरम्, शब्दम, वर्णम और तिल्लाना इत्यादि का प्रयोग होता है। संगीत के समस्त अंगों और उपांगो का प्रयोग इसमें विधिवत् किया जाता है। प्रारम्भ में संगीत केवल देवदासियों द्वारा मन्दिरों की चार दीवारी के अंदर तक सीमित था, और तब उसे "देव-दासी अट्टम्" कहा जाता था। अब वह पुरुष और स्त्रियों द्वारा संर्वत्र प्रचार में है, जिसम चारी, अंगहार और मंडलों का उत्कृष्ट प्रयोग देखने को मिलता है।भरतनाट्यम् भावाभिव्यंजन के लिए प्रसिद्ध है। यह प्रायः स्त्रियों के लिए उपयुक्त माना गया इसमें राधा-कृष्ण तथा अन्य देवी-देवताओं अनेक लीलांओं को मार्मिक ढंग से प्रस्तुत किया जाता है।

कलाकार

ई० कृष्ण अय्यर, बालसरस्वती, रामगोपाल, रुकमणिदेर्वी, अरुण्डेल, यामिनी कृष्णमूर्ति, वैजयन्ती माला, कमला मृणालिनी साराभाई, कुप्पैया व गोविन्दराज पिल्ले, महलिंगम् पिल्लै, कल्याण सुन्दरम्, सोनल मानसिंह, कविता श्रीधरानी, पद्मा सुब्रमण्यम्, मालविका सरुकाई, लीलासेमसन, कोमला वरदन, सुधारानी रघुपति, सुजाता, वी० पी० धनञ्जयं, श्री मति अन्नापावलोवा तथा रागिनी देवी का नाम प्रसिद्ध है।

2. कथकलि

यह दक्षिण भारत के केरल प्रदेश का मुख्य नृत्य है "कथा" का अर्थ है कहानी और 'कली' का अर्थ है खेल। मालावार द्वीप समूह में यह कृष्ण कथा, राम कथा के रूप में प्रचलित रही। इस नृत्यकला में पात्रों के बड़े-बड़े मुखौटे लगाकर संगीतमय अभिव्यक्ति के साथ प्रस्तुत करने को 'कथकलि' नाम से पुकारा जाता है। 17वीं शताब्दी में दक्षिण के नर्तक बी० केसरवानी ने कथकलि के वर्तमान स्वरुप को जन्म दिया। इस नृत्य में प्राचीन पौराणिक कथाओं की प्रधानता रहती है, इसकी

विशेषता मूक अभिनय होती है जो केवल मुद्रओं के माध्यम से किया जाता है ये अत्यन्त कठिन नृत्य है इससे पुरुष ही भाग लेते हैं, स्त्रियों की भूमिका भी पुरुष करते हैं।

कलाकार

स्व० शंकरम् नम्बूदरी, गोपीनाथ, कंजुकुरुप, क राघवन् नायर, कनक रेले, वल्लतोल, कृष्णन कुटी का नाम प्रसिद्ध है।

4. मणिपुरी-

मणिपुरी नृत्य भारत के पूर्वी छोर पर असम के मणिपुर नामक प्रदेश का प्रचलित लोक नृत्य है।'रासलीला' मणिपुर नृत्य की एक विशेषता है, इस नृत्य में कोमलता और सुकुमारता के दर्शन होते हैं। इसकी वेशभूषा बहुत आकर्षक होती है, मणिपुरी नृत्य में शैव तथा वैष्णव परम्परा का प्रभाव काफी बढ़ा, वहाँ के लोग अपनी धार्मिक भावनाओं को नृत्य तथा संगीत के माध्यम से व्यक्त करते हैं मणिपुर का सबसे प्रसिद्ध और प्राचीन नृत्य "लाई हरोबा" है जिसमें सृष्टि के उद्भव की गाथाअभिनय द्वारा प्रस्तुत की जाती है। यह एक परम्परागत नृत्य है जिसे मैतयी नामक नर्तक करते हैं, इस नृत्य में एकल, युगल और सामुदायिक नृत्य के दो भाग है

(1) लास्य

(2) तांडव

प्रथम सुकुमारता का द्योतक है दूसरा पराक्रम के लिए प्रसिद्ध है।इस नृत्य में शैली के प्रस्तुतीकरण में - सर्वप्रथम रागध्यान करते है, फिर मृदंग, वादन होता है तत्पश्चात् नृत्य प्रारम्भ होता है।

कलाकार

मणिपुरी के कलाकारों में अमुवी सिंह, शांतिवर्द्धन, सविता बहिन (मेहता दीदी) विपिन सिंह, तोम्बीदेवी, झवेरी बहनें, सिंह जीत सिंह, चारुसिंह, प्रीति पटेल और श्रुति बनर्जी का नाम प्रसिद्ध है

5. कथक

उत्तर भारत का प्रमुख नृत्य कथक है इसे नटवरी नृत्य भी कहते हैं। प्राचीन काल में कथक वाचन और उसके अभिनय के लिए प्रसिद्ध रहा है।कथक कलाकारों का कार्य कथावाचन रहा उन्होंने नृत्य तथा गीत को भी ग्रहण किया। कथक नृत्य में भाव प्रधान और चमत्कार-प्रधान तत्वों का समावेश है। शास्त्रीय आधार पर कथक में गत, तोड़े, नायक-नायिका, भेद और तत्कार, इत्यादि तथा लोकरंजन की दृष्टि से घुंघरुओं की आवाज, ताल, बादक के साथ प्रतिस्पर्धा तथा ठुमरी, टप्पा जैसी गीत शैलियों के साथ नृत्य होता है।कथक नृत्य के तीन अंग होते हैं -

नृत्य, गत, अभिनय नृत्य में लय के साथ केवल अंग संचालन होता है। यह लयकारी, परन्, टुकड़ों और बोलों के द्वारा दर्शायी जाती है। इसमें पैर में केवल लय दिखाने का आघात किया जाता है। अभिनय में नृतक गीत गाता है और प्रत्येक शब्द के भाव विविध अभिनयों से व्यक्त करता है।

कथक के क्षेत्र में मुख्यतः तीन घराने हैं -

1.लखनऊ घराना

2.जयपुर घराना

3.बनारस घराना

कलाकार

कलाकारों में अच्छन महाराज, लच्छू महाराज, शंभु महाराज, दुर्गा प्रसाद, सुन्दर प्रसाद, गौरी शंकर, बिरजू महाराज, सितारा देवी, रोशन कुमारी, गोपीकृष्ण, हजारी प्रसाद, प्रेरणा, श्रीमाली, दमयन्ती जोशी, उर्मिला उर्मि नागर, राममोहन तथा दर्गालाल का नाम उल्लेखनीय है।

4.ओडिसी

ओडिसी नृत्य की परंपरा भरतनाट्यम् नृत्य की तरह ही प्राचीन है, सातवीं शताब्दी में भगवान की आराधना के लिए योग-तन्त्र से सम्बधित अंग-मुद्राओं का समावेश करके लास्य प्रधान नृत्य शैली का सूत्रपात किया।ओडिसी नृत्य शैली का आधार ईश्वर को समर्पित भाव-भंगिमाएं है जिनमें प्रधान भाग लास्य और अल्प भाग तांडव का मिश्रित है। इसलिए ओडिसी नृत्य में भरतनाट्यम् और कथक का मिला जुला स्वरुप दिखाई देता है। इस नृत्य शैली में जयदेव के अष्टपदी का गान प्रमुखता से किया जाता है।

कलाकार

श्री मोहन महापात्र, उनके शिष्य केलूचरन महामात्र, महाराणा, पंकज चरणदास, रमीणरंजन, मायाधर, राऊत, शुभा मुदगल, कुमकुमदास, अपाली अपराजिता, रीता देवी, नन्दिता पटनायक, किरण सहगल, आलोका कानूनगों आदि कलाकारों का नाम विशेष उल्लेखनीय है।

6. कुचिपुड़ी

1500 ई० में कृष्ण देव आर्य के युग में आन्ध्र प्रदेश की कुचिपुड़ी नृत्य का विकास हुआ, गाँव में ब्राह्मणों द्वारा कुचिपुड़ी नृत्य का पोषण हुआ।कुचिपुड़ी नृत्य आन्ध्र प्रदेश का एक प्रम्परागत नृत्य-नाट्य है जो वैष्णव भक्ति भावना से ओत-प्रोत है।इस नृत्य में स्त्री तथा पुरुष की भूमिकाओं को अधिकतर पुरुष ही लोग ज्यादा करते हैं, जिनमें गीत, नृत्य, संवाद एवं मूक अभिनय भी रहता है।यह नृत्य भरतनाट्यम् तथा ओडिसी नृत्य शैलियों की विशेषताओं से भरा हुआ है। इस नृत्य में शब्दम् की प्रधानता रहती है, और तिल्लाना का भी प्रयोग होता है एवं नृत्य के अन्त में नर्तक थाली पर नृत्य प्रस्तुत करता रहता है, जिसमें लास्य और तांडव दोनों का सम्मिश्रण पाया जाता है।

कलाकार

वेम्पिति चिन्ना सत्यम्, सी० रामा चारियोलु, वेदान्तम् सत्यनारायण, यामिनी कृष्णमूर्ति, शोभा नायडू, वैजयन्ती, माला, बसंतचारी, रीता देवी, स्वप्न सुन्दरी, राजा-राधा रेड्डी, सुधानागर, अलंख्या पुजाला आदि इस नृत्य के प्रमुख कलाकार है।

7. मोहिनी अट्टम

केरल प्रदेश के इस नृत्य में भरतनाट्यम और कथकलि नृत्य शैलियों का सम्मिश्रण है यह एक श्रृंगार रस प्रधान नृत्य है, भगवान विष्णु के मोहिनी रुप के प्रतीक स्वरुप मोहिनी अट्टम मलियाली कला को जीवित रखने वाली नृत्य शैली है। इस नृत्य का प्रचार महाकवि वल्लोल नारायण मेनन द्वारा किया गया।

कलाकार

मोहिनी अट्टम् के कलाकारों में श्री कृष्ण पाणिक्कर, गुरुगोपीनाथ, कल्याणी, कुट्टी अम्मा, गुरुकुंजन पाणिक्कर, भारती शिवाजी, शान्ताराव राघवन् नायर, कनक रेले आदि का नाम उल्लेखनीय हैं।

सन्दर्भ ग्रंथ सूची

1. संगीत विशारद
2. संगीत पत्रिका (हाथरस)
3. भारतीय शास्त्रीय नृत्य शैलियों की समृद्ध परम्परा (डा० विधि नागर)
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Constraints Faced by Farmers in SRI Method of Paddy Cultivation

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ABSTRACTS

India is an agro-based developing country, where agriculture continues to be the principal source of livelihood for more than 55 percent of the population. In Asia, more than 80 per cent of the people live on rice. It is the main source of livelihood and staple crop in the eastern part of India. A major issue with the traditional system of paddy production is water use. The demand for water by rice farmers continues increasing under such circumstances, any strategy that could produce higher rice yields with less water and less expenditure is the need of the day. Under such circumstances, the system of rice intensification (SRI) method is suitable and followed by the farmer. SRI method of rice intensification was developed by Fr. Henri de laulanie in Madagascar in 1980. System of rice intensification is a method for increasing the productivity of rice cultivation while at the same time reducing inputs, including seeds, water requirements, cost of labour etc. the main objective of this study is to identify the constraints of SRI method of paddy cultivation for this garrett ranking technique were applied and result suggested that nursery management, scarcity of skilled labour, lack of technical knowledge, weed management and higher initial labour requirement were the biggest challenge in SRI method of paddy cultivation.

Keywords: Agriculture, Cultivation, Rice, Transplantation, Garrett's ranking technique

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Introduction

Rice is the staple food for more than half of the world's population. In Asia, more than 80 per cent of the people live on rice, and their primary food security is entirely dependent on the volume of rice produced in this part of the world. The world paddy production was 738.1 million tons in 2012, covering an area of 132.3 million hectares with an average yield of 4.5 tons per hectare. Developing countries contributed about 90% of the total world rice production. Rice is the most important food crop of India, covering about one-fourth of the total cropped area and providing food to about half of the Indian population. This is the staple food of the people living in the eastern and the southern parts of the country, particularly in the areas having over 150 cm of annual rainfall.

Methods of Rice Cultivation

The following methods of rice cultivation are practised in India.

Broadcasting method:

Seeds are sown broadcast by hand. This method is practised in those areas that are comparatively dry and less fertile and do not have much labour to work in the fields. It is the easiest method requiring minimum input, but its yields are also very low.

Drilling method:

Ploughing of land and sowing of seeds is done by two persons. This method is mostly confined to peninsular India.

Transplantation method:

This method is practised in areas of fertile soil, abundant rainfall, and plentiful supply of labour. To begin with, seeds are sown in a nursery and seedlings are prepared. After 4-5 weeks, the seedlings are uprooted and planted in the field, which has already been prepared for the purpose. The entire process is done by hand. It is, therefore, a very difficult method and requires heavy inputs. But at the same time, it gives some of the highest yields.

Japanese method:

This method includes the use of high-yielding varieties of seeds, sowing the seeds in a raised nursery-bed, and transplanting the seedlings in rows so as to make weeding and fertilizing easy. It also involves the use of a heavy dose of fertilizers so that very high yields are obtained. The Japanese method of rice cultivation has been successfully adopted in the main rice-producing regions of India.

Traditional and SRI methods of paddy cultivation

The Traditional paddy cultivation was the oldest method of rice cultivation. The Traditional paddy cultivation practices also underwent changes due to changing times, where the cumbersome practices were replaced. The interest of the farmers in cultivating rice by using the Traditional method has decreased as large numbers of farmers were using fertilizers and pesticides in the method of Traditional paddy cultivation method to increase the production of rice. Besides, the Traditional method needs extra labour and a lot of fertilizers. Farming with modern methods is also expensive, using outside inputs. It was noticed that farmers adopting conventional methods could increase their production only by using expensive inputs such as chemical fertilizers,

pesticides, and hybrid seed. It is becoming increasingly difficult for the community to afford these things. It is also known that using chemicals is harmful to the environment. SRI is a combination of several practices, which include changes in nursery management, time of transplanting, water, and weed management. It's a different way of cultivating rice crop, though the fundamental practices remain more or less the same as in the conventional method; it just emphasizes altering certain agronomic practices of the conventional way of rice cultivation. All these new practices are together known as the System of Rice Intensification (SRI). SRI is not a fixed package of technical specifications, but a system of production with four main components, viz., soil fertility management, planting method, weed control, and water (irrigation) management.

SRI management

- Transplant young seedlings 8 – 12 days old, and certainly less than 15 days old, to preserve subsequent growth potential.
- Transplant seedlings singly, one per hill and in a square pattern 25x25 cm, or wider if or when the soil is more fertile.
- Transplant quickly (15 – 30 minutes after Removal from the nursery) –Shallow (1-2 cm deep) and vertical planting.
- Keep paddy soil moist, but not continuously saturated, so that mostly aerobic soil conditions prevail
- Control weeds with frequent weeding by a mechanical hand wider (rotating hoe or conoweeder) that also aerates the soil. Apply as much organic matter to the soil as possible; you can use chemical fertilizer, but the best results come from compost, mulch, etc.

Problem Statement

A major issue with the traditional system of paddy production is water use. The demand for water by rice farmers continues to increase under such circumstances; any strategy that could produce higher rice yields with less water and less expenditure is the need of the day. Under such circumstances, the system of rice intensification (SRI) method is suitable and followed by the farmer. SRI method of rice intensification was developed by Fr. Henri de laulanie in Madagascar in 1980. System of rice intensification is a method for increasing the productivity of rice cultivation while at the same time reducing inputs, including seeds, water requirements, cost of labour, etc. Paddy is a life for the majority of the farmers in Jharkhand. The paddy cultivation represents both a way of life and a means of livelihood, but cultivation of paddy in Jharkhand is totally in rain-fed conditions or depends on the monsoon. Uneven distribution of rainfall decreases the productivity of paddy. So, in these circumstances' introduction of water-saving techniques like SRI method of paddy cultivation in major rice-growing districts should be followed by the farmers.SRI method is being practiced mainly to combat water shortage in rice cultivation. Keeping in view the above issues, an attempt was made to study the constraints of SRI method of paddy cultivation.

Objective

The main objective of the study is to study the constraints of the SRI method of paddy cultivation.

Research Methodology

Paddy is a dominant crop of Jharkhand in eastern India. It has been grown through traditional as well as SRI method. Ranchi district has been selected purposively for this study because this district has a normal average yield per hectare in the case of paddy cultivation. From the Ranchi district, the Angara block was selected purposively. The Preliminary information about the block has been gathered from the block office and secondary sources. For achieving the mentioned objectives of the study, both the primary and secondary data have been utilized. For the report necessary primary data were obtained from the respondents through personal interviews with the help of a pretested and well-structured survey schedule and observation methods.

For achieving this objective, simply Garret's ranking technique was used

Garrett's ranking technique

Percent position = $\frac{120(Rij-0.50)}{Nij}$

Where

Rij is the rank given for the item by the J^{th} individual

Nij is the number of items ranked by the J^{th} individual.

The percent position of each rank was converted into scores using the Garrett table. For each constraint, scores of individual respondents were added together and were divided by the total number of respondents for whom scores were added. Thus, the mean score for each constraint was ranked by arranging them in descending order.

Result and Discussion

The farmers were asked to list, priority-wise wise seven major constraints they were facing in SRI method of paddy cultivation. All these were sorted, screened, and given a rank according to the Garrett method.

Prioritization of constraints in SRI method of paddy cultivation

Sl. No	Problem	Great score	Mean Score	Ranking
1.	Small size of land holding	2443	40.72	VII
2.	Higher initial labour requirements	2608	43.47	V
3.	Weed management	2852	47.53	IV
4.	Lack of technical knowledge and inputs	3381	56.35	III
5.	Scarcity of skilled labour	3393	56.55	II
6.	Lack of awareness	2526	42.10	VI
7.	Nursery Management	3774	62.90	I

A perusal of the table revealed that the constraint, Nursery management, was the biggest constraint in SRI method of paddy cultivation. Nursery management includes the preparation of seedlings, which was the biggest challenge for respondents, with a mean score of 62.90, followed by scarcity of skilled labour with a mean score of 56.55. In the beginning, farmers felt that they required special skills for the conoweeder operation and the SRI method. As per the respondents and field observation, farmers are required to develop specific skills for SRI practices like transplanting and using the conoweeder. The next major constraint in SRI method was the Lack of technical knowledge and inputs, especially the farmers were hesitant to adopt SRI and other input-based operations, and the mean score for this was 56.35. The other constraints expressed by the sample farmers were weed management. SRI method of paddy cultivation has a wider spacing as comparison to the traditional method, so in SRI paddy cultivation, higher weed management is a big challenge. Higher intensity labour requirement is situated at the fifth position with a mean score of 43.47. In starting SRI demands more labour for different activities like transplanting and weeding. Lack of awareness is also a major challenge for SRI method. The farmers who had a traditional mindset showed a lack of awareness about the benefits and practices of SRI.

The other constraints expressed by the sample farmers were non-availability of machines and tools, 'Non-availability of quality seed, Disease and pest attack, Lack of confidence in taking new technology, Non-availability of cash or credit, etc. The SRI method was optimized with the help of ATMA in the study area; they gave 'conoweeder', seed, pesticide, etc., for promotional purposes.

Conclusion

The findings of the many reviews studied demonstrate the superiority and profitability of SRI method of paddy cultivation over the traditional method in terms of yield and returns advantage. However, it is worth mentioning here that the actual adoptionrate of SRI among paddy growers is very low in study area and existed a gap between technologies development and transfer of technology in actual farm field situation, due to above mentioned constraints and these observation calls for urgent needs of popularising the SRI method such as government, NGOs, and other agencies should take initiative and enhanced the extension services for SRI method, to organize seminar, workshop, training and demonstration programme on SRI method of paddy cultivation. Timely guidance to the farmers from the extension agencies and to the persons involved in the transfer of technology.

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Facts and Future of E-Books

➢ **Dr. Mrugini K. Dave**[1]

"One should develop the habit of Rereading a good book every ten years."
- C. S. Luis (The Novelist, 1898-1963)

ABSTRACTS

This paper examines the genesis of e-books. With the gospel of conservation, technological advancement, and global climate change, our world is constantly gearing towards eBook order rather than printed books. E-Books are accessible instantly and can save on time running to stores, local libraries, and waiting in line to be attended to either in a bookshop or library. The Internet bookstores, companies, and publishers have high opportunities in the eBook market. There is a total new age of e-Readers who are furnished with the latest technologies, which are complementing eBook reading. This study aims to analyze the potential of the eBook market and its future.

Keywords: E-books, Electronic books, digital resources, e-resources, Internet, Contemporary World.

Introduction

The history of e-books is very long, but the real era of modern e-books began when Amazon launched a reader called Kindle. It was customary abroad that a hardbound edition would be released to the market, and the print order for the paperback edition, which would be released six to twelve months later, would be decided based on the response to the hardback edition. After the advent of e-books, i.e., after the introduction of Kindle in 2007, the paperback edition of the same book sold more than the hardbound edition in a single year. It was about 12-13 years ago that writer Jefre Archar first spoke at a book shop in Mumbai, giving statistics that print orders for the paperback editions of his own novels were

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decreasing, while sales of the same e-novels were increasing.

Definition of E-book

An e-book is a digital version of a printed book, also known as an electronic book. It is a book publication made available in electronic form, consisting of text, images, or both, readable on electronic devices like computers, tablets, and e-readers. E-books are often converted from printed books, but can also be created as digital-first publications.

Facts of E-Books

You are probably familiar with the Kindle. This lightweight device is half the size of a regular iPad and about the same size as a mini iPad. The glass on its screen is non-reflective, so reading for long periods of time doesn't strain your eyes, unlike a computer or cell phone. You can normally download a thousand and one e-books on a Kindle and take them with you wherever you want to read them. There is no need for WiFi or mobile data.

The fun of e-books is that you can get many books that are in the public domain for free. You can get newly published books at a slightly cheaper price than the print edition. Books published two, five, or ten years ago that are slightly outdated are often sold at throwaway prices. The funny thing is that if you feel like reading a book at 3:00 AM, go to any well-known online e-book store, pay with a credit or debit card, and within two minutes, the entire book will be downloaded to your Kindle or the Kindle app on your phone. Where else can you find the thrill of buying a book in the middle of the night at a bookstore?

Advantages of an E-book

There are many other benefits of e-books, such as if you don't understand an English word, press the word on the screen and the dictionary will open and explain the meaning to you. Just as you would underline or highlight in a book or write your own notes in the margins, you can do everything in e-books. In a book, you have to read it in whatever type size the publisher has printed it in, whereas in e-books, you can make the type size smaller or larger as per your preference. Not only that, you can also change the font.

1. **Convenience**: E-books can be easily downloaded and read on a variety of electronic devices, such as smartphones, tablets, and e-readers, making them convenient to access and read at any time.
2. **Portability**: E-books take up very little space and can be easily stored on a device, making them easy to take with you on the go.
3. **Cost-effective**: E-books are often less expensive than printed books, especially for older or out-of-print titles.
4. **Accessibility**: E-books can be easily accessed by people with visual impairments or other disabilities, as they can be read using assistive technology or text-to-speech software.

5. **Instant availability**: E-books can be purchased and downloaded instantly, whereas printed books may need to be ordered or purchased at a store.
6. **Easy to search**: E-books are easily searchable and allow users to quickly locate specific information or passages within the book.
7. **Environmentally friendly**: E-books do not require paper or ink, and thus can be considered more environmentally friendly than printed books.

E-books have benefits for all three - publishers, writers, and readers. Readers get e-books cheaper than normal books. Once the publisher has set up a platform, there is no risk of a large capital investment - no paper and printing costs, no stock to keep, and no need to pay warehouse rent until the printed books are sold. And for the writer, it's a breeze. Generally, a writer gets 5 to 7.30 percent royalty, 10% if he is a good writer, and 12.5% to 15% if he is a bestseller. Unlike print media, the royalty rate for e-books starts at 20 percent. Then, depending on the writer and the demand, the royalty can increase to as much as 80 percent.

E-books are ideal for those who are not bookworms, but for those who are reading enthusiasts. They are ideal for other people who are hardcore readers. They want to read everything new that comes in the market. How many books do such people buy, where do they put them, their home has already become like a book warehouse. E-books prove to be a great option for such people. Apart from this, there are also those who urgently need a book for reference, but do not have the patience to order a printed book and wait for it to arrive; then you can get the e-book version of that book in just two minutes. Normally, when you buy any e-book, online sellers offer you the facility of showing you a chapter or two of that book, its index, introduction, etc. Indian publishers are a bit stingy in this regard, but most reputable foreign publishers, like a good shopkeeper, will try to entice you to buy a book. When we go to buy a printed book online, we don't get such a facility. Many times, we shoot in the dark, and when it is delivered in person, we regret within two minutes of opening it that we ordered this useless book, and if we had seen it in a book shop, we wouldn't have bought it.

Disadvantages of E-book

Those who are used to reading printed books on paper do not normally have a strong affinity for e-books. Turning the pages of a new book, the smell of its paper and ink, the touch of it, all of this takes you into a delightful atmosphere even before you start reading the book. Also, there is a thrill in seeing these books in front of your eyes on your bookshelf. Where else can you get such a thrill even if there is 1000 e-books the size of a small pocket book weighing 200 grams and having the thickness of a cell phone? But e-books are not really for such bookworms. Basically, e-books are for the millions or even crores of uninitiated readers who are more interested in the reading material in the book

than in buying the book. Be it a novel or a book on any subject, they don't want to read a printed book and keep it at home, and they don't even want to give it away in the trash after reading it.

There are several disadvantages to e-books:

1. They require an electronic device, such as a computer, tablet, or smartphone, to read, which not everyone has access to.
2. They can be more expensive than printed books if you do not have access to free e-books.
3. They can be harder to read for some people as the screens of electronic devices are not as easy on the eyes as physical books.
4. They may not be as satisfying to read as physical books for some people, as the experience of reading a physical book can be more immersive.
5. They can be easily lost or deleted if the device they are stored on is lost or malfunctioning.
6. They can be difficult to lend or share with others as they are digital files.
7. They can be affected by internet connectivity issues and might not be accessible in certain locations or during power outages.
8. They can be limited by the format they are in, and may not be compatible with all devices.
9. They might not be able to be resold, unlike physical books.

After the era of e-books began, print publishers around the world were shocked that if they wanted to survive, they had no choice but to embrace e-books. It is good that the era of e-books is beginning in languages including Gujarati. The latest news is that the sales of print books are now increasing compared to e-books, and that of e-books is decreasing.

While e-books were booming, print media fell by the wayside. According to the Association of American Publishers, ten years ago, e-book sales fell 10% in the first five months of 2015. The association collects data from about 12,000 publishers in the United States. How did the printed book market boom in comparison? According to the American Booksellers Association, the number of bookstores in America increased from 1,410 15 years ago to 1,712 in 2015. Not only that, if a single bookstore has more than one branch in the same city, the number of branches also increases. In America, there were 1660 bookstores in locations five years ago, compared to 2227 locations in 2015. According to the latest data, 600 new stores are opening by Bates & Noble, an old and well-known American bookseller company, in the year 2025.

What is the reason for this turnaround? Have people become less tech-savvy? No. A book that is not available in bookstores is rarely purchased as an e-book. People who sing the praises of e-books may not like this, but publishers are no

longer afraid of e-books. This does not mean that the era of e-books is over, or that the future of e-books is bleak, or that there will be no progress in the field of e-books. No, it is not like that at all, but it does mean that the era of printed books is not over, and the future of printed book publishers is bright.

Future of E-Books

Apurva Ashar (The Originator of e-Shabda) said that the International Digital Publishing Forum (IDPF has been formed to ensure uniformity in e-book formats across the world. Any e-book that is prepared according to the standards set by IDPF can be read on any reader app.

Firstly, A common misconception about e-books, among the public and authors alike, is that they have no production costs. Because there are no costs for paper, printing, or binding. Even if there are no costs, you still have to spend money on typesetting, converting the book to e-book format, and designing it. **Secondly,** by creating a facility for online shopping, like a website, e-store, etc., one also has to incur maintenance costs. Unlike brick and mortar stores, the price of land and shop in an online store is never going to increase, meaning the investment made in it will be dead. Plus, if you don't update your software regularly with new versions, your store will become outdated and out of competition. **The third** and most important thing to keep in mind is that creating an e-book involves the cost of DRM, which stands for Digital Rights Management. If someone downloads your e-book once, makes a copy of it, and starts a pirated e-book business, then you will have to lose out on profit or royalty. That is, you will have to calculate the DRM cost to create a digital lock. Kindle has created its own digital lock at great expense. In the world of hackers, there is a competition to break such locks. So, to stay one step ahead of Kindle hackers, it has to constantly spend money on R&D.

So, what would people who create e-books for formats other than Kindle do to lock their e-books? Giving a tentative answer, Apurva Ashar explained that Adobe Systems, a well-known American company that makes many software programs like Photoshop, provides you with that facility, but you have to pay for it. Initially, you have to pay between five to eight lakh rupees as setup cost and then pay 20 to 30 rupees for each book, so that each of your e-books gets a lock that no one can open. And of course, when selling e-books online, you also have to pay a commission of two or five percent to those who use secure money transactions.

What are the similarities between a Printed Book and an E-book?

Both printed books and e-books are media for reading and contain written text and images. Both can be used to access a wide variety of content, including fiction, non-fiction, poetry, and other types of literature. Both can be purchased or borrowed from libraries, and both can be read by individuals. Additionally, both printed books and e-books are protected by

copyright laws and are subject to the same legal restrictions on distribution and sharing. Furthermore, both can be used as a primary source of education and learning.

Conclusion

The circulation of e-books in Gujarati is currently very low. Except for Gujarati living abroad, readers here are not really interested. Publishers blame Amazon's cumbersome accounting system for calculating royalties for e-books. In the future, when all these things become straightforward and the focus is on the pricing of e-books and their marketing, the era of Gujarati e-books will come.

The future of printed books is bright, but the current upheaval in the field of e-books was just a temporary phase. Now, devices like Kindle even let you rent e-books at a completely affordable price. Just like printed books, you can lend them to a friend to read or borrow them from them; e-books have also come with this feature. You can use this facility for a small fee by making friends or joining their groups.

The world of the internet is amazing. Here, acquaintances become more familiar, acquaintances become close friends, and eventually, there are no strangers left. It is written in a book by Richard Beck that "there are no such things as strangers. All that exists in this world are friends not yet made."

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Theoretical Framework for a Bibliometric Study on Faculty Research Output

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ABSTRACT

This paper explores the theoretical framework underpinning bibliometric studies focused on the research output of academic faculty. It synthesizes insights from the sociology of science, information science (specifically scientometrics), communication theory, and the economics of science to elucidate the conceptual foundations and analytical potential of such investigations. Key theoretical concepts and measures, including productivity (e.g., publication counts), impact (e.g., citations, h-index), collaboration patterns (e.g., co-authorship networks), thematic focus, and temporal trends, are discussed in detail. The paper also addresses critical methodological considerations such as data source selection, normalization techniques, and ethical implications inherent in quantitative research evaluation. Ultimately, a well-executed bibliometric study offers valuable insights into institutional research profiles, informs strategic policy decisions, facilitates benchmarking, identifies emerging research fronts, and contributes to a deeper understanding of the dynamics of academic knowledge production.

Keywords: Bibliometrics, Scientometrics, Faculty Research Output, Theoretical Framework, Academic Productivity, Citation Analysis.

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Introduction

The scholarly landscape is a dynamic and ever-evolving ecosystem, driven by the relentless pursuit of knowledge and its dissemination. At the heart of this ecosystem lies the research output of university faculty, a critical indicator of intellectual vitality, institutional impact, and societal contribution. Understanding and analyzing this output is paramount for academic institutions seeking to optimize resource allocation, foster impactful collaborations, and enhance their global standing. While the quality and depth of research are often subject to qualitative assessment, the sheer volume and interconnectedness of modern scholarship necessitate robust quantitative approaches.

This paper proposes a comprehensive theoretical framework for conducting a bibliometric study on the research output of faculty. Bibliometrics, as a quantitative discipline, offers a powerful lens through which to systematically examine publication patterns, citation impacts, collaborative networks, and thematic specializations. By moving beyond anecdotal evidence and leveraging the vast repositories of scholarly data, a bibliometric approach can unveil hidden trends, identify areas of strength and weakness, and provide empirical insights into the dynamics of academic productivity. This paper will delve into the core theoretical underpinnings that inform such a study, drawing from the sociology of science, information science, communication theory, and the economics of science, to outline how these diverse perspectives converge to provide a holistic understanding of faculty research endeavors. Through this exploration, we aim to establish a robust conceptual foundation for future empirical investigations into the intricate world of academic scholarship.

A bibliometric study fundamentally relies on the quantitative analysis of bibliographic data. Its theoretical grounding draws from several interconnected fields:

1) **Sociology of Science:** This field, pioneered by Merton, highlights the social structures and norms that govern scientific communities. A bibliometric study can illuminate how these structures influence research output, such as the Matthew Effect (where established researchers gain more recognition) or the formation of scientific elites. It can also explore the impact of institutional pressures, funding mechanisms, and research policies on faculty productivity.
2) **Information Science and Scientometrics:** At its core, bibliometrics is a subfield of information science. Scientometrics specifically focuses on the quantitative study of science, technology, and innovation. Key theoretical concepts here include:

Bradford's Law of Scattering: This law suggests that a small number of core journals account for a large proportion of relevant articles on a given topic, while a larger number of

peripheral journals contribute fewer articles. In a faculty context, this can help identify core publication venues for specific departments or disciplines.

Lotka's Law of Inverse Square: This law describes the frequency of publication by authors in a given field, typically showing that a small number of authors are highly productive, while many authors publish less frequently. This can be used to analyze faculty productivity distributions and identify highly prolific researchers.

Zipf's Law: While more generally applied to word frequencies, its principle of uneven distribution can be extended to publication patterns, showing how certain topics or keywords might dominate a faculty's research output.

Communication Theory: Research output is a form of academic communication. Communication theory helps us understand the dissemination of knowledge, the formation of scholarly networks, and the impact of different communication channels (e.g., journal articles, conference papers, books) on the reach and influence of faculty research.

3) **Economics of Science:** This perspective considers research as an investment and its output as a return. It can help analyze the efficiency of research funding, the impact of resource allocation on faculty productivity, and the economic value generated by academic research. Concepts like "human capital" (the knowledge and skills of faculty) are relevant here.

Key Theoretical Concepts and Measures in a Bibliometric Study:

Productivity: This is a fundamental measure, often quantified by the number of publications (articles, conference papers, books), citations received, or patents filed. Theoretically, higher productivity is often associated with greater impact and recognition within the academic community. However, the *quality* of output is also crucial, leading to considerations of citation metrics.

Impact: Beyond mere quantity, impact refers to the influence and recognition of research. This is often measured through:

a) **Citations:** The number of times a publication is cited by other researchers is a widely accepted proxy for its impact and intellectual influence. The theoretical assumption is that highly cited works contribute significantly to their respective fields.

b) **h-index:** This metric attempt to balance productivity and impact by considering the number of publications (h) that have received at least h citations. It aims to provide a more nuanced measure than raw citation counts.

c) **Journal Impact Factor (JIF):** While controversial, the JIF (average number of citations to articles published in a journal over a specific period) is often used as a proxy for the perceived quality or prestige of the publication venue, implicitly reflecting on the impact of articles published therein.

Collaboration: Academic research is increasingly collaborative. Bibliometric analysis can reveal:

a) **Co-authorship networks:** Mapping these networks can illustrate internal (within-institution) and external (inter-institutional, international)
collaborations. Theoretically, collaboration can lead to higher-quality research, greater interdisciplinarity, and increased impact due to diverse expertise and resources.

b) **Collaboration intensity:** Measures like the average number of authors per paper or the percentage of co-authored papers.

Thematic Focus and Research Specialization: Analyzing keywords, topics, and journal affiliations can reveal the core research areas of faculty. This helps in understanding the intellectual landscape of a department or institution and identifying emerging research trends.

Temporal Trends: Analyzing changes in publication patterns, citation counts, and collaboration over time can reveal the evolution of faculty research, the impact of new research initiatives, or shifts in disciplinary focus

Methodological Considerations and Theoretical Implications:

A robust bibliometric study on faculty research output requires careful methodological choices, each with theoretical implications:

1. **Data Sources:** The choice of bibliographic databases (e.g., Web of Science, Scopus, Google Scholar) significantly impacts the results. Each database has its own coverage, indexing policies, and biases, which need to be acknowledged theoretically. For instance, Web of Science is strong in natural sciences, while Scopus has broader coverage. Google Scholar is more inclusive but can suffer from data inconsistencies.
2. **Normalization:** When comparing research output across different disciplines or time periods, normalization is crucial. Different fields have different citation practices and publication norms. Theoretically, failing to normalize can lead to misleading comparisons (e.g., direct comparison of citation counts between a highly cited medical paper and a less frequently cited humanities paper).
3. **Ethical Considerations:** While quantitative, bibliometric studies have ethical implications. Over-reliance on simple metrics can lead to "gaming" the system, encouraging quantity over quality, and potentially misrepresenting individual or institutional performance. Theoretically, a purely quantitative approach without qualitative interpretation risks devaluing the nuances of scholarly work.

Potential Insights and Theoretical Contributions:

A well-designed bibliometric study can offer valuable insights and contribute theoretically in several ways:

a) **Understanding Institutional Research Profile:** It can provide a data-driven picture of a university's or department's strengths, weaknesses, and unique research contributions.

b) **Informing Research Policy and Strategy:** By identifying trends, highly impactful researchers, and collaborative opportunities, institutions can make more informed decisions about resource

allocation, faculty recruitment, and strategic research planning.

c) **Benchmarking and Performance Evaluation:** While used cautiously, bibliometrics can facilitate benchmarking against peer institutions and offer a quantitative component to faculty performance evaluations. However, it's crucial to acknowledge the theoretical limitations of reducing complex scholarly contributions to mere numbers.

d) **Identifying Emerging Research Fronts:** Analyzing keyword co-occurrence and citation networks can help identify nascent research areas and interdisciplinary connections within a faculty's output.

e) **Exploring the Dynamics of Scientific Knowledge Production:** By studying changes over time, a bibliometric analysis can contribute to the broader theoretical understanding of how scientific knowledge is created, disseminated, and impacts society.

f) **Revealing Collaboration Dynamics:** Understanding who collaborates with whom, and the impact of these collaborations, contributes to the theoretical understanding of scientific teamwork and network formation.

Conclusion:

A bibliometric study on the research output of faculty is a theoretically rich endeavor that offers a systematic and quantitative approach to understanding academic scholarship. By drawing upon theories from the sociology of science, information science, communication theory, and economics, such a study can provide valuable insights into faculty productivity, impact, collaboration patterns, and thematic specializations. While methodological rigor and careful interpretation are paramount to avoid oversimplification, a well-executed bibliometric analysis can contribute significantly to our understanding of the dynamics of academic research and inform strategic decision-making within higher education institutions.

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राष्ट्रीय एकीकरण एवं भावात्मक एकता में शिक्षा की भूमिका

➢ **डॉ. मधुरिमा वर्मा**[1]

सारांश

यह शोध-पत्र भारत जैसे विविधताओं से भरे राष्ट्र में राष्ट्रीय एकीकरण (National Integration) और भावात्मक एकता (Emotional Unity) को सुदृढ़ करने में शिक्षा की अनिवार्य भूमिका का विश्लेषण करता है। भारत में भौगोलिक, भाषाई, धार्मिक, और जातीय विभिन्नताएँ विद्यमान हैं, जिनके कारण स्वतंत्रता के बाद क्षेत्रीयता, भाषावाद, सांप्रदायिकता और आर्थिक असमानता जैसे विघटनकारी तत्वों का उदय हुआ। यह समस्या देश के अस्तित्व और सुरक्षा के लिए एक चुनौती है।

यह पत्र प्रस्तावित करता है कि शिक्षा इन विघटनकारी प्रवृत्तियों का एकमात्र समाधान है, क्योंकि यह व्यक्तियों की सोच और मानसिकता को व्यापक दृष्टिकोण प्रदान करती है। राष्ट्रीय एकता को 'हम' की भावना के रूप में परिभाषित किया गया है, जहाँ व्यक्ति अपने व्यक्तिगत और सामूहिक हितों का त्याग कर राष्ट्रहित को प्राथमिकता देता है। भावात्मक एकता समिति (1961) के विचारों को केंद्र में रखते हुए, यह विश्लेषण करता है कि शिक्षा के उद्देश्य, पाठ्यक्रम, शिक्षण विधियाँ और शिक्षक की भूमिका कैसे महत्वपूर्ण हैं।

मूल शब्द- राष्ट्रीय एकीकरण, भावात्मक एकता, शिक्षा की भूमिका, संवैधानिक मूल्य, विविधता के प्रति सम्मान

परिचय

भारत एक ऐसा विशाल देश है जहाँ विभिन्न जाति एवं धर्म के अनुयायी निवास करते हैं। देश में विभिन्न प्रान्त हैं। प्रत्येक प्रान्त की प्रथक भाषा, बोली वेशभूषा एवं रहन सहन है। भागौलिक कारणों से भिन्न - भिन्न जलवायु भी है। जलवायु के आधार पर तथा वहाँ की उपज के आधार पर स्थान विशेष का भोजन व खान पान भी निर्धारित होता है। भारत में मैदानी भाग, समुद्र तटीय भाग तथा पर्वतीय क्षेत्र सभी उपलब्ध है। इसी कारण स्थानीय व्यवसाय भी अलग - अलग है। इतनी विभिन्नता वाले देश के समक्ष रामट्रीय और भावात्मक एकता की समस्या विकराल होती है। भारत में स्वतंत्रता

[1] शिक्षा शास्त्र विभाग, आर्य कन्या डिग्री कॉलेज, प्रयागराज

के उपरान्त यह समस्या अधिक देखने को मिली। देश में स्वतंत्रता से पूर्व ऐसी एकीकरण की समस्या नहीं थी क्योंकि समस्त देश के सामने एक लक्ष्य था अंग्रेजी हुकूमत से मुक्त होना। जाति धर्म व क्षेत्र की विभिन्नता को भूल कर सभी ने एकता के सूत्र में बँध कर अंग्रेजों क विरूद्ध लड़ाई लड़ी और विजय का लक्ष्य प्राप्त किया।

स्वतंत्रता के पश्चात् अनेक विघटनकारी तत्व सामने आये। तत्कालीन स्थिति को देख कर डॉ0 सम्पूर्णानन्द जी ने लिखा है "स्वतंत्रता के बाद के वर्षों में भारत ने अनेक क्षेत्रों में प्रगति की है किन्तु इन वर्षों में राष्ट्रीय जीवन में प्रथकता की प्रवृत्तियां में उत्तरोत्तर वृद्धि भी अवलोकित है।"

स्वतंत्रता प्राप्ति के पश्चात् देश में भाषा के नाम पर दंगे हुए, धर्म के नाम पर राजनीतिक दल बने, केन्द्र में प्रभुत्तव के लिए उत्तर और दक्षिण का प्रश्न उठा, राज्यों में आपसी तनाव बढ़े और उद्योगों की स्थापना को लेकर परस्पर वैमनस्य बढ़ा ।

यद्यपि विविधता देश की आर्थिक और सांस्कृतिक समृद्धि का कारण होती है, परन्तु जब विविधता या भिन्नता निम्न स्तर पर आ जाती है तो देश के अस्तित्व पर प्रश्न चिन्ह लग जाता है। देश का अस्तित्व खतरे में पड़ जाता है। देश की सुरक्षा के लिए इस समस्या का हल खोजना आवश्यक है। शिक्षा के माध्यम से इस समस्या का समाधान हो सकता है। शिक्षा एक व्यापक दृष्टिकोण देती है तथा हमारी सोच व मानसिकता को शिक्षित करती है।

राष्ट्रीय एकता या राष्ट्रीय एकीकरण किसी राष्ट्र के व्यक्तियों के बीच समान हित के आधार पर विकसित हम की वह भावना है जो उन्हें क्षेत्र जाति, लिंग, धर्म, संस्कृति व अन्य बन्धनों के आधार पर भिन्नता होते हुए भी अपने राष्ट्र से बाँधती है और वे राष्ट्रहित के आगे अपने वैयक्तिक एवं सामूहिक हितों का त्याग करते हैं।

सम्पूर्ण राष्ट्र या समाज को एक समझना ही राष्ट्रीय या सामाजिक एकीकरण है। राष्ट्रीय एकता का तात्पर्य है समाज में रह रहे प्रत्येक जाति, सम्प्रदाय क्षेत्र या भाषा के व्यक्ति को अपने समाज का अंग स्वीकार करना, उनके उत्सवों, परम्पराओं खान पान एवं पहनावों में रूचि लेना तथा सभी की जीवन शैली का आदर करना।

राष्ट्रीय एकता ही किसी भी देश की प्रगति का मूल आधार है। एकीकरण से तात्पर्य है समूचे राष्ट्र व समाज को एक समझना। किसी राष्ट्र के अस्तित्व के लिए यह आवश्यक है कि उसके व्यक्ति 'मैं' से हट कर 'हम' की भावना से प्रेरित हो। उनमें राष्ट्र के प्रति समर्पण की भावना हो। आपसी भाईचारा हो। वैयक्तिक सोच से ऊपर रामट्रहित को महत्व दें। राष्ट्रीयता के अभाव में कोई भी देश सुदृढ़ नहीं हो सकता और न ही अधिक दिनों तक जीवित रह सकता है। जाति, धर्म के नाम पर हिंसा राष्ट्रीय एकता की कमी को दर्शाती है।

"डॉ० राधा कृष्णन ने अपने भाषण में कहा है - राष्ट्रीय एकता एक ऐसी समस्या है जिससे सभ्य राष्ट्र के रूप में हमारे अस्तित्व का घनिष्ठ सम्बन्ध है।"1

राष्ट्रीय एकता को परिभाषित करते हुए डॉ0 जे0 एस0 बेदी ने कहा - "देश के विभिन्न राज्यों के व्यक्तियों की आर्थिक सामाजिक, सांस्कृतिक एवं भाषा विषयक विभिन्नताओं को वांछनीय सीमा के अन्तर्गत रखना और उनमें भारत की एकता का समावेश करना।"2

राष्ट्रीय एकता सम्मेलन - राष्ट्रीय एकता एक मनोवैज्ञानिक एवं शैक्षिक प्रक्रिया है, जिसके द्वारा लोगों के दिलों में एकता, संगठन एवं सन्निकटता की भावना सामान्य नागरिक की भावना और राष्ट्र के प्रति भक्ति की भावना का विकास किया जाता है।3

सामान्य तौर पर हम कह सकते हैं कि राष्ट्रीय एकता से तात्पर्य देश के निवासियों की भावात्मक एवं नैतिक एकता से है। जाति, धर्म, प्रान्त, भाषा, संस्कृति के प्रति मानसिक संकीर्णता न रख कर अपितु उदार दृष्टिकोण अपनाते हैं।

भारतीय परिप्रेक्ष्य में राष्ट्रीय एकता को इस प्रकार समझा जा सकता है मानो एक माला में विभिन्न फूलों

को पिरोया गया हो। यह फूल भिन्न रंग भिन्न आकार व भिन्न सुगन्ध वाले है किन्तु एक सूत्र में गुँथे हुए हैं।

भारतीय संस्कृति की सुरक्षा एवं हस्तान्तरण के लिए, राष्ट्रीय विकास एवं समृद्धि के लिए, जनतन्त्र की सफलता के लिए राष्ट्र की उन्नति व सम्मान के लिए तथा राष्ट्र को विघटनकारी तत्वों से बचाने के लिए राष्ट्रीय एकीकरण की आवश्यकता है।

राष्ट्रीय एकीकरण व भावात्मक एकता संकीर्ण मानसिकता के साथ न हो। भारत वर्मा 'वसुधैव कुटुम्बकम' में विश्वास करता है।

अतः इस बात का ध्यान रखा जाए कि संकीर्ण राष्ट्रीयता विश्व के लिए घातक न हो। राष्ट्रीयता अंतर्राष्ट्रीय सद्भावना के परिप्रेक्ष्य में हो।

राष्ट्रीय एकीकरण व भावात्मक एकता में कठिनाइयाँ -

प्राचीन धार्मिक ग्रन्थों में भारत को एक राष्ट्र कहा गया है। शंकराचार्य ने भारत की उत्तरी, दक्षिणी, पूर्वी और पश्चिमी सीमाओं पर धार्मिक मंदिरों की स्थापना की। अशोक, समुद्रगुप्त, अलाउद्दीन खिलजी, अकबर तथा औरंगजेब ने पूरे भारत पर अपना साम्राज्य स्थापित कर उसे एक राष्ट्र का रूप देने का प्रयास किया। इतना होने पर भी भारत में अनेक स्वतंत्र राष्ट्र बनने के प्रयास भी चलते रहे। उत्तर भारत तो एक सूत्र में रहा किन्तु दक्षिण भारत में स्वतंत्र अस्तित्व के लिए प्रयास चलते रहे। हर्मा के शासन काल में चालुक्यों ने दक्षिण भारत में स्वतंत्र रूप से शासन किया। मुगलों के शासन के उपरान्त अनेक राज्यों में मराठों की सत्ता रही तथा निजाम और हैदर अली की भी सत्ता रही। यह इस बात को दर्शाता है कि यह विघटनकारी प्रवृति भारतवर्ष में सदैव से ही रही। कभी दबी रहीं और कभी उभर कर सामने आई और प्रत्यक्ष रूप से देश को प्रभावित किया। स्वतंत्रता प्राप्ति के पश्चात् भी देश विभाजन के भी यही कारण थे।

धर्म या साम्प्रदायिकता

हमारे भारत देश में विभिन्न धर्मावलम्बी निवास करते हैं हिन्दू, मुस्लिम, सिक्ख, ईसाई, पारसी, बौद्ध, जैन यदि सभी अपने धर्म को मानते हुए सब धर्मो के प्रति आदर भाव रखें तो विघटन की स्थिति न हो। किन्तु खेद है कि यह उदार दृष्टिकोण हम नीं अपना पाते और दूसरे के धर्म के प्रति असहिष्णु हो जाते हैं। देश का विभाजन इसी धार्मिक असहिष्णु का परिणाम है।

क्षेत्रीयता

भारत देश अनेक प्रान्तों में बटा है। प्रत्येक प्रान्त की अपनी विशेषताएं हैं। अपनी जन्म भूमि सभी को प्रिय होती है। अपने जन्म स्थान से प्रेम करना स्वाभाविक है किन्तु दूसरे प्रान्त या क्षेत्र को हानि पहुँचाना गलत है। प्रान्तों कायह टकराव देश की अखंडता के लिए अच्छा नहीं है।

जातीयताद

भारत में अनेक जातियाँ हैं। हिन्दुओं में ब्राह्मण, क्षत्रिय, वैश्य तथा शूद्र हैं। मुसलमानों में शेख, सैय्यद, मुगल और पठान, जैनियो में दिगम्बर और श्वेताम्बर, सिक्खों में अकाली और नामधारी। अनेक जातियों में बँटे होने के कारण जातीय हित कभी कभी राष्ट्रीय हित को भी प्रभावित करने लगते हैं। राष्ट्रीय हित उपेक्षित होने से देश की एकता पर प्रभाव पड़ता है।

भाषावाद

भारत वर्ष में विभिन्न भाषाएँ बोली जाती हैं। भारतीय संविधान में 22 भाषाओं का उल्लेख हैं- असमी, बंगाली, बोडो, डोगरी, गुजराती, हिन्दी, कन्नड़, कश्मीरी, कोंकणी, मैथिली, मलयालम, मैतेयी, मराठी, नेपाली, उड़िया, पंजाबी, संस्कृत, सन्थली, सिन्धी, तमिल, तेलगू तथा उर्दू। अपनी भाषा के वर्चस्व को सिद्ध करने के लिए देश में भाषा सम्बन्धी विवाद होते रहे हैं हिन्दी भाषा सर्वाधिक बोलने लिखने तथा समझने में सरल होने के कारण राष्ट्र भाषा का गौरव प्राप्त करने के लिए उपयुक्त भाषा समझी गई। इस बात का दक्षिण भारतीय लोगों

ने विरोध किया तथा आन्दोलन भी किये। इस तरह भाषा विवाद भी विघटन का कारण बना।

आर्थिक असमानताएँ

भारत देश में वर्ग भेद भी विघटन का एक कारण है। आर्थिक असमानता कुंठा और निराशा को बढ़ाती है तथा कुंठा आक्रमकता को बढ़ाती है।

राजनीतिक दल

धर्म और जाति के आधार पर गठित राजनीतिक दल समाज और राष्ट्र के विघटन में अपनी प्रमुख भूमिका निभाते हैं।

उपर्युक्त विभिन्नताओं के संदर्भ में इस बात को ध्यान में रखना है कि भारत विविधताओं का देश है। राष्ट्रीय एकता का अर्थ इन विविधताओं को समाप्त करना नहीं है बल्कि उन्हें बनाए रखना है। विविधता में एकता ही हमारे देश की और हमारी संस्कृति की पहचान होनी चाहिए। आपसी सौहार्द को बनाए रखने में शिक्षा एक सशक्त भूमिका का निर्वाह करती है।

राष्ट्रीय एकीकरण तथा भावात्मक एकता के लिए शिक्षा की भूमिका -

माँ प्रथम शिक्षिका है। जन्म से ही इन भेदकारी प्रवृत्तियों को निरूत्साहित किया जाए। राष्ट्रीय एकता व भावात्मक एकता को प्राप्त करने के लिए शिक्षा एक सशक्त साधन है। 1961 में भावात्मक एकता समिति का गठन किया गया। इस समिति के अध्यक्ष डा0 सम्पूर्णानन्द थे। समिति के विचार थे कि शिक्षा भावात्मक एकता को सुदृढ़ बना सकती है। शिक्षा का उद्देश्य मात्र ज्ञान देना न हो अपितु छात्र का सर्वांगीण विकास करना हो। इसके अन्तर्गत उसका भावात्क एवं संवेगात्मक विकास भी आयेगा। उनके दृष्टिकोण को व्यापक बनाने की आवश्यकता है।

राष्ट्रीय एकीकरण तथा भावात्मक एकता के लिए शिक्षा के उद्देश्य, पाठयक्रम, शिक्षण विधियों तथा शिक्षक की भूमिका का विशेमा महत्व है।

शिक्षा के उद्देश्य निर्धारित करते समय इस बात पर ध्यान दिया जाए कि शिक्षा राष्ट्रीय भावना व राष्ट्र प्रेम का विकसित करने वाली हो। शिक्षा का उद्देश्य मानव धर्म को विकसित करना हो। शिक्षा 'मैं' नहीं 'हम' की भावना को विकसित करने वाली हो। शिक्षा का उद्देश्य सभी धर्म और संस्कृति के प्रति आदर विकसित करना हो। लोकतंत्र का विकास भी शिक्षा का प्रमुख उद्देश्य हो। लोकतांत्रिक भावना इस बात को महत्व देती है कि राष्ट्र में सभी का स्थान समान हैं तथा सभी की भागीदारी और अधिकार समान हैं।

पाठ्यक्रम निर्धारण में भी इस बात पर ध्यान दिया जाए कि जो हमारे विद्यार्थी पढेंगे वह ज्ञान उनके भावी जीवन को प्रभावित करेगा। पाठ्यक्रम के माध्यम से भारतीय समाज का इतिहास, संस्कृति तथ आदर्शो का ज्ञान छात्रों को पढ़ाया जाता है। यदि छात्र विभिन्न परम्पराओं की जानकारी प्राप्त कर लेगा तो वह उनसे 'घृणा नहीं करेगा। 'घृणा का कारण जानकारी का अभाव होता है। पाठ्यक्रम ऐसा बनाया जाए कि छात्र वास्तविक ज्ञान से परिचित हो सके। इतिहास, भूगोल, साहित्य, संगीत, विज्ञान, विद्यालय की गतिविधियाँ, सभी राष्ट्र प्रेम का ज्ञान देने वाली हों। पाठ्यक्रम सहगामी क्रिया भी राष्ट्र प्रेम व एकीकरण के भाव को बढ़ाने वाली हो। एन.सी.सी., एन.एस.एस., रोवर्स रेंजर्स, गल्स गाइड, विद्यालय, महाविद्यालय का सांस्कृतिक कार्यक्रम विभिन्न प्रतियोगिताएं, भाषण तथा रैली आदि भी इसमें सकारात्मक और सशक्त भूमिका निभा सकेंगी।

शिक्षण विधियों के प्रयोग में भी इस बात की सतर्कता बरती जाए कि छात्र एवं अध्यापक समूह एक दूसरे के साथ सहयोग से कार्य करें। क्रियात्मक एवं सृजनात्मक प्रवृत्ति का विकास हो। विषय को अधिक प्रभावकारी बनाने के लिए दृश्य एवं श्रव्य सहायक सामग्री का प्रयोग किया जाए। छात्रों में सकारात्मक दृष्टिकोण विकसित करने के लिए प्रश्नोत्तर विधि का

प्रयोग हो। यदि छोटे बच्चे हों तो तथ्यों को कहानी के माध्यम से तथा रंग बिरंगे चार्ट के माध्यम से समझाया जाये।

शिक्षक की भूमिका बहुत महत्वपूर्ण है। विषय की प्रस्तुति सकारात्मक रूप से की जाए। इतिहास शिक्षण में कक्षा का वातावरण ऐसा हो कि किसी प्रकार की सांस्कृतिक दुर्भावना की सम्भावना न हो। शिक्षक विद्यार्थियों में सभी जाति, धर्म, सम्प्रदाय, वर्ग के प्रति सम्मान की भावना को उत्पन्न कर सकें। छात्रों में उदार मानसिकता विकसित करें।

विद्यालयों में राष्ट्रीय पर्वो का आयोजन हो। शिक्षा के माध्यम से राष्ट्रध्वज, राष्ट्रगान, राष्ट्रभाषा का महत्व विद्यार्थियों को समझाया जाए।

राष्ट्रीय एकता को विकसित करने के लिए शिक्षा के औपचारिक, अनौपचारिक प्रौढ़ शिक्षा, जन संचार के साधन और स्वैच्छिक संस्थाओं आदि का प्रयोग किया जा रहा है।

छात्रों को देश भ्रमण करा कर राष्ट्र की भौगोलिक स्थिति से अवगत कराया जा सकता है। इससे छात्रों को देश की विशालता तथा विभिन्न प्रान्तों की संस्कृतियों का ज्ञान होगा ओर उसके प्रति सम्मान की भावना उत्पन्न होगी।

राष्ट्रीय एकता को स्थापित करने में अनुशासन के स्वरूप का भी अत्याधिक महत्व है। छात्र जीवन का अनुशासन ही आजीवन अनुशासित रहने की प्रेरणा देता है।

राष्ट्रीय एकता के लिए उपयुक्त भाषा नीति का विकास करना भी आवश्यक है। आधुनिक भारतीय भाषाओं का विकास करना चाहिए। प्रारम्भिक शिक्षा मातृ भाषा के माध्यम से ही दी जाए। माध्यमिक शिक्षा आयोग ने दो भाषा, शिक्षा आयोग ने त्रिभाषा फार्मूला तथा नयी शिक्षा नीति ने भी त्रिभाषाफार्मूला देकर भाषा विवाद को समाप्त करने का प्रयास किया है।

भारत विभिन्न जातियों, सम्प्रदायों, समुदायों, भाषाओं धर्मो एवं संस्कृतियों का देश है अतः राष्ट्रीय चेतना का विकास करना चाहिए। इस प्रकार यह दृष्टिगत होता है कि राष्ट्रीय एकीकरण एवं भावात्मक एकता के लिए शिक्षा एक सशक्त साधन है।

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India's Nutri Cereals Trend: A Decomposition Analysis

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ABSTRACT

Post-COVID-19 situation offers an extraordinary chance to hold onto the second and repurpose approaches towards a food framework that is resilient and sustainable. Among all nations, India demonstrates the highest levels of Nutri-cereal production and consumption worldwide. Recognizing their superior nutritional profile, the Indian government has officially reclassified millets—including sorghum, pearl millet, and finger millet (ragi)—from "coarse cereals" to "Nutri-cereals". Novel coronavirus disease (COVID-19) pandemic wakes us up to boost our immune system through natural and smart food. The study's goal was to look into the area, production, and yield of India's Nutri-cereals cultivation. The total area of Nutri-cereals cultivation in 2019-20 was 23987.95 thousand hectares in India, with the production of 47748.34 thousand tonnes. The secondary source of data for India included statistics for the previous six decades (1969-1970 to 2019-20) on Nutri-cereals acreage, production, and productivity. Data sourced from the Ministry of Agriculture and Farmers' Welfare, Government of India, was used to compute compound annual growth rates, which revealed a declining trend in area under cultivation alongside positive growth in both production and productivity of Nutri-cereals. India had the greatest yield effect on Nutri-cereals production, as per the decomposition analysis. The growth in Nutri-cereal production was predominantly attributed to yield improvements rather than area expansion. The yield effect emerged as the most dominant factor, surpassing both area and interaction effects during the specified period. The yield of Nutri-cereals accounted for 1991 kg. /Hectare in 2019-20 in India. As a result, policymakers must adopt development-oriented policies, and academics must construct an investigative research activity to promote long-term Nutri-cereals production in India and increase yield under Nutri-cereals farming.

Keywords: Nutri-cereals farming, trend, decomposition,

JEL: Q15, Q16, Q18, O13

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Introduction

In the global debate on food and nutrition security, coarse cereals—recently rebranded as Nutri-Cereals—have re-emerged as a sustainable and climate-resilient alternative (PNAS, 2019; Food Production, Processing and Nutrition, 2025). These comprise sorghum, pearl millet, finger millet, and other minor millet varieties. Traditionally consumed in India for centuries, their importance has declined with the rise of rice and wheat during the Green Revolution (DeFries *et al.*, 2018; Oak, 2023). However, rising concerns about malnutrition, dietary diversification, climate stress, and post-COVID health consciousness have renewed interest in these cereals (Bhat *et al.*, 2023; Venkatesh *et al.*, 2023).

India dominates global Nutri-cereal markets, contributing approximately 80 million tonnes to worldwide production and consumption (Yadav *et al.*, 2024). Despite this, their cultivated area has been shrinking, primarily due to crop diversification toward more remunerative crops, policy neglect, and shifts in consumer preferences (Yamuna et al., 2024; Madhu et al., 2024). However, advancements in productivity, adoption of technological innovations, and enhanced policy focus—particularly following the United Nations' designation of 2023 as the International Year of Millets—have transformed the narrative surrounding these crops (Akshatha et al., 2025).

While several studies have analysed growth and instability of cereals at the state or crop level (Yamuna et al., 2024), long-run analyses of nutri-cereals for India as a whole are limited. Moreover, the contribution of area vs. yield effects in driving production has not been sufficiently quantified at the national level (Madhu *et al*., 2024; Yadav *et al*., 2024).

This study aims to examine temporal trends in area, production, and productivity of Nutri-cereals in India over an extended period (1970–2020), estimate growth rates and decompose production growth into area, yield, and interaction effects, and provide policy recommendations for promoting sustainable nutri-cereals cultivation.

3. Methodology

3.1 Data Source

The research utilizes secondary data on the area, production, and yield of nutri-cereals in India, covering the period from 1969–70 to 2019–20. The dataset was obtained from the Directorate of Economics and Statistics under the Department of Agriculture and Farmers' Welfare, Ministry of Agriculture and Farmers' Welfare, Government of India, which functions as the nation's principal source of official agricultural statistics.

3.2 Analytical Tools

Methodology

The present analysis draws upon secondary data compiled from multiple published and authenticated sources, including annual reports of the Indian Institute of Millet Research, India, as well as APEDA. Time-series data on the area, production, and productivity of millets spanning six decades (from 1970–71 to 2021–22) were utilized for the analysis.

To analyse the long-term trends in area, production, and productivity, the Compound

Annual Growth Rate (CAGR) was computed. The decadal growth rates were estimated using an exponential growth model.:

$$Y_t = ab^t u_a$$

Where:

- Y_t = dependent variable (area, production, or yield) in year t
- a = intercept (constant)
- b = regression coefficient
- t = time (year)
- u_t = disturbance term

The exponential growth model was converted into a log-linear form and estimated through the Ordinary Least Squares (OLS) technique. The Compound Annual Growth Rate (r) was computed using the following expression:

$$\text{CAGR(r)Antilog of } \ln b - 1) \times 100$$

The statistical significance of the estimated regression coefficient was evaluated through the t-test.

The study examines the relative contributions of cultivated area and productivity to the total production of millets and other nutri-cereals. By analysing trends in production, it is possible to distinguish whether changes in total output are primarily driven by an expansion of the area under cultivation or by improvements in yield. Understanding these dynamics is essential for identifying key factors that influence production growth and for formulating effective strategies to enhance food and nutritional security. This approach provides valuable insights into the performance of nutri-cereals over time, highlighting opportunities for targeted interventions to promote sustainable cultivation and maximize productivity. To assess the individual contributions of area, productivity, and their interaction to changes in total production, an additive decomposition scheme was employed. This approach enables the separation of absolute changes in total output into distinct components attributable to area expansion, yield improvement, and the interaction effect between these factors-

$$P = A_0 (Y_n - Y_0) + Y_0 (A_n - A_0) + \Delta A \Delta Y$$

$$1 = [(Y \Delta A)/P] [(A \Delta Y)/P] [(\Delta A \Delta Y)/P]$$

$P \rightarrow$ Change in production

$A_0 \rightarrow$ Area in the base year

$A_n \rightarrow$ Area in the current year

$Y_0 \rightarrow$ Yield in the base year

$Y_n \rightarrow$ Yield in the current year

$\Delta A \rightarrow$ Change in the area $(A_n - A_0)$

$\Delta Y \rightarrow$ Change in yield $(Y_n - Y_0)$

4. Results and Discussion

4.1 Trends in Area, Production and Productivity

Area Under Cultivation: Alarming Contraction Despite Nutritional Imperatives

The results about the compound annual growth rate of area under cultivation for different nutri-cereals are profound and an accelerating crisis that demands immediate scientific and policy attention. Over the six-decade study period from 1970-2020, the collective nutri-cereals sector experienced a substantial contraction of -2.05% CAGR, representing one of the most significant shifts in India's agricultural landscape. This decline became particularly acute in the most recent decade (2020-21), where the contraction

accelerated dramatically to -3.75% CAGR, nearly doubling the historical decline rate.

Jowar (*Sorghum bicolor*) emerges as the most critically affected crop, exhibiting an alarming -3.65% CAGR over the entire study period, which intensified to a devastating -5.65% CAGR in 2020-21. This represents an unprecedented loss of cultivation area for what was once considered a drought-resilient staple crop. Conversely, bajra (*Pennisetum glaucum*) demonstrates remarkable resilience with the lowest overall decline rate of -1.25% CAGR, though recent trends show concerning acceleration to -2.45% CAGR in 2020-21. The differential responses among these crops provide fascinating insights into the complex interplay of socio-economic factors, climate adaptation, and market dynamics shaping contemporary Indian agriculture.

Table 1: CAGR for different nutri cereals of area (1970–2020)

Period	Small Millets	Ragi	Jowar	Bajra	Nutri Cereals
1970-71	-2.80	-1.85	-3.45	-1.28	**-2.15**
1980-81	-1.42	-0.95	-2.65	-0.85	**-1.35**
1990-91	-2.75	-1.62	-4.12	-1.45	**-2.28**
2000-01	-1.98	-1.25	-3.25	-0.95	**-1.68**
2010-11	-3.25	-2.15	-4.85	-1.85	**-2.95**
2020-21	-4.15	-2.85	-5.65	-2.45	**-3.75**
1970-2020	**-2.15**	**-1.45**	**-3.65**	**-1.25**	**-2.05**

Production Dynamics: A Tale of Resilience and Vulnerability

The production trajectories of nutri-cereals present a compelling narrative of agricultural transformation and adaptation. The aggregate production data reveal a modest but significant positive growth of 0.35% CAGR over the 1970-2020 period, demonstrating the sector's capacity to maintain output despite severe area constraints. However, the recent 2020-21 period marks a critical inflection point, with production shifting to negative growth at -1.45% CAGR, signalling potential systemic challenges that merit urgent investigation.

Bajra stands out as the undisputed champion of the nutri-cereals family, achieving an impressive 1.95% CAGR in production over the six-decade period. This remarkable performance reflects the crop's exceptional adaptability to marginal lands and its increasing acceptance in commercial agriculture. The crop demonstrated a steady growth rate of 0.85% CAGR during the challenging 2020–21 period, indicating its strong potential as a climate-resilient option to enhance food security. Ragi (Eleusine coracana) also demonstrated commendable historical performance with 0.85% CAGR, though its recent shift to negative growth (-0.45% CAGR

in 2020-21) raises important questions about changing cultivation practices and market preferences.

The contrasting fortunes of small millets and jowar, both showing consistent negative production growth throughout all periods, highlight the urgent need for targeted interventions. These crops, despite their exceptional nutritional profiles and climate resilience, face systematic challenges that have resulted in production declines of -1.65% and -2.35% CAGR, respectively, over the study period.

Table 2: CAGR for different nutri cereals of production (1970–2020)

Period	Small Millets	Ragi	Jowar	Bajra	Nutri Cereals
1970-71	-1.85	0.95	-2.15	1.85	**0.25**
1980-81	-0.95	1.25	-1.45	2.15	**0.85**
1990-91	-2.15	0.65	-2.85	1.65	**-0.15**
2000-01	-1.25	1.15	-1.95	2.45	**0.65**
2010-11	-2.85	0.25	-3.25	1.25	**-0.85**
2020-21	-3.65	-0.45	-4.150	0.85	**-1.45**
1970-2020	-1.65	0.85	-2.55	1.95	**0.35**

Productivity Revolution: Technological Triumph Amid Structural Challenges

Perhaps the most encouraging and scientifically fascinating aspect of this analysis lies in the productivity trends, which reveal a consistent pattern of technological advancement and agricultural intensification across all nutri-cereals. The overall sector achieved an impressive 2.15% CAGR in productivity over 1970-2020, representing a genuine agricultural revolution that has enabled production maintenance despite dramatic area reductions.

Bajra continues to lead this productivity revolution with an extraordinary 3.25% CAGR over the entire study period, demonstrating the transformative power of crop improvement programs and enhanced cultivation techniques. This exceptional performance reflects decades of systematic breeding efforts, improved agronomic practices, and the crop's inherent genetic potential for yield enhancement. Ragi follows with a substantial 2.35% CAGR, showcasing the effectiveness of research investments in traditional crops and their capacity for modern agricultural transformation.

Even the traditionally challenging crops show remarkable productivity improvements: small millets achieved 1.55% CAGR while jowar recorded 1.45% CAGR over the study period. These gains represent millions of hours of scientific research, field experimentation, and farmer innovation that have collectively

transformed the yield potential of these ancient grains.

However, the 2020-21 data reveal a concerning deceleration in productivity growth rates across all crops, with the sector average dropping to 1.65% CAGR. This slowdown, while still positive, suggests potential diminishing returns from current technological approaches and highlights the need for breakthrough innovations in crop science and agricultural systems.

Table 3: CAGR for different nutri cereals of productivity (1970–2020)

Period	Small Millets	Ragi	Jowar	Bajra	Nutri Cereals
1970-71	2.45	2.85	1.35	3.25	**2.45**
1980-81	1.25	2.25	1.85	3.15	**2.15**
1990-91	1.45	2.35	1.25	3.25	**2.05**
2000-01	2.05	2.45	1.65	3.45	**2.35**
2010-11	0.95	2.15	1.85	3.15	**1.95**
2020-21	0.65	1.85	1.25	2.85	**1.65**
1970-2020	1.55	2.35	1.45	3.25	**2.15**

4.2 Decomposition Analysis

The decomposition revealed that the yield effect dominated production growth throughout the study period. The production decomposition analysis reveals distinct patterns across nutri-cereals, with yield effects emerging as the dominant driver of production changes while area effects demonstrate mixed contributions across crops. The decomposition analysis reveals notable variability in how area expansion, gains in productivity, and their interplay contribute to overall production outcomes for distinct nutri-cereal crops throughout the study period. These results highlight that the relative importance of these factors differs substantially among crop types and regions, underscoring the complexity of production dynamics in the nutri-cereal sector.

Small millets exhibited a complex decomposition pattern characterized by a positive area effect of 110.87 thousand tonnes, indicating that area expansion contributed positively to production despite the declining cultivation trends observed in aggregate statistics. However, this positive area contribution was offset by a substantial negative yield effect of -120.44 thousand tonnes, suggesting either productivity stagnation or declining efficiency in traditional cultivation systems. The interaction effect of 109.57 thousand tonnes provided partial compensation for the yield losses, indicating that areas experiencing expansion also benefited from some productivity improvements, though these gains were insufficient to fully offset the negative yield impacts.

Ragi demonstrated the most pronounced decomposition effects among individual crops, with a positive area effect of 166.06 thousand tonnes being significantly undermined by the largest individual negative yield effect of -301.18 thousand tonnes. This pattern suggests that while ragi cultivation expanded geographically, the productivity performance was severely compromised, potentially reflecting inadequate technology adoption or cultivation on marginal lands. The substantial positive interaction effect of 235.12 thousand tonnes, representing the highest value among all crops, indicates considerable spatial heterogeneity in ragi performance, with some regions successfully combining area expansion with yield improvements while others experienced productivity declines.

Jowar exhibited the most extreme decomposition pattern with a substantial positive area effect of 234.34 thousand tonnes, being dramatically overwhelmed by the largest negative yield effect across all crops at -576.22 thousand tonnes. This massive negative yield contribution represents the single largest component in the entire decomposition analysis, highlighting fundamental challenges in sorghum productivity improvement despite apparent area expansion. The interaction effect of 441.88 thousand tonnes was substantial but insufficient to overcome the severe yield deficit, suggesting that while some regions achieved simultaneous area and yield improvements, the overall productivity crisis in jowar cultivation dominated the production outcomes.

In stark contrast to other nutri-cereals, bajra presented an encouraging decomposition pattern characterized by a minimal negative area effect of -9.01 thousand tonnes, being more than compensated by a substantial positive yield effect of 145.93 thousand tonnes. This represents the only positive yield effect observed across all nutri-cereals studied, indicating successful technology adoption and productivity enhancement in pearl millet cultivation. The small negative interaction effect of -36.92 thousand tonnes suggests that yield improvements were achieved primarily through intensification of existing cultivation areas rather than expansion into new regions, reflecting a mature and efficient production system.

At the aggregate level, the nutri-cereals sector demonstrated a pronounced transformation pattern with a substantial negative area effect of -382.83 thousand tonnes, indicating significant overall contraction in cultivation area, consistent with structural shifts in Indian agriculture toward commercial crops. This area loss was more than offset by an impressive positive yield effect of 1,211.73 thousand tonnes, representing the largest single component in the decomposition analysis and demonstrating the transformative impact of technological improvements across the sector. The substantial negative interaction effect of -728.90 thousand tonnes suggests that yield improvements occurred primarily in areas where cultivation was maintained or intensified, rather than in regions experiencing area expansion,

indicating a concentration of productivity gains in established growing regions.

The decomposition results reveal that yield effects dominated production changes across the nutri-cereals sector, contributing 1,211.73 thousand tonnes compared to the negative area effect of -382.83 thousand tonnes. The interaction effects, while substantial in absolute terms at -728.90 thousand tonnes, indicate complex spatial patterns where yield improvements and area changes did not necessarily coincide. The analysis demonstrates significant crop-specific variations, with bajra showing successful yield-led growth, while traditional crops like small millets, ragi, and jowar faced varying degrees of productivity challenges despite some positive area contributions. These findings indicate that the nutri-cereals sector has undergone a fundamental transformation characterized by technological progress in productivity alongside structural contraction in cultivation area.

Table 4: Decomposition Analysis of Millet Production Changes in India: Separating Area, Yield, and Interaction Effects (1970-2020)

Crop	Area Effect	Yield Effect	Interaction Effect
Small millets	110.87	-120.44	109.57
Ragi	166.06	-301.18	235.12
Jowar	234.34	-576.22	441.88
Bajra	-9.01	145.93	-36.92
Nutri cereals	-382.83	1211.73	-728.90

5. Conclusion

This study shows that despite a continuous decline in acreage, India's nutri-cereals production has increased due to yield improvements. The decomposition analysis highlights yield as the principal driver of growth, while area effects have diminished over time. These findings underscore the importance of productivity-oriented policies, combined with incentives to stabilize acreage and integrate nutri-cereals into food and nutrition strategies.

Future research could extend to state-level analyses, climate impact modeling, and value chain economics, offering deeper insights into sustaining nutri-cereal growth.

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Gender based Women Entrepreneurship Present Sustainable Development Situation in India

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ABSTRACT

Women's entrepreneurship is crucial for a nation's economic development and can be a potent weapon for releasing the constraints imposed by the incredibly prevalent gender inequality, particularly with regard to their participation in the workforce. Furthermore, considering that India's development trajectory has been moving more and more toward women-led development, the aforementioned programs can do a lot to find untapped talent, offer the required training, and encourage inclusive industry participation—all of which can help to increase industrial and national productivity.

Keywords- Women Entrepreneurs, Classification of Entrepreneurs, Sustainable Development, Financial Service, Economic System,

Introduction

Peter F. Drucker's Views on Entrepreneurs. "The definition of an entrepreneur is someone who is constantly on the lookout for change, who reacts to it, and who uses it as an opportunity. One of the most important tools that entrepreneurs have at their disposal is innovation, which is the technique by which they take advantage of developments as a chance to create a new business or service."

Women Entrepreneurs, according to the Government, "A Company is deemed to be owned and controlled by women if it has a minimum financial stake of 51% in the capital and employs at least 51% females. Another

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requirement is that the company must be run by women."

In other words, "An enterprise owned and controlled by a woman having a minimum financial interest of 51% of the capital and giving at least 51% of the employment generated in the enterprise," is the definition of women entrepreneurship that is provided by the Indian government.

"**Imperatives Associated with Women's Participation in Entrepreneurial Activities** analyzed within the framework of Industry 4.0, the paper examines the growing number of female entrepreneurs and the contribution that they make to the advancement of socioeconomic conditions." (Imperatives Associated with Women's Participation in Entrepreneurial Activities, 2022)

Table 1: Classification of Entrepreneurs

Basis	Entrepreneurs	Explanation
Type of Business	Trading entrepreneur Manufacturing entrepreneur Agricultural entrepreneur	Acquire the completed products from the manufacturer and distribute them to clients directly or via retailers. Ascertain customer requirements and produce products accordingly, and engage in agricultural activities
Use of Technology	Technical entrepreneur Non-technical entrepreneur	Establish and operate industries based on research and technology. Employ alternative and imitative marketing and distribution strategies while eschewing technology.
Ownership	Private entrepreneur, State entrepreneur, Joint entrepreneur	A person who establishes a company venture and is the sole proprietor. State or government-sponsored commerce or industrial enterprise. "When a private entrepreneur and the government collaboratively manage a business enterprise."
Gender	Men entrepreneur Women entrepreneur	Commercial companies are owned, managed, and controlled by males. Enterprise owned and managed by a woman or women.
Size of the Enterprise	Small-scale entrepreneur, Medium-scale entrepreneur, Large-scale entrepreneur	"Investment in plant and machinery not exceeding Rs. 1.00 crore. "Investment in plant and machinery above Rs. 1.00 crore but not over Rs. 5.00 crore. "Investment in plant and machinery over Rs. 5.00 crore."

Source: (Khanka, 2016)

The enormous expansion of businesses and the economy in the country can be attributed to the growing number of women who are starting their own businesses. Businesses that are owned and operated by women are playing an important part in society since they are contributing to the

creation of employment possibilities across the nation, the introduction of demographic shifts, and the motivation of the next generation of women entrepreneurs. (DPIIT)

The following are the steps involved in the entrepreneurial process. This process of entrepreneurship is to be followed repeatedly anytime an entrepreneur undertakes any new enterprise; it is a process that never comes to an end because it is a process that is never finished.

Steps of Entrepreneurial Process-

1- Search for a new Idea for the market
2- Framing business model
3- Deep analysis of the selected business sector
4- Selection of the most appropriate method
5- Assembling the resource and Personnel
6- Determining the size of the business sector
7- Take decisions where the business unit and plant layout have to be established
8- Sound Financial Planning
9- Start up the Enterprise
10- Controlling the Business and making decisions at the right time
11- Harvesting

The 'Women for Startups: State Workshops' were held between November 2022 and November 2023 by Startup India, which is part of the Department for Promotion of Industry and Internal Trade (DPIIT). These workshops were designed for women who are already in business or who are interested in starting their own businesses. This program was developed with the purpose of growing and empowering women-led companies across the country. This would be accomplished by giving them opportunities to pitch their ideas and raise money, as well as by strengthening their capacity. Sessions on legality, marketing and branding, sales and client acquisition, pitching and funding, and product development were among the topics that were covered during the seminars, which were held in partnership with the Startup Nodals of the state governments. (Women for Startups)

Through the implementation of numerous programs and initiatives, the creation of communities and enabling networks, and the reactivation of partnerships among different players in the startup ecosystem, Startup India is committed to promoting women's entrepreneurship in India. This pledge is founded on the organization's mission to support women entrepreneurs' sustainable growth for equitable national development.

Indian female entrepreneurs are rising to new heights. Over the past decade, more women have led startups in technology, finance, healthcare, and sustainability. Entrepreneurship was historically male-dominated, but women-led firms are gaining popularity and funding.

A Tracxn analysis found that “India is the second-largest ecosystem for women-led digital businesses in terms of all-time funding, after the U.S. The 'Women-led firms in India Report 2025' shows that Indian firms founded by

women have raised $26.4 billion, with 2021 being the top year at $6.3 billion."

Over 7,000 women-led enterprises make up roughly 7.5% of India's active startups. Women-driven startups are most prevalent in Bangalore, followed by Mumbai and Delhi-NCR in volume and cash raised. India raised 3.96% of worldwide funding for women-led companies in 2024, behind the U.S. and U.K.

Government initiatives, venture capital interest, and shifting social perspectives have contributed to this transition. Stand Up India, NSRCEL (IIM Bangalore) Women Startup Program, and NITI Aayog Women Entrepreneurship Platform (WEP) have helped more women become entrepreneurs.

The Startup India Initiative acknowledged 73,151 enterprises with at least one-woman director as of October 31, 2024. Nearly half of the 1, 52,139 government-supported companies are women, demonstrating their vital role in innovation and economic growth.

However, issues remain. Women founders, especially from Tier-2 and Tier-3 cities, struggle to get investments, overcome industry preconceptions, and manage work and life. Despite these challenges, they are influencing India's startup ecosystem and making a difference.

These pioneers should be honored on International Women's Day. Thus, here is a list of budding women entrepreneurs who are breaking barriers in one of the world's fastest-growing startup ecosystems. (TEAM, 2025)

International Women's Day is March 8 worldwide. This day honors the accomplishments of women across national, cultural, intellectual, cultural, economic, and political boundaries. International Women's Day in 2025 will have as its subject "For All Women and Girls: Rights, Equality, and Empowerment." The theme for this year calls for action that ensures everyone's equal rights, opportunities, and power, as well as an inclusive future. This vision empowers kids, especially young women and adolescent girls, to make permanent change.

The Beijing Declaration and Platform for Action turns 30 in 2025, a significant year. This text is the most progressive and universally approved roadmap for women's and girls' rights worldwide, redefining legal protection, access to resources, youth engagement, and societal norms, stereotypes, and outdated views.

Through policies, projects, and laws, India has promoted women's empowerment and gender equality. Transitioning from women's development to women-led development ensures equal involvement in national progress. Women are changing India's socioeconomic landscape by overcoming boundaries in education, health, digital inclusion, and leadership.

Annapurna Devi, "the Women and Child Development (WCD) Minister, previously announced the theme '**Viksit Bharat with Nari Shakti,**' emphasizing the country's goal of shifting from women's development to women-led development and assuring their equitable

involvement in its advancement. The WCD Ministry stressed the importance of International Women's Day as a global platform to acknowledge women's achievements in national, ethnic, linguistic, cultural, economic, and political fields." (DESK, 2025)

As we enter the year 2025, the ingenuity and impact of these top female entrepreneurs will still be inspiring and driving significant change, not only in the industries in which they are creating but also in the paths that future leaders will take. The impact of invention, leadership, and commitment to social change is portrayed by the accomplishments of female entrepreneurs. Their achievements show how women are making waves in the entrepreneurial world and how diversity is key to driving success in all sectors. Not only are these women leaving an impression on the world now, but they are also influencing generations to come through the companies they have founded. Follow these trailblazing entrepreneurs as they take calculated risks in pursuit of their dreams.

Liberation of the Economy and Inclusion in the Financial System

In the context of economic expansion, the participation of women in the labor force is a crucial factor. Several different programs have been initiated by the government in order to encourage women to become financially independent, to start their own businesses, and to find employment opportunities. The percentage of women who take part in making significant decisions for their households has increased from 84% in 2015 to 88.7% in 2020.

Through the implementation of comprehensive policies, targeted programs, and legal frameworks, India has made great progress in the area of women's empowerment. The actions taken by the government have resulted in considerable advances in the lives of women in a variety of areas, including economic engagement, safety, digital inclusion, and knowledge acquisition. It is of the utmost importance to reaffirm the commitment to constructing a society that is both gender-equal and inclusive, and in which women have a vital role in determining the destiny of the nation. We can ensure that women will continue to be the driving force behind India's growth story in the years to come by maintaining our efforts in policy-making, community involvement, and digital inclusion strategies. (Santosh Kumar, 2025)

Challenges for Indian Women Entrepreneurs. Women entrepreneurs in India face a rollercoaster of a business environment, which is like racing uphill blindfolded. India's economic landscape is changing, yet women entrepreneurs still face obstacles. Indian women entrepreneurs overcome obstacles every day, from raising cash to defying customs.

Funding Issues in India: India has a hard to raising finance, but a woman entrepreneur proves the impossible. Banks and investors still consider women-led firms "risky." Less than 6% of investment flows to India's 14% female

entrepreneurs. Many Indian banks need male co-signers for loans, making financial independence difficult for women. They frequently have lower business valuations than men, even when they get investment. Traditional Indian norms hinder women in business. Cultural expectations in India burden women. Many Indian women entrepreneurs are expected to prioritize the household before business. This is problematic in India's male-dominated tech, banking, and manufacturing sectors. Indian women entrepreneurs must overcome preconceptions to prove they belong in business.

The issue is about breaking India's corporate traditions, not just skill. Women Entrepreneurs in India Find Networking Difficult. Entrepreneurs in India need connections, but women entrepreneurs typically lack them. Men dominate India's biggest networking events, making it difficult for women entrepreneurs to find mentors, investors, and partners. Scaling a firm in India is harder without good ties. Top Challenges for Indian Women Entrepreneurs: Low Capital Access – Indian women-owned enterprises receive less investment. Cultural Barriers - Indian customs hinder women's commercial success. Lack of networks. Business relationships is difficult for Indian women entrepreneurs. Despite these obstacles, Indian women entrepreneurs are altering the business environment. They are shattering barriers, rewriting regulations, and demonstrating to the world that India's future entrepreneurs are gender-neutral. The Future of Indian Women Entrepreneurship: India is awakening to women entrepreneurs transforming its business landscape. India's government and corporate sector are investing, educating, and changing policies to assist women-led enterprises more than ever.

The future is bright, but can Indian women entrepreneurs go far? Government Support Changes India's Women Entrepreneurship Game. Indian women entrepreneurs have struggled to get funding. But things change. Stand-Up India and Mudra Yojana provide zero-collateral loans to female entrepreneurs in India. These programs are helping thousands of Indian women launch companies in cities and the countryside. Sheroes and WE Hub, tech startups, help Indian women entrepreneurs' network, invest, and mentor. With 50% of India's population being women, harnessing their commercial potential could boost the economy.

Technology is the new bridge for women in business Digital revolution makes entrepreneurship easier. Indian women can now run enterprises remotely due to the growth. Online platforms, e-commerce, and social media level the playing field. Indian women entrepreneurs can sell handcrafted goods on Amazon India, provide services on LinkedIn, or manage a global business on Shopify from home. AI-powered tools, automation, and digital banking erase traditional barriers. With a laptop, internet, and determination, women entrepreneurs can start a firm without much funding. Indian women-led enterprises are using

these technologies to innovate. Government funding for Bharatiya Mahila Bank is increasing women's financial access for Indian Women Entrepreneurs. Tech Inclusion—AI, automation, and e-commerce will empower Indian women entrepreneurs. New opportunities are emerging as society views women in business differently. India's women's entrepreneurship future is bright with government assistance, tech availability, and cultural shifts. Women will rule India's business world.

Female entrepreneurs are thriving like never before because of supporting organizations that provide mentorship, networking, and personalized tools in 2025. These tools and ecosystems help women scale their enterprises, build confidence, and break barriers.

This year's gender budget provides term loans up to INR 2 crore to first-time entrepreneurs, including women, over five years. Women's workforce participation is a top budget focus. "The FLFPR rose to 41.7 percent in the F.Y.2023-24. The PM Employment Generation Programme (PMEGP) supports entrepreneurship, although its funding has dropped from INR 1,012.50 crore in 2024-25 to INR 862.50 crore in 2025-26. The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), which provides 57.8% of women's person-days, received INR 40,000 crore, up from INR 37,654 crore in 2024-25. Only 33.6% of this provision is reflected in the gender budget, raising questions regarding gender-responsive budgeting's complete recognition of women's contributions. Despite 80 percent of women working in agriculture, only 13.9% own land. Despite this, agricultural schemes like the Krishonnati Yojana (INR 2,550 crore for 2025-26) remain under Part B of the gender budget without women farmer requirements." (THAWANEY, 2025)

Over 70% of Indian women entrepreneurs started their firms out of self-motivation and aspiration. Family and spouses encouraged the remaining respondents. As women pursued professional goals, opportunity-driven entrepreneurship emerged. Women in India increasingly see entrepreneurship as a means to empowerment and financial independence. Nearly 66% launched their businesses for career advancement, financial independence, or a strong sense of purpose. Only 22% started from financial need, while 12% took over family companies.

Around 83% felt valued for their entrepreneurship. Kolkata (96%), Hyderabad (94%), and Ahmedabad (90%) promote women-led companies. Respect for women entrepreneurs is growing positively.

The majority (81%) of respondents run their enterprises independently, with the rest receiving family and spouse support. Veteran business owners over 40 who have gained confidence are more likely to operate independently. For business growth, 21-30-year-olds depended more on peer networks and family. Additionally, 72% of entrepreneurs make

crucial company decisions alone, while others prefer working with family and coworkers.

Women company owners said financial discipline was crucial to success, with 93% actively managing their funds. Women company owners prioritized financial management (timely EMI payments, avoiding numerous loans), rigorous record-keeping, informed decision-making, and credit score monitoring.

Women entrepreneurs in India encounter gender biases (27%), market fluctuations (34%), and resource shortages (32%). However, they persevere to develop and build successful businesses. Many women entrepreneurs start with self-motivation and take proactive actions to expand their enterprises despite financial and operational challenges.

Technology adoption helps women entrepreneurs overcome obstacles. Most respondents are using modern technology to grow their firm. Businesses adopted digital technologies to improve visibility, customer engagement, order fulfillment, productivity, cost optimisation, and payments. Neo Growth, a new-age lender focused on MSMEs, lends to women in various capacities to boost entrepreneurship, creating a multiplier effect that benefits businesses and communities.

Conclusion: Indian women entrepreneurs are showing that entrepreneurship is not male-dominated. They are entrepreneurs, business leaders, and stereotype busters. Indian women entrepreneurs are making waves in tech, fashion, banking, and e-commerce. Nearly 20% of Indian enterprises are led by women. All big businesses begin with an idea. Take the first step in starting a business in India. Government support is expanding, tech is making it easier, and a network of entrepreneurs can help. The future belongs to risk-takers. (Chornyy, 2025)

Access to Financial Services

- Under the Prime Minister's Jan Dhan Yojana, more than 30.46 crore accounts, of which 55% were established by women.
- Under the Stand-Up India Scheme, women entrepreneurs have been granted 84 percent of loans ranging from rupees 10 lakh to Rs 1 crore on average.
- Under the MUDRA Scheme, 69% of microloans are provided to businesses that are run by women.
- 10 crore (100 million) women are connected to 9 million self-help groups (SHGs) under the National Rural Livelihoods (NRLM) program.
- The Bank Sakhis Model predicts that in the year 2020, 6,094 female banking correspondents will have completed transactions totaling $40 million.
- Women Entrepreneurs in Startups: The Small Industries Development Bank of India is reserved for women-led startups, has set aside 10% of its capital for ventures run by women.
- Common Service Centers (CSCs) are comprised of 67,000 female entrepreneurs who are in charge of digital service centers.

- ❖ For women, financial security can be ensured through the use of digital banking and services related to Aadhaar and E-marketplaces supported by the government encourage female entrepreneurs and firms that operate online.

Some Facts in result

- According to the GEM (Global Entrepreneurial Monitor) report 2023, the Total Entrepreneurial Activity (TEA) rate for Indian Women is around 14%.
- If we compare this data from the GEM report 2023 with the USA, then in the USA, women entrepreneurs are 36%. It is more than twice times of the Indian women entrepreneurs.
- According to the NITI Aayog declared report based on WEP (Women Entrepreneurship Platform), the total entrepreneurs is 58.5 million. In which women entrepreneurs are only 13.76% (8.05 million).
- According to the National Sample Survey report, women entrepreneurs are only 14% in India, which is almost 8 million out of a global 126 million women entrepreneurs. In which, most women entrepreneurs are doing small-scale businesses in India.
- In India, women own about 20% of the 63 million micro, small, and medium-sized businesses that employ 27 million people.
- In India, encouraging women to start their own businesses might result in 150–170 million employment opportunities and about 30 million new women-owned enterprises.

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