

Rs. 50.00  
ISSN-0566-2257



# UNIVERSITY NEWS

*A Weekly Journal of Higher Education*

**Association of Indian Universities**

Vol. 63 • No. 16 • April 21-27, 2025

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# ASSOCIATION OF INDIAN UNIVERSITIES



NOTIFICATION FOR SUBMISSION OF PROPOSALS UNDER THE

## Academic and Administrative Development Centre (AADC) Initiative



The Association of Indian Universities (AIU), the premier representative body of universities and higher education institutions in India, invites proposals and Expressions of Interest (EOI) from its member universities for the establishment of Academic and Administrative Development Centre (AADC) under its flagship initiative launched in 2022.

### About AADC

The AADC initiative is a forward-looking programme introduced by AIU to strengthen the academic and administrative ecosystem of Indian higher education. The Centres aim to enhance the professional capacities of faculty and administrative staff in universities and other Higher Education Institutions (HEIs).

These centers will focus on:

- ▶ Training faculty for online/blended teaching-learning methodologies.
- ▶ Developing e-content and leveraging technology for continuous assessment and evaluation.
- ▶ Facilitating research collaborations.
- ▶ Conducting programmes on effective university governance & administration through technological advancements.

### Proposal Submission Details



Interested member universities/HEIs are invited to submit their EOI and detailed proposal, duly endorsed by the Head of the Institution, to the following address:

**Ms. Ranjana Parihar**

Joint Secretary  
Association of Indian Universities (AIU)  
AIU House, 16 Comrade Indrajit Gupta Marg,  
New Delhi – 110002

✉ **Email:** [aadc@aiu.ac.in](mailto:aadc@aiu.ac.in)

☎ **Phone:** 011-23230059 (Ext. 228)

🌐 For detailed guidelines, please visit: [www.aiu.ac.in](http://www.aiu.ac.in)

**Last date for submission:**  
May 15, 2025

### General Terms & Conditions

- ✓ Each approved center shall be designated as AIU-[University Name] Academic and Administrative Development Centre (AIU-AADC).
- ✓ AADC will offer short-term capacity-building programmes for faculty, administrators, and other stakeholders in online, offline or hybrid modes.
- ✓ A total of 20 member universities will be selected based on the quality of proposals and available infrastructure. Member universities where AADC Centers are already operational need not apply.
- ✓ AIU will extend a one-time financial support of ₹1,00,000 per selected university:
  - a) An advance of ₹50,000 will be released at the time of the launch for the first programme.
  - b) The remaining ₹50,000 upon submission of a Utilization Certificate
- ✓ Each AADC Centre is expected to conduct a minimum of five (05) programmes during one academic calendar year, **with at least one programme held in physical mode.**
- ✓ AIU will provide academic guidance, including:
  - (a) Identifying resource persons
  - (b) Assisting in the design and development of course content.
  - (c) Supporting the academic structure and delivery model
  - (d) Programme themes and logistics will be finalized in collaboration with the host university
- ✓ After completion of each programme, the host university is required to submit a comprehensive report to AIU for:
  - (a) Archiving
  - (b) Possible publication in the University News
  - (c) Uploading on the AIU website

**AIU encourages all eligible member universities to actively participate in this impactful initiative aimed at transforming higher education through continuous professional development and capacity building. Let us join hands to build a stronger, more innovative, and future-ready academic landscape for India.**

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## Path to India's Energy Independence: Challenges and Future Prospects<sup>#</sup>

Asha Pandey\* and N P Melkania\*\*

The evolution of human civilization has been intrinsically linked to energy access and utilization. From the early harnessing of fire and animal power to the modern era of electricity and sustainable fuels, energy has been a catalyst for development. Energy underpins fundamental services, such as, heating, cooling, transportation, communication, and industrial operations. Over the past four decades, global energy consumption has nearly doubled, and is expected to rise further, driven primarily by ever-increasing demand from India and China, especially. With traditional energy resources being finite, ensuring a stable energy supply has become a key public policy priority, influencing both the national agenda and international geopolitical strategies. Availability of limited domestic energy reserves compels countries to rely on imports to meet their energy needs, and India is no exception. India has spent a whopping amount of Rs 12,29,886 crore in fiscal year 2023-2024 on import of coal, gas, and oil (2021-2022) (Niti Aayog, 2025).

Energy independence is essential for a nation's economic stability, national security, and sustainable growth. A country that depends significantly on energy imports is susceptible to global price volatility, supply interruptions, and geopolitical conflicts. By diminishing reliance on foreign energy supplies *via* domestic production, the increase of renewable energy, and efficient resource management, a nation can protect its economy from external shocks, reduce trade imbalances, and fortify its currency. Energy self-sufficiency bolsters national security by diminishing dependence on politically risky regions for fuel procurement. Moreover, investment in renewable energy and energy-efficient technologies promotes innovation, employment, and environmental sustainability. Ultimately, attaining energy independence guarantees sustained resilience, cost-effectiveness, and a stable energy future for economic advancement and public welfare.

### India's Energy Landscape

India's electricity generation capacity has experienced substantial growth, fuelled by both conventional and renewable

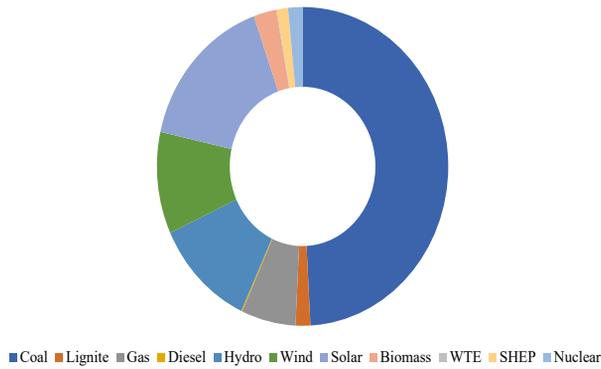
<sup>#</sup>This article is published to commemorate 'World Earth Day or Mother Earth Day' to be celebrated on April 22, 2025. The theme of the said Day for the year 2025 is "Our Power, Our Planet" with focus on "Action to Increase Global Clean Energy".

\*Assistant Professor, Department of Environmental Science, University School of Vocational Studies and Applied Sciences, Gautam Buddha University, Greater Noida 201 312, Uttar Pradesh. Email: asha.pandey@gbu.ac.in

\*\*Professor, Department of Environmental Science; Dean University School of Vocational Studies and Applied Sciences; Dean University School of Biotechnology; and Dean Academics, Gautam Buddha University, Greater Noida- 201 312, Uttar Pradesh. Email: niranjan.melkania@gbu.ac.in

energy sources. In the fiscal year 2023-24, the total installed capacity reached 5,21,310 MW, reflecting a 5.43 per cent rise from the previous year's 4,94,459 MW. India's installed generation capacity is dominated by the private sector at 50.7 per cent, followed by the state sector at 25.3 per cent, and the central sector at 24 per cent. India's energy mix is among the most diverse, drawing from nearly 10 different renewable and non-renewable fuel sources. According to MoP (2025), the country's current energy mix exhibits significant diversity, as shown in Fig. 1.

**Fig. 1: Present energy mix of India (MoP 2025)**



### Energy Transition over the Years in India

Since independence, India has undergone significant shifts in energy consumption, driven by rapid urbanization and economic liberalization. Two major peaks in energy demand emerged—one after gaining independence in 1947, and the other during the economic reforms of the 1990s—underscoring the strong connection between Gross Domestic

Product (GDP) and energy use (Muhammad *et al.*, 2024). In 1947, with a population of 340 million and a per capita GDP of \$600 (Angus, 2001), India relied on traditional energy sources for 75 per cent of her needs, including firewood, plant and animal wastes, and animal traction. Commercial energy use—mainly coal, remained minimal. Rural areas, facing acute energy shortages, lacked industrial development, and a long-term energy strategy (Amouroux and Marie, 2022).

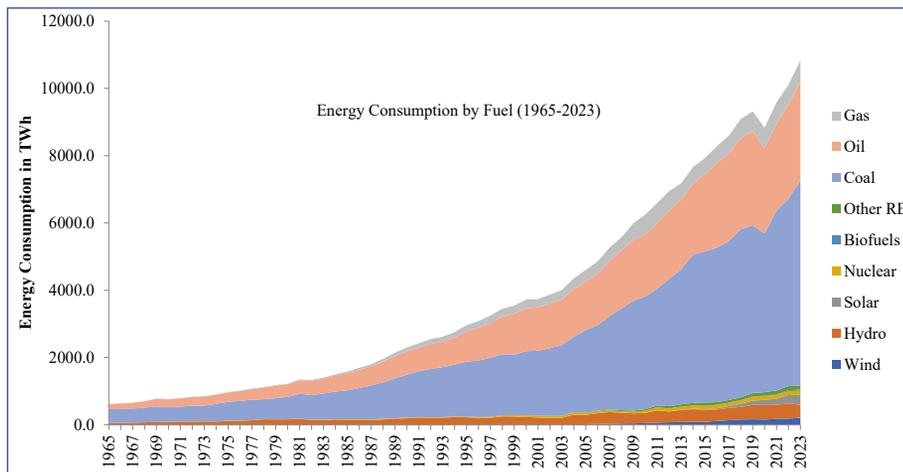
Hydropower was the only renewable energy source used apart from traditional biomass like wood fuel (Pandey, 2021). Although, coal was the dominant energy source in the country, its consumption remained low due to limited urbanization, and a smaller population. Coal and oil consumption later saw a sharp increase, aligning with the rapid growth of Indian industries. Nuclear energy was incorporated into India's energy mix in the 1970s, followed by the introduction of wind energy and other renewables, such as, biomass and geothermal energy in the 1990s. More recent additions include biofuel and solar energy, introduced in 2000 and 2004 respectively. A comprehensive overview of changes in India's energy mix is presented in Fig. 2.

### Growing Energy Demand and Energy Import

India's energy dependence stems from rapid economic and population growth, constrained domestic energy supplies, and infrastructural and legislative obstacles. With the growing expansion of the country's industrial and urban sectors, energy demand has surged significantly, surpassing the growth of domestic output, especially for crude oil and natural

gas. India has substantial coal reserves, however, a considerable portion of it is of inferior grade, and domestic mining has failed to satisfy the industrial demands. Furthermore, insufficient investments in energy exploration, outdated infrastructure, and regulatory delays have impeded the advancement of indigenous energy resources. India has, thus, increasingly depended on energy imports, particularly crude oil, liquefied natural

**Fig. 2 : Energy Transition Over the Year in India (1965-2023)**



(Source: Statistical Review of World Energy, 2024)

gas (LNG), and high-grade coal, to reconcile the disparity between supply and demand. This need is exacerbated by the current shift towards greener energy sources, necessitating imported fuels and technologies in the immediate term. In addition of the financial burden on the country, reliance on coal and crude oil imports further exacerbates the challenges of reducing Greenhouse Gas (GHG) emissions and air pollution too (Bhattacharya and Jana, 2009).

Over the last 10–15 years, India has seen a sharp rise in fossil fuel imports, thus, highlighting growing energy insecurity. Coal imports have increased from 76 million tonnes to 265 million tonnes, while crude oil imports have risen from 154 million tonnes to 197 million tonnes. Natural gas imports have also surged from 9,111 million cubic meters to 23,996 million cubic meter. This growing dependency strains alarmingly the economy, increases vulnerability to global price fluctuations, and poses significant challenges to achieving sustainable and self-reliant energy goals. The rising import bills for fossil fuels are placing a substantial monetary burden on the Indian economy. Despite having abundant coal reserves, the country’s coal import expenditure has soared from ₹42,511 crore in 2010 to ₹3,17,800 crore in 2024. Crude oil imports have followed a similar trend, increasing from ₹3,65,901 crore to ₹8,01,092 crore between 2010 and 2022. Natural gas imports have also seen a steep rise, from ₹11,067 crore to ₹1,10,994 crore. This growing financial outflow not only strains national resources but also deepens fuel poverty, and reduces fiscal space for investment in sustainable energy alternatives. The details of increasing import trends are depicted in Figs. 3a and 3b.

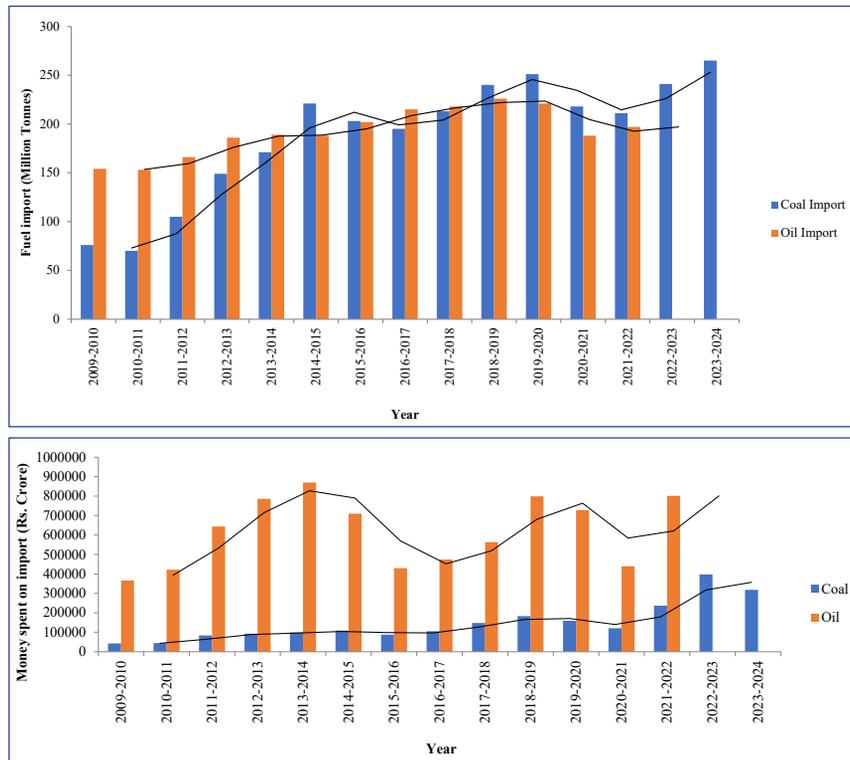
India’s heavy reliance on energy imports—particularly on coal, oil, and natural gas—places significant pressure on her economy and the environment. Economically, it widens the trade deficit, strains foreign exchange reserves, and drives inflation through rising fuel prices. The government often faces increased fiscal burden due to subsidies, while consumers deal

with growing energy costs, worsening fuel poverty. This dependence also makes the country vulnerable to global price volatility and geopolitical tensions. Environmentally, continued reliance on imported fossil fuels significantly increases greenhouse gas emissions and air pollution, hampers progress toward achieving the climate goals, and poses serious risks to the public health. This dual challenge underscores the urgent need for India to transition to cleaner, and domestically-sourced energy to achieve sustainable development and long-term energy security.

### India’s Renewable Energy Growth

India’s total installed power capacity rose from 275.90 GW in 2014-15 to 441.97 GW in 2023-24, marking a 60.19 per cent increase over nine years (Fig. 4). During the same period, renewable energy capacity (including large hydro) grew from 81.22 GW to 190.57 GW, reflecting a 134.63 per cent rise. This significant growth highlights India’s accelerating shift toward cleaner energy sources (MNRE, 2024). India ranks globally 4<sup>th</sup> in wind- and bio- power installations, and holds the 5<sup>th</sup> position in both solar- and hydro- power capacities (IRENA, 2024).

**Fig. 3a. Fuel Import Trend; 3b. Monetary Expenditure on Fuel Import (2009-2024)**



(Source: Niti Aayog, 2025)

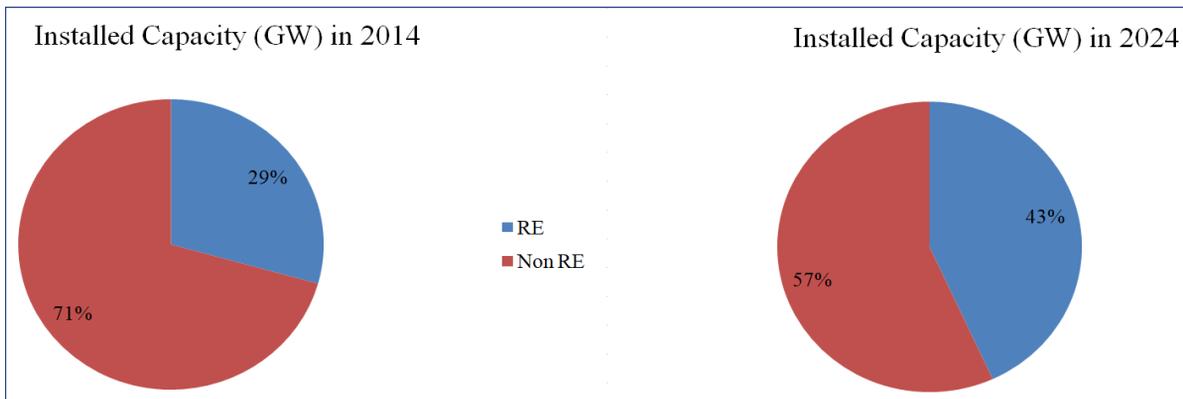
Gujarat, Rajasthan, Tamil Nadu, Karnataka, and Maharashtra together account for around 61 per cent of India’s total renewable energy capacity. In solar power, Rajasthan, Gujarat, Karnataka, Tamil Nadu, and Maharashtra contribute 70.76 per cent. For wind power, Gujarat, Tamil Nadu, Karnataka, Maharashtra, Rajasthan, and Andhra Pradesh make up 93.37 per cent of the total capacity. In bioenergy, Maharashtra, Uttar Pradesh, Karnataka, and Tamil Nadu contribute 71.49 per cent. Himachal Pradesh, Uttarakhand, Karnataka, Jammu & Kashmir, Maharashtra, and Telangana account for 57.15 per cent of India’s large hydro capacity (MNRE, 2024)

As per the latest figures of August 2024 (Akshay Urja, MNRE, 2024; Table 1), the total installed capacity of non-fossil energy sources has reached 207.76 GW. Solar power holds the largest share with 89.43 GW, followed by wind power at 47.19 GW and large hydro at 46.93 GW. Bio-energy and small- hydro contribute 10.96 GW and 5.07 GW, respectively, while the nuclear power accounts for 8.18 GW. This steady increase reflects a strong move toward cleaner and more sustainable energy solutions.

**Table 1: Non-fossil Energy Sources and their Contribution in India (Akshay Urja Aug., 2024)**

Non-Fossil Energy Source	Installed capacity GW
Wind Power	47.19
Solar Power	89.43
Bio-energy	10.96
Small Hydro Power	5.07
<b>Sub-total</b>	<b>152.65</b>
Large Hydro	46.93
<b>Total</b>	<b>199.58</b>
Nuclear Power	8.18
<b>Total Non-Fossil Fuel</b>	<b>207.76</b>

**Fig. 4. Difference in Renewable and Non-renewable Total Installed Capacity 2014-2024**



## Energy Independence: The Challenges

India’s pursuit of energy independence is confronted with several significant challenges as follows:

### Heavy Dependence on Imported Fossil Fuels

Fossil fuel imports constitute a major share of India’s energy consumption, with about 88 per cent of oil, and 80 per cent of industrial coking coal—critical for iron and steel production—being sourced from abroad. This heavy reliance places India as the third largest net energy importer globally, after Japan and Germany. The annual import bill for coal, oil, and natural gas is estimated to exceed ₹12 lakh crore, representing a significant burden on the nation’s GDP. (Abhyamkar *et al.*, 2023; Niti Aayog, 2025).

### Grid Insecurity

The inability of India’s current grid infrastructure to handle variable sources like solar and wind, is one of the main obstacles to the country’s transition to renewable energy. The system, which was initially designed for consistent, conventional power generation, finds it difficult to manage the intermittent and variable supply from renewables, which leads to supply-demand imbalances, and a rise in the risk of grid instability (Pathak, 2025).

### High Costs of Non-fossil Energy

Coal continues to be the most affordable energy source in India, with a per unit cost of just ₹0.71, compared to ₹2.44 for solar, and ₹2.70 for wind (Press release MNRE, 2024). This stark price gap makes coal a more practical and accessible choice for middle- and lower-middle-class households. Additionally, the adoption of emerging clean technologies, like green hydrogen and battery storage, is slowed by high production costs—green hydrogen, for example,

remains significantly more expensive than the conventional grey hydrogen, posing a major hurdle to widespread, and cost-effective deployment.

### ***Decentralized Energy***

Notwithstanding advancements in electrification, numerous rural areas continue to face erratic and unpredictable electrical delivery. Mitigating these gaps necessitates significant investments in decentralized renewable energy systems, and grid improvements to ensure fair energy access nationwide (Dey *et al.*, 2024).

### ***Import Dependence***

India is grappling not only with dependence on fossil fuel imports but also with challenges related to importing key materials for renewable energy. The country's clean energy sector heavily relies on critical minerals like lithium, cobalt, and nickel—all of which are currently sourced from abroad. This reliance increases vulnerability to supply chain disruptions and geopolitical tensions. To reduce these risks, India must focus on diversifying import sources and strengthening domestic exploration and production of these essential minerals (IEEFA, 2025).

Confronting these complex difficulties necessitates a holistic strategy that includes legislative reforms, technical advancements, infrastructural enhancement, and international cooperation to attain sustainable energy autonomy.

### ***Way Forward***

Positioned at the forefront of India's energy transformation, the renewable energy sector reflects a strategic blend of necessity and opportunity in achieving long-term sustainability goals. To become self-reliant India (=Aatmanirbhar Bharat) through clean energy, and serve as an inspiration for the global Clean Energy Transition, India launched "The National Green Hydrogen Mission" on 04 January, 2023 (with an outlay of Rs. 19,744 crore up to the financial year 2029-2030). The Mission will lead to significant decarbonization of the economy, reduced dependence on fossil fuel imports, and enable India to assume technology and market leadership in Green Hydrogen. As a part of this Mission, the Government has initiated five pilot projects (consisting of 37 trucks and buses, and nine hydrogen refueling stations) for using hydrogen buses and trucks, through the Ministry of New and Renewable Energy. The vehicles, for trial, include 15 hydrogen fuel cell-based vehicles, and 22 hydrogen internal combustion

engine-based vehicles, running on 10 different routes across the country. The projects are awarded to major companies, such as, TATA Motors Ltd., Reliance Industries Ltd., NTPC, ANERT, Ashok Leyland, HPCL, BPCL and IOCL. The thrust area in the development of commercial viable technologies for utilization of hydrogen in the transport sector as fuel in buses-and trucks, and supporting infrastructure like hydrogen refueling stations.

On 15 August, 2024, the Hon'ble Prime Minister of India declared India's ambitious objective of attaining energy independence by 2047, coinciding with the centenary of the nation's independence. This vision seeks to significantly diminish India's reliance on expensive energy imports, currently surpassing ₹12 lakh crore per year, by implementing a multifaceted strategy that promotes cleaner and more self-sufficient energy infrastructure. The roadmap encompasses augmenting the proportion of natural gas in the energy portfolio, extending the national infrastructure for Compressed Natural Gas (CNG) and piped natural gas, advancing electric mobility, and integrating 20 per cent ethanol with gasoline (Press release PM Office, 2024).

One of the major initiatives is to establish India as a global center for green hydrogen generation, a sector with significant potential for clean energy and industrial decarbonization. India's renewable energy sector has demonstrated considerable advancement, having attained 100 GW of renewable energy capacity before to its established deadline. The nation's energy policy indicates an increasing transition to alternatives, such as, solar, wind, and nuclear power, with the objective of mitigating the expanding energy deficit, and ensuring long-term sustainability.

In accordance with the mandate, the Ministry of New and Renewable Energy (MNRE) has implemented several efforts to promote the varied deployment and production of renewable energy technologies, with the objective of expediting India's transition to renewable sources and diminishing reliance on fossil fuels. Key initiatives aimed at this objective include: the *Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyan* (PM-KUSUM) Scheme for decentralized solar energy to power agricultural pumps, the Roof Top Solar (RTS) Programme, the Central Public Sector Undertaking (CPSU) Scheme for Grid-Connected Solar Photovoltaic (PV) Power Projects, the Development of Solar Parks and Ultra Mega Solar Power Projects, the Performance Linked Initiatives (PLI) Scheme for the National Programme

on High-Efficiency Solar PV Modules, and the Green Energy Corridor Scheme for the construction of intra-state and inter-state transmission lines for power evacuation and grid interaction; all aimed at advancing the Solar Power sector. The Ministry has implemented significant policy measures and plans to harness the potential of alternative renewable energy sources, such as, wind power, bio power, and small hydro power. The Ministry of Power has established “National Mission on use of Agri-Residue in thermal power plants- SAMARATH” in order to counter stubble burning and reduce carbon footprint of thermal power plants, and also power generation through biomass utilization (MoI&BC, 2025).

India has established ambitious climate objectives within its revised climate strategy and Nationally Determined Contributions (NDCs), demonstrating a robust commitment to environmental sustainability. By 2030, the nation intends to decrease emissions intensity by 45 per cent relative to 2005 levels and ensure that about 50 per cent of its installed electric power capacity is derived from non-fossil fuel sources. Moreover, India commits to establishing a carbon sink that may sequester 2.5 to 3.0 billion tonnes of CO<sub>2</sub> equivalent using afforestation and vegetation initiatives. The establishment of climate-resilient infrastructure is the primary objective to both alleviate and adjust to the effects of climate change. The Lifestyle for Environment (LiFE) project advocates for sustainable consumption and production practices, fostering eco-conscious living among individuals. India’s long-term climate strategy culminates in the objective of attaining net-zero carbon emissions by 2070, a target declared at the UN Climate Change Conference (CoP26) in Glasgow, highlighting India’s dedication to global climate initiatives (UNFCCC 2025).

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# The Evolution of Commerce: From Barter System to AI-Powered E-Commerce and Open Network for Digital Commerce

Ajay Kumar Gupta\*

Commerce has been a significant aspect of human life, well since ancient civilizations, when it began in the form of a direct exchange of goods and services, also known as the barter system, proving to be fundamental to the development of the civilizations and societies. Based on people's needs, commodities and services were exchanged directly, without the use of any standardized currency. Later, money, coins and other forms of currency were introduced, allowing for the procurement of goods and services in a more efficient and organized manner. This laid the foundation for both commerce and modern economics.

Commerce is one of the most essential and widespread activities, involving everyone from small scale entities like hawkers and shopkeepers to large-scale manufacturers, industrialists, and local and national governments. The social and defense development, as well as the stability of governments, are directly or indirectly dependent on commerce. Almost all governments have established independent ministries to oversee policies and activities that promote commercial growth, which in turn strengthens the government.

Today, the globalized environment of commerce encompasses a vast array of activities, including retail, wholesale, e-commerce, and globalized e-commerce. This article will discuss the development of commerce, from the ancient exchange of goods and services to today's globalized and AI-enabled e-commerce. We will also briefly explore the new revolution in the field of e-commerce, known as the Open Network for Digital Commerce (ONDC).

## The Evolution of Commerce

Commerce plays a significant role in both an individual's daily life and the nation's economy. It provides employment opportunities for individuals, organizations, and industries and is also a crucial

*\*Former Dy. Director, RGPEEE, IGNOU, New Delhi and Presently, Sr. Programmer and Incharge, Computer Centre, Rani Durgavati. University, Jabalpur-482001, M.P. E-mail: ajayguptajbp@yahoo.com*

pillar of a strong national economy. Over time, the nature of commerce has evolved with the inclusion of new technologies. Today, we have transitioned from the old barter system to e-commerce powered by Artificial Intelligence. Due to the efforts of the Government of India, an e-commerce platform based on ONDC is now available at a very low service fee, benefiting both small retailers and large sellers.

The ONDC-backed marketplace will undoubtedly create job opportunities and provide small retailers, startups, and MSMEs with the chance, independence, and confidence to reach consumers with their products. The following sections discuss various types of commerce, along with their associated benefits and limitations. Additionally, a detailed discussion is provided on the benefits of AI-powered e-commerce and the revolutionary ONDC network.

## The Barter System

In ancient times, people practiced an old system in which services and commodities were exchanged between two parties to meet routine requirements. This method of exchanging goods and services is known as the barter system, which remained in practice until the introduction of currency. When a monetary medium for exchanging services was not available but goods and services were still available for trade, the barter system successfully served the purpose of commerce. Reference [9] discusses the revolution of e-commerce.

Initially, the barter system was used to exchange goods and services. However, a medium to uniformly assess the value of services and commodities was needed to facilitate commercial activity, which led to the introduction of currency. The main role of currency is to determine the value of goods and services, facilitating a fair exchange. These forms of currency include:

- Commodity Money.
- Metal Coins.
- Paper Money.

### **Traditional Commerce/Trading**

Before the evolution of the internet, traditional commerce was the primary method for buying and selling goods and services. This mode of trade required the physical presence of both the buyer and seller, with direct interaction between them. Additionally, the physical presence of goods was necessary to display them to customers. Reference [2] presents the origin and history of commerce in a global context. The following are the physical requirements for conducting traditional commerce:

- Seller.
- Buyer.
- Physical Goods or Services.
- Physical Space to Display Products and Services.
- A Form of Currency to Evaluate Goods and Services.

### **E-Commerce**

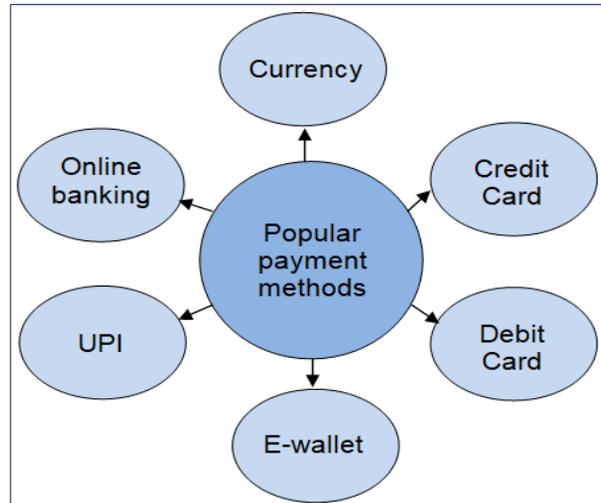
With the evolution of internet technology, a new mode of commerce emerged, known as e-commerce. In this form of business, trading transactions for goods and services are conducted with the support of the internet. Reference [6] provides an overview of e-commerce, while Reference [8] focuses on its evolution. E-commerce enables all activities to be performed digitally, requiring only a device such as a smart-phone, laptop, or desktop, along with internet connectivity. The typical operations involved in an e-commerce transaction are as follows:

- Displaying the properties of goods and services.
- Placing digital orders and submitting customer details.
- Digital payment methods (for the convenience of the consumer, with an option for cash on delivery).
- Digital invoicing.
- Delivery of goods through courier services.
- Digital submission of requests for cancellation and return of goods.

The development of internet-enabled banking services led to the introduction of new payment methods. Some popular payment methods are illustrated in Figure 1.

The evolution of the internet and online payment methods has transformed local-level trading

**Figure 1: Popular Payment Methods**



and commerce into a globalized market without any geographical barriers.

It is true that e-commerce and online trading have partially captured the space of traditional commerce, but traditional commerce will continue as an ongoing process. It ensures the prompt availability of goods and services, from global markets to the grassroots level of the country.

### **M-Commerce**

M-commerce, which stands for mobile commerce, is considered a subset of e-commerce. In this mode of commerce, transactions are conducted using mobile devices. E-commerce companies typically offer all essential features through an app, which also provides secure online payment options using smartphones.

Due to their unlimited features and simplicity, both e-commerce and m-commerce are becoming integral parts of everyday life. Especially during festive seasons, nearly all e-commerce firms break their own sales records. Reference [1] presents a review of various e-business and m-business models, as well as research opportunities.

Both e-commerce and m-commerce have become increasingly important in recent years, as more people gain access to the internet and mobile devices. They offer numerous benefits, such as convenience, flexibility, and access to a broader range of products and services. However, they also present new challenges and risks, including security concerns and the need to adapt to evolving technology and changing consumer preferences.

## Differences between Traditional Commerce and E-Commerce

It is true that the e-commerce mode of trading is becoming increasingly popular due to its numerous features, but the traditional mode of commerce should not be overlooked.

Both systems have their pros and cons and are essential for the economic growth of a nation. Some key differences between traditional commerce and e-commerce are outlined in Table 1.

**Table 1: Differences between Traditional Commerce and E-Commerce**

Traditional Commerce	E-Commerce
It is an ancient/older mode.	Came into existence with the evolution of internet access.
Transactions are performed without internet.	Internet connectivity is required for transactions.
Example: Malls, shopping bazaars, physical stores.	Example: Online shopping sites like Amazon, Flipkart.
Physical interaction between seller and buyer.	Interaction occurs online via apps or websites with internet connectivity.
Accessibility during working hours.	Accessibility round the clock, 24/7.
Physical presence of goods.	Virtual representation of goods/services with specifications and prices.
Limited scope of work	No geographical restrictions or limitations (depends on the seller).
Activities are performed manually.	All activities are performed digitally.
Goods sold physically.	Goods/services are delivered to the consumer via courier services
Few options for cancellation or return.	Cancellation/return is a popular feature in e-commerce.
Due to physical constraints, shopkeepers can only stock a limited variety of goods.	E-commerce offers thousands of options, allowing consumers to choose the best.
Digital/Cash payment options.	Online payments and cash on delivery options are available.

Based on the above, the advantages and disadvantages E-commerce can be identified as follows:

### *Advantages*

- Wider reach without geographical barriers.
- Round-the-clock availability of the shopping platform; interaction and information available in different languages.
- Low prices: Since minimal physical infrastructure is required, customers usually receive goods and services at attractive and discounted prices.
- Diverse payment systems: Offers multiple online payment options, including credit/debit cards, wallets, cash on delivery, etc.
- Effective customer support: Round-the-clock support via call, video call, online chat, etc.
- Live tracking: Real-time tracking of orders and other activities.
- Thousands of options for selecting goods.
- A limited-time cancellation and return facility is typically available on online e-commerce marketplaces.

### *Disadvantages*

- Since all transactions in this mode of commerce, including payment for goods, are performed digitally, the possibility of cyber-attacks and hacking exists to some extent.
- Indirectly, the customer bears the shipping cost, which is included in the price of the goods.
- There is no physical interaction with people, nor is there a physical showcase of the goods, as seen in traditional commerce.
- Traditional shopkeepers face fierce competition from online retailers, which affects their business viability.
- In e-commerce, the majority of transactions are performed using payment gateways and other online options, so the threat of security breaches always exists.
- All end users typically submit their details digitally on e-commerce web portals, so there is a risk of data misuse and theft.

### **Hybrid E-Commerce Business Model**

A number of business organizations are integrating both traditional and e-commerce business

models. Many companies like Mamaearth, Snitch, Bewakoof.com, Reliance Digital etc are opening physical stores in different parts of the country while also conducting business activities through their own e-commerce web portals. Consumers have the option to visit the store or place an order on the company's official web portal.

### **Common Business Models**

Based on the characteristics and nature of the services offered by business organizations, several models are categorized. The following are four main and popular business model types in practice:

- Business to Consumer (B2C)
- Business to Business (B2B)
- Consumer to Consumer (C2C)
- Consumer to Business (C2B)

#### ***Business to Consumer (B2C)***

This is one of the most popular business models, in which goods and services are directly sold by the business to the consumer. For example, an e-commerce website or offline store both sells goods/services to the consumer.

#### ***Business to Business (B2B)***

As the name suggests, in this business model, the sale/transfer of goods occurs between one business and another. For example, a company may provide engineering machinery, etc., to another business to help set up their own manufacturing or business operations.

#### ***Consumer to Consumer (C2C)***

When two individuals, rather than business entities, engage in a transaction, it falls under the category of consumer-to-consumer. For example, Quikr and OLX, where the company only provides a platform for interaction and showcasing products and services, while the actual purchase and sale occur between consumers.

#### ***Consumer to Business (C2B)***

This business model refers to when a consumer sells their own products or services to a business or organization. Consumer-to-business covers services provided by individuals to business organizations. For example, consultants, and interior architects are consumers who provide services to business organizations, such as constructing buildings or bridges.

### ***E-commerce Marketplace***

In e-commerce, the marketplace is an essential component. It is a platform that hosts products from multiple vendors, enabling consumers to choose, compare, and purchase products and services from a single location. The marketplace owner is responsible for managing the entire business cycle, including onboarding goods and services, executing orders, handling cancellations and returns, shipping products, providing online or real-time customer support, collecting payments, and settling payments to vendors, among other tasks. Vendors are primarily responsible for the manufacturing and inventory management of goods. The following are some examples of e-commerce marketplaces:

- Amazon
- Flipkart
- eBay
- Myntra
- Meesho

A seller mainly requires a GST number, PAN number, and a bank account to register on these marketplaces and start selling through the portal. Each e-commerce marketplace charges different fees for facilitating various services, such as promotion, maintenance, delivery, and payment. The charges and range of services vary from one e-commerce marketplace provider to another. The terms and charges for using the services of e-commerce marketplaces, such as Amazon and Flipkart, are detailed on their portals at [17] and [18]. Some common charges are listed below:

- Packaging bags and material
- Closing/Fixed Fee
- Collection Fee
- Shipping Fee
- Commission
- RTO (Undelivered) Fee
- Customer Return Fee
- Damage Claims
- Local and global reach

Besides the above fees/charges, each e-commerce marketplace defines its own terms and conditions regarding the payment cycle and more. Many e-commerce marketplaces define the payment duration based on the seller's category, with sellers on Amazon divided into Basic, Standard, Advanced,

and Premium categories, while Flipkart divides sellers into Wood, Bronze, Silver, Gold, Platinum, and Diamond categories.

### The Open Network for Digital Commerce (ONDC): Revolution in E-Commerce

In e-commerce, sellers have the option to onboard their products and services on various online marketplaces such as Amazon, Flipkart, Myntra, Meesho, Ajoio. Each marketplace has its own policies, fees, and charges. For MSMEs, startups, and small retailers, registering on multiple platforms and managing separate accounts with varying terms and conditions can be difficult. To address this challenge, sellers now have an alternative, the ONDC network. ONDC stands for Open Network for Digital Commerce, a revolutionary initiative by the Government of India aimed primarily at promoting an open e-commerce network that connects shoppers, platforms, and retailers which allows them to register once on a government-backed ONDC network, making their products discoverable to buyers across India. Regardless of which seller app is used to list on the ONDC network, the products are visible to all buyers on the network, irrespective of the app they use. Reference [12] presents a comprehensive analysis of the ONDC initiative.

Another advantage is the very nominal fee compared to e-commerce marketplace platforms like Amazon, Flipkart, etc. Reference [3] presents an overview of how ONDC can support various players in the digital commerce ecosystem, as well as the building blocks for the advancement and operation.

This concept is inspired by the successful implementation of the Unified Payments Interface (UPI). Authorities believe that ONDC will create a similar transformative environment for sellers and buyers, much like the platform-independent UPI service. The challenging UPI project was developed by the National Payments Corporation of India (NPCI), and digital transactions continue to grow rapidly. The Table-2 shows the continuous growth of digital transactions in India.

The promoters of ONDC are the Quality Council of India (QCI) and Protean EGOV Technologies, which was established in December 2021. The objectives of the ONDC Network project are outlined in [15]. The ONDC network comprises three major components:

- **Buyer Apps:** Applications that interact with the demand layer of goods and services, such as

**Table-2: Continuous Growth of Digital Transactions in India**

Month	Volume (in Mn.)	Avg. Daily Volume (in Mn.)
Apr-24	13,303.99	443.47
May-24	14,035.84	452.77
Jun-24	13,885.14	462.84
Jul-24	14,435.55	465.66
Aug-24	14,963.05	482.68
Sep-24	15,041.75	501.39
Oct-24	16584.97	535
Nov-24	15482.02	516.07

Source: <https://www.npci.org.in/statistics/monthly-metrics>

Chatbots, user-based apps, and voice assistants.

- **Seller Apps:** Applications that interact with the supply layer of goods and services, such as receiving buyer requests, fulfilling orders, and managing goods and services catalogs.
- **ONDC Gateways:** Applications that orchestrate buyer and seller services. For instance, location-based buyer discovery apps, such as Mystore, Magicpin.

It is hoped that the revolutionary e-commerce environment created by the ONDC network will boost the participation of MSMEs, startups, and small retailers. Reference [5] focuses on ONDC in the context of democratizing digital commerce and curbing digital monopolies in India.

This represents a step toward the democratization of digital commerce, shifting it from a platform-centric model to an open, interoperable network where buyers and sellers can interact regardless of the platforms they use. Its aim is to create an inclusive e-commerce environment, allowing different platforms to connect and interoperate with one another.

#### Objectives of ONDC

- Promote decentralization and democratize e-commerce.
- Ensure accessibility and inclusivity for vendors, micro, small, and medium-sized enterprises (MSMEs), and local businesses.
- Provide more options and foster self-reliance for customers.
- Make e-commerce more inclusive and accessible to a wider consumer base.

- Disrupt the monopolistic dominance of large platforms and promote equal participation for all stakeholders.

The list of ONDC participants, along with their availability, roles, categories, and other information, is available at [13]. Sellers can choose any ONDC participant from the list. For example, Mystore has pan-India reach, with buyer and seller roles across different categories of goods, such as food, fashion. Later in this article, we will demonstrate the registration process on Mystore [14]. The published product will also be available on other ONDC-integrated seller platforms.

#### *Fees and Registration on the ONDC Network*

The details of the various fees charged within the ONDC network are outlined below:

- *Buyer App Fee:* This fee is charged by the Buyer Network Participant when an order is placed and is referred to as the Buyer Finder Fee. The fee varies depending on the buyer app through which the order was placed and the product category. The tentative Buyer App Fees for Mystore (ONDC-connected marketplace) are provided at [20], though these may change.
- *Seller App Fee:* This fee is charged by the Seller Network Participant that facilitates the order for the seller.
- *Logistics Charges:* These charges are applied by the Seller Network Participant only if the seller opts for logistics services provided by the Seller App.

#### **Registration Process**

The seller is free to register with any of the ONDC-connected marketplaces. Here, we are demonstrating the procedural steps to register on an ONDC-connected marketplace, Mystore [16]. The complete seller training manual provided by Mystore is available at [19].

- Select 'Register as Seller' from [16], if you are registering for the first time.
- After verifying the mobile number and providing details such as email, business, GST, bank details and Aadhaar, the login credentials will be provided.
- After logging in, the seller needs to complete their personal and business profile.
- The seller app will conduct KYC authentication.

Upon successful authentication, the account status will be marked as 'Approved'. The seller will then be able to publish their products on the ONDC network by providing the following details:

- Product → Add new listing
- Product name, description, images, price, MRP
- Inventory management option
- Weight (in grams)
- Tax rate (inclusive/exclusive)
- GST
- Publish
- Time required to ship
- Availability of cancellation option
- Availability of refund option
- Net quantity (weight, liquid, and pieces)
- Category of goods (e.g., Home Décor, etc.)
- Details of manufacturing and packaging
- Brand owner name
- Address
- Expiry details
- Batch number
- Product generic name (e.g., copper bottle)
- Included items (e.g., pillow cover with bed sheet)

Now, we have the option to approve, publish, or un-publish the goods to be sold. The registered seller can access information about the orders received using the same login credentials. This will display the complete details of the orders placed and received, as shown below:

- Dashboard
- Order details
- Orders received from Seller App (e.g., Mystore) or other buyers
- See order details
- Ship now
- Pickup address (default or update manually)
- Ship provider
- Pickup date and time
- Ship now
- Shipment status (cancelled, shipped, ready to ship)

- Ledger shows the value of transactions
- Order amount credit
- ONDC buyer app fee
- ONDC seller app fee
- Tax
- TDS
- ONDC logistics fee
- Seller App and Buyer App Commission

### **Difference between the ONDC Network and E-commerce Marketplaces**

ONDC is being developed with the intention of eliminating the platform dependencies of traditional e-commerce, providing equal opportunities to small sellers, similar to those available on large e-commerce platforms such as Amazon, Flipkart, etc. While both are related to e-commerce, they differ in certain characteristics. Some key differences are outlined in the Table 3.

### **AI in E-Commerce: Transforming the Industry**

In recent years, Artificial Intelligence (AI) and its applications have emerged as booming technologies, impacting almost every aspect of our daily lives. AI will play a crucial role in achieving the national goal of a \$5 trillion economy and in establishing India as

the third-largest economy in the world by 2025. The applications of AI are not limited to specific fields; rather, it is becoming the backbone of various sectors, including social, industrial, trade, and education. Sellers and buyers are the two main components of commerce, and this activity is essential not only for survival but also for providing employment and ensuring the economic growth of the nation. Reference [10] and many others have discussed the applications of AI in business management, e-commerce, and finance. This article also focuses on AI components such as machine learning and deep learning. Reference [4] highlights the application of AI in education, specifically showcasing the capabilities of chatbot tools like ChatGPT, Google Bard, and Microsoft Copilot, as well as introducing prompt engineering. Reference [7] discussed the integration of AI applications in the field of education.

As the reach of e-commerce extends beyond urban areas and into rural regions of the country, which is largely due to round-the-clock availability of the internet at very low cost; AI is another emerging field, and its applications are being utilized across almost all sectors. AI is integrated into a wide range of technologies and innovations, from household goods to robotics, drones, fighter jets, defense systems, and more.

**Table 3 : Difference between the ONDC Network and E-commerce Marketplaces**

<b>Parameters</b>	<b>E-Commerce Marketplaces</b>	<b>ONDC Network</b>
App Downloading	Requires downloading the e-commerce app	No need to download an app
Platform Nature	Platform-centric model	Open network model, independent of the platforms and apps
Onboarding Fee	Charges approximately 20-30%, depending on the chosen e-commerce platform	Charges approximately 4-6%
Registration	Requires separate registration on each e-commerce platform	Seller can register with any one ONDC-connected marketplace (e.g., Mystore)
Ownership	Typically privately owned by specific entities, with seller policies and terms of service driving revenue	No single entity regulates ONDC; it's an open backend network connecting suppliers, buyers, logistics, and payment portals via open-source protocols
Customer Support and Review	More effective customer support and review systems	Ongoing improvement process
Categories of Goods	Offers a wide range of categories, including fashion, beauty, healthcare, and more	Currently available in specific categories, but expanding in the future
Reach	Nationwide, with some platforms offering global reach	In its growing phase, soon to be available across the nation

Realizing its potential, e-commerce businesses are now relying on AI applications to grow their companies, maintain global operations, and meet customer demands across multiple channels. Reference [11] discussed AI technologies, e-commerce models, and the applications of AI in e-commerce.

### ***Integration of Leading AI Technologies in E-Commerce***

E-commerce is integrating the following leading AI technologies to serve customers in a more efficient manner.

- *Natural Language Processing (NLP)*: This field focuses on enabling computers to understand, process, and generate human language naturally and effectively.
- *Machine Learning (ML)*: Machine learning uses statistical techniques and algorithms to enable computers to learn from data and make predictions or decisions without explicit programming.
- *Computer Vision (CV)*: Computer vision is a branch of artificial intelligence that allows computers to interpret and analyze visual data from images and videos.
- *Data Mining*: Data mining is the practice of extracting meaningful patterns and insights from large datasets to enhance AI algorithms and systems.

### ***AI Applications Revolutionizing E-Commerce***

AI applications and tools offer a range of benefits to e-commerce businesses, some of which are listed below:

- *Personalized Product Recommendations*: AI analyzes customer data, browsing history, and uses NLP to recommend products based on past behavior.
- *Chatbots and Virtual Assistants*: AI-powered chatbots assist with customer service, answer inquiries, offer recommendations, and provide round-the-clock support.
- *Fraud Detection and Prevention*: AI analyzes transactions in real time to detect suspicious activities and prevent fraud.
- *Visual Search and Image Recognition*: AI enables product searches using images, enhancing traditional keyword-based search methods.
- *Inventory Management*: AI predicts demand and optimizes stock levels by analyzing sales data and trends.

- *Dynamic Pricing*: AI adjusts pricing in real time by analyzing market trends, demand, and competitor prices.
- *Customer Sentiment Analysis*: AI analyzes customer feedback to assess sentiment and enhance products or services.
- *Voice Assistance*: AI-driven voice assistants enable customers to search, shop, and ask questions using voice commands.
- *Supply Chain Optimization*: AI analyzes supply chain data to optimize logistics, reduce costs, and improve delivery times.
- *Multilingual Support*: AI-powered NLP tools break language barriers, offering support for both customers and sellers.

### ***Challenges of Implementing AI in E-Commerce***

Artificial Intelligence (AI) is not only useful for enhancing e-commerce features but also for improving various aspects of the industry. Indeed, the integration of AI in e-commerce has enhanced the services provided by e-marketplaces and is offering various benefits to consumers. In the future, both e-marketplaces and customers will continue to benefit from advancements in AI technologies. However, along with the benefits of AI integration in e-commerce, there are also several challenges. Some of these challenges include:

- Data Privacy Risks
- Technical Failures
- High Implementation Costs
- Ethical Issues
- Bias and Discrimination
- Job Displacement

### ***AI Integration in ONDC***

The integration of AI into ONDC is helping small businesses compete with larger platforms, improve operational efficiency, and provide consumers with a seamless, enjoyable shopping experience. An AI-powered ONDC offers the same benefits to small and medium-sized businesses as it does to larger e-commerce platforms.

### ***Conclusion***

This article discusses the journey from the ancient barter system of commerce to the modern e-commerce system, covering the essential elements

and benefits of e-commerce. It also examines the availability, advantages, and limitations of popular e-commerce marketplaces for sellers. Due to the monopoly of these platforms, sellers are often forced to accept their terms and pay high service fees. Furthermore, sellers must register separately on each marketplace, adding to their burden. Small sellers, in particular, are finding it increasingly difficult to compete and sustain their businesses in such a highly competitive environment.

In response to these challenges, the Government of India has conceptualized and initiated the Open Network for Digital Commerce (ONDC) across several cities. Building on the success of the UPI payment system, the Government of India is confident in the successful implementation of the ONDC network. This article explores the introduction of the ONDC network, its operational model, and the benefits it is expected to offer to small and medium-sized businesses, both now and in the future.

With easy registration on the ONDC network, micro, small, and medium enterprises (MSMEs) and small traders can display and sell their products and services with minimal fees and simple formalities. The platform will provide all necessary technical support to sellers. While challenges related to customer support, product quality, and customer trust remain, the ONDC network, like UPI, is expected to overcome these obstacles over time and integrate new technologies to ensure its success.

The success of the ONDC network will be a lifeline for MSMEs, startups, and small businesses, enabling them to reach customers both locally and across distant regions. This initiative will also create new employment opportunities, encourage entrepreneurship, and contribute significantly to the country's GDP growth.

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# Binary Accreditation System of National Assessment and Accreditation Council: Challenges, Opportunities, and Strategic Pathways for Quality Assurance

Nikhil N K\*, Vijesh P V\*\* and Shefeeque V\*\*\*

Quality education is vital for any nation's social and economic development, and thus, it assumes even greater importance for humanity. Higher education is a key driver of emerging knowledge economies like India (Pattil,2018). Higher education drives teaching, research, and extension, supplying essential human resources for various fields. It fuels scientific progress, economic growth, and technological innovation, shaping a nation's development (Hota & Sarangi,2019). India's higher education system, one of the largest and most diverse in the world, has undergone significant transformation due to privatization, expansion, increased institutional autonomy, and the introduction of programs in emerging domains. While these developments have improved accessibility, they have also raised concerns about the quality and relevance of higher education. In response, the *National Education Policy--2020 (NEP--2020)* envisions a transformative framework emphasizing multidisciplinary education, digital learning, and skill-based development, aligning with initiatives such as *Viksit Bharat (Hamara Sankalp Viksit Bharat,2025)* and *Skill India Digital (Skill India digital hub (SIDH), 2025.)*. In order to comply with the National Education Policy (NEP) 2020, the NAAC intends to align the assessing and accrediting procedures in higher education (Shinde & Wankhede,2020).

The need for quality assurance and accreditation has been established, especially in globalization and financial constraints impinging on higher education (Dey,2011). The Indian education system urgently requires substantial reforms to retain talent and ensure future generations contribute

effectively to the nation's growth and development (Sivasthava,2024). These reforms reinforce the need for a robust accreditation system that ensures quality assurance and institutional excellence. Against this backdrop, the National Assessment and Accreditation Council (NAAC), established in 1994 as an autonomous body under the University Grants Commission (UGC), plays a pivotal role in evaluating and enhancing the standards of Higher Education Institutions (HEIs). NAAC's mandate is to integrate quality assurance into the core functions of HEIs, operating through its General Council (GC) and Executive Committee (EC), which include eminent academicians, policymakers, and educational administrators. NAAC's accreditation framework is built upon five core values: contributing to national development, fostering global competencies among students, inculcating a value system, promoting the use of technology, and striving for excellence. Institutions undergoing accreditation are assessed based on seven criteria: curricular aspects, teaching-learning and evaluation, research and consultancy, infrastructure and learning resources, student support and progression, governance and leadership, and innovations and best practices (NAAC,2025). NAAC has continuously refined its assessment methodologies, incorporating insights from international quality assurance agencies and aligning with global higher education standards. Its evolving approach underscores the importance of self-evaluation, institutional accountability, autonomy, and innovation in higher education. With globalization and digital transformation reshaping Indian higher education, quality assurance mechanisms such as NAAC's accreditation process are critical for positioning HEIs within a competitive global framework. The Viksit Bharat vision and the Skill India Digital initiative emphasize integrating digital skills, technological advancements, and competency-based education, reinforcing the role of accreditation in ensuring institutional preparedness for the future. HEIs operate within a complex ecosystem, balancing national regulations, societal expectations, and stakeholder needs. In this context,

\*Assistant Professor, Department of Commerce, Rajagiri College of Social Sciences, Kalamassery, Kerala-683104. E-mail: [nknikhil@rajagiri.edu](mailto:nknikhil@rajagiri.edu)

\*\*Librarian, Rajagiri College of Social Sciences, Kalamassery, Kerala-683104. E-mail: [vijesh@rajagiri.edu](mailto:vijesh@rajagiri.edu)

\*\*\*Research Officer on Special Duty, Kerala State Higher Education Reforms Implementation Cell, Kerala State Higher Education Council, Trivandrum, Kerala. E-mail: [shefik.v@gmail.com](mailto:shefik.v@gmail.com)

NAAC's Assessment and Accreditation (A&A) framework is a strategic tool for standardizing quality, promoting transparency, and ensuring academic excellence. As NAAC advances its binary accreditation system, it must navigate opportunities and challenges, fostering a culture of continuous improvement and quality sustenance in higher education.

**Table 1: Total Number of Accredited Institutions (As of 16/01/2025)**

Type of Higher Education Institution	Number of Accredited Institutions
Universities	419
Colleges	6,846
Total	7,265

*Source(s): National Assessment and Accreditation Council (NAAC), <http://naac.gov.in/index.php/en/>, Accessed on March 05, 2025.*

Table 1 data highlights the total number of accredited higher education institutions (HEIs) in India as of January 16, 2025, with 419 universities and 6,846 colleges, totalling 7,265 accredited institutions.

**Table 2: Accreditation Grades under RAF (July 1, 2017 – February 27, 2025)**

Grade	Percentage	Number of HEIs
A++	3.5%	302
A+	9.2%	800
A	15.5%	1,347
B++	16.8%	1,461
B+	17.9%	1,559
B	27%	2,354
C	9.6%	833
D	0.7%	61
Total	100%	8,717

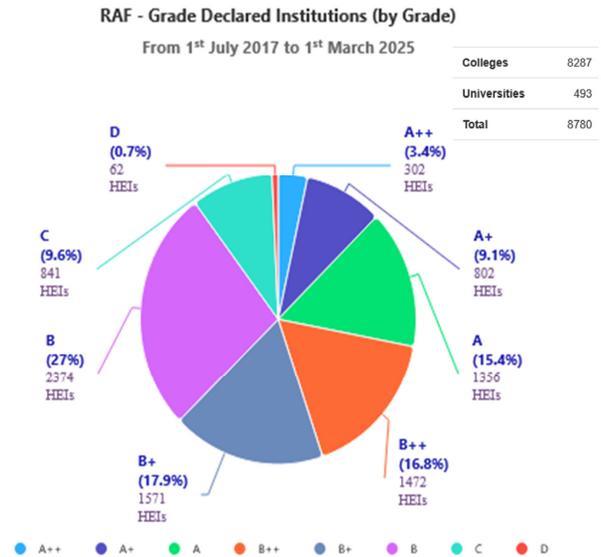
*Source(s): National Assessment and Accreditation Council (NAAC), <http://naac.gov.in/index.php/en/>, Accessed on March 05, 2025.*

Table 2 shows that most institutions fall into mid-tier categories, with B (27%), B+ (17.9%), and B++ (16.8%) making up over 60% of the total. Only a small percentage (12.7%) have achieved the top A++ (3.5%) and A+ (9.2%) grades, indicating that very few institutions meet the highest quality benchmarks.

### Revised Accreditation Framework (RAF) and Accreditation Procedures

The Revised Accreditation Framework (RAF) marks a transformative shift in the accreditation

**Figure 2: RAF (Revised Accreditation Framework- Grade declared institutions (by grade)**



*Source(s) - Figure from National Assessment and Accreditation Council (NAAC), <http://naac.gov.in/index.php/en/>, Accessed on March 05, 2025.*

process, integrating Information and Communication Technology (ICT) to enhance objectivity, transparency, scalability, and robustness. Unlike the earlier qualitative peer review approach, RAF emphasizes data-driven assessment and structured benchmarking, ensuring a fair and comprehensive evaluation of Higher Education Institutions (HEIs). RAF was primarily subjected to quantitative data analysis over subjective peer reviews intended for fairness and transparency, followed by Digital tools to streamline the evaluation process by minimizing in-person visits, reducing administrative burdens, and enabling real-time data validation. The accreditation score is determined through peer review (30%) and online assessment (70%), ensuring a balanced evaluation. An external validation mechanism was initiated to foster the reliability and accuracy of submitted data. It was evident that the updated evaluation criteria now include increased participation from students and alumni to provide a holistic assessment. Different benchmarks are applied to universities, autonomous colleges, and affiliated/constituent institutions, ensuring context-specific assessments.

The assessment framework is structured around seven key criteria that determine the performance and quality of HEIs, and the evaluation was subjected to Curricular Aspects, Teaching-Learning and Evaluation, Research, Innovations and Extension,

Infrastructure and Learning Resources, Student Support and Progression, Governance, Leadership, and Management and Institutional Values and Best Practices.

RAF had a well laid Accreditation Procedures formulated by NAAC, which included structured phases to ensure systematic and comprehensive evaluation:

- i. Integration of IIQA and SSR:* The Institutional Information for Quality Assessment (IIQA) and Self-Study Report (SSR) are initial indicators of an HEI's commitment to accreditation and assessment.
- ii. Data Validation and Pre-Qualifier Score:* Institutions undergo an online evaluation of submitted data. Those scoring below 30% on Quantitative Metrics (QnM) indicators are ineligible for further assessment.
- iii. Student Satisfaction Survey (SSS):* A crucial step, this survey gathers feedback from at least 10% of enrolled students to assess institutional effectiveness.
- iv. Onsite Peer Review and Final Assessment:* Institutions meeting the minimum qualifying score proceed to an onsite evaluation by a NAAC-nominated peer review team, which assesses qualitative parameters.

### Implementation of Binary Accreditation

The Revised Assessment and Accreditation (A&A) Framework, introduced in July 2017 by the NAAC, marked a paradigm shift in the accreditation process by integrating ICT-enabled, data-driven methodologies that ensure objectivity, transparency, scalability, and robustness. This framework introduced key changes, including data-based quantitative indicator evaluation, extensive use of ICT, process simplification, benchmarking against international quality assurance (QA) frameworks, and a shift towards system-generated scores (SGS) comprising approximately 70% online evaluation and 30% peer judgment. Additionally, a pre-qualifier threshold (25% of SGS) was introduced before peer visits and third-party data validation to enhance credibility.

In alignment with this transformation, NAAC has proposed the Binary Accreditation System, which simplifies the accreditation outcome into three categories: Accredited, Provisionally Accredited,

and Not Accredited. This model provides a streamlined approach, allowing institutions that are not accredited to reapply after six months, while those provisionally accredited must address recommendations within one year before seeking full accreditation. The eligibility criteria for Binary Accreditation differ slightly from the general NAAC framework, requiring higher education institutions (HEIs) to have at least one batch of graduates or a minimum of four years of existence before applying. The assessment structure of Binary Accreditation retains the seven core criteria used in the current accreditation framework.

Unlike the traditional accreditation model, Binary Accreditation relies solely on Qualitative Metrics, requiring HEIs to submit a Self-Study Report (SSR) with detailed qualitative descriptions (1,000–1,500 words per criterion). Given the qualitative nature of this model, no Data Validation and Verification (DVV) process is required. The evaluation is conducted by a peer team, which assesses institutions based on their SSR and onsite observations. Peer reviewers submit a criterion-wise assessment report (1,000–1,500 words), including an analysis of strengths, weaknesses, opportunities, challenges (SWOC), recommendations, and a Peer Review Score Sheet (PRSS). The final accreditation status is determined using a Cumulative Grade Point Average (CGPA), which is internally computed but not displayed on the accreditation certificate. The classification is as follows:

- Accredited:  $CGPA > 2.00$
- Provisionally Accredited:  $1.50 < CGPA < 2.00$
- Not Accredited:  $CGPA < 1.50$

This model ensures institutions can improve based on feedback, fostering continuous quality enhancement. By eliminating quantitative metrics and simplifying accreditation outcomes, Binary Accreditation enhances accessibility while maintaining rigorous quality assurance standards in higher education (NAAC,2025).

### Transitioning from RAF to Binary Accreditation

The National Education Policy 2020 (NEP, 2020) paves a firm footing for a transformative shift in India's education system, significantly focusing on holistic, multidisciplinary learning and skill development. To align with National Education Policy 2020 (NEP, 2020), it is imperative to strengthen the

assessment and accreditation mechanisms of Higher Education Institutions (HEIs). It even envisions the establishment of the National Accreditation Council (NAC) as one of the key verticals under the proposed Higher Education Commission of India (HECI), aiming to strengthen the assessment and accreditation mechanisms of higher education in India. However, As NAAC moves toward this new-fangled model, it is important to understand its implications, benefits, and challenges for HEIs across India.

The Government of India has proposed these reforms with a strategic intent to strengthen the Vision of NEP 2020 to develop a simple, trust-based, credible, objective, and rationalized system for approval, accreditation, and ranking of HEIs with the following key objectives:

- A centralized database which is secure and verifiable.
- Modern systems are driven by robust technology to minimize/replace manual involvement.
- Mentoring and incentivizing towards eminence, significance, and global acclaim.

To envision the National Accreditation Council (NAC) at the national level, NAAC has decided to transition from the Revised Accreditation Framework (RAF) to a Binary Accreditation Framework to simplify the accreditation process and enhance transparency, which is considered to be a transformative approach to higher education accreditation in India, equipping institutions meet essential quality benchmarks. The proposed model adopts a Yes/No (Accredited/ Not Accredited) model, which intends to enhance transparency, simultaneously reduce subjectivity, and significantly streamline the accreditation process. By not focusing on comparative rankings, the proposed framework ensures that HEIs meet or fail to meet accreditation standards, developing a more objective and data-driven assessment. The binary framework aligns with the National Education Policy (NEP) 2020, emphasizing digital integration, institutional accountability, and outcome-based education. The evaluation will be based on Curriculum, Faculty Resources, Learning and Teaching, Research and Innovation, Extracurricular (EC) and Co-Curricular (CC) Activities, Community Engagement, Green Initiatives, Governance and Administration, Infrastructure Development and Financial Resources and Management.

The proposed shift of NAAC from RAF to the Binary Accreditation Framework has been considered

a milestone addressing the limitation of the NAAC Accreditation framework. The prime focus was simplifying the accreditation process and enhancing transparency by making it more objective, transparent, and data-driven. Many colleges and universities hesitate to undergo NAAC accreditation because the fear of securing lower grades (B, C, etc.) affects their reputation. Most institutions often aimed for higher grades rather than continuous improvement under RAF. However, with the binary system, HEIs' focus has to shift to meet quality benchmarks and gradually enhance their standards to get accredited.

The proposed Binary Framework encourages accredited institutions to elevate their bar gradually (Level 1' to 'Level 4 of Institutions of National Excellence and Level 5 Institutions of Global Excellence for Multidisciplinary Research and Education (as envisioned in NEP 2020)) and drastically Simplify the Accreditation process, specifically for the HEIs going for the first cycle and the Periodicity for Re-accreditation may be brought down (from five years as followed now). Rather than a one-size-fits-all model, considering the heterogeneity of HEIs in the country, HEIs may be categorized (Based on orientation/vision and heritage/legacy), and information will be sought.

**Table 3: Suggested Category of HEIs**

Criteria	Suggested Category of HEIs
Orientation and Vision	<ul style="list-style-type: none"> <li>• Multidisciplinary Education and Research -Intensive</li> <li>• Research -Intensive</li> <li>• Teaching-Intensive</li> <li>• Specialized Streams</li> <li>• Vocational and Skill-Intensive</li> <li>• Community Engagement &amp; Service Rural &amp; Remote Location</li> </ul>
Heritage and Legacy	<ul style="list-style-type: none"> <li>• Old and Established</li> <li>• New and Upcoming</li> </ul>

**Source(s):** Report of the Overarching Committee, constituted by the Ministry of Education, November 2023. Published by the Department of Higher Education, Ministry of Education, Government of India.

The proposed framework intends to meet minimum quality standards rather than competing for higher grades, as the previous system involved physical visits, where peer team members had more discretion in their evaluations. However, the recent

reformation significantly reduced the pressure to influence peer teams for a better score. In the proposed binary framework, higher use of AI, data analytics, and automation significantly minimizes human intervention and makes it more challenging for peer teams to manipulate scores.

The ONOD (One Nation One Data) device is proposed to centrally capture all common data used by agencies like AISHE, UGC, AICTE, NAAC, and NBA/NIRF to strengthen the Binary Accreditation Framework. It is expected to capture all stable variables, such as programmes, students, and faculty used by all agencies to be captured and validated. Post-development of ONOD significantly minimizes redundant efforts and errors, ensuring consistency. Soon, the introduction of Binary and Maturity-Based Graded Accreditation (Levels 1 to 5) will be implemented by making ample modifications in the manuals (metrics, measures, benchmarks, etc). A maturity-based graded accreditation model can complement the binary system by incentivizing excellence and innovation beyond minimum compliance (pharmabiz,2024). Binary Accreditation Framework is largely based on quantitative assessment with very minimum review through an online mode. Data verification and validation will be carried out collectively by the involved agencies using appropriate scientific methodology. “Stakeholder Crowdsourcing” methodology has been proposed, which includes students, faculty, alumni, industry, parents, and academic scientific peer groups - effectively society at large, as part of the accreditation and ranking process as a novel attempt to validate the data submitted by the HEIs, However, the proposed maturity-based graded accreditation methodology shall include qualitative peer assessment through the qualitative peer expert’s assessment (PEA). It is expected to include parameters set as benchmarks deeply rooted in objectives of NEP 2020, SDG/G20, and other national priorities articulated through various Ministries and Departments of the Government of India.

The proposed framework intends to meet minimum quality standards rather than competing for higher grades, as the previous system involved physical visits, where peer team members had more discretion in their evaluations. However, the recent reformation significantly reduced the pressure to influence peer teams for a better score. In the proposed binary framework, higher use of AI, data

analytics, and automation significantly minimizes human intervention, making it more challenging for peer teams to manipulate scores.

## Conclusion

The Binary Accreditation System represents a paradigm shift in India’s higher education quality assurance framework, aiming to enhance accessibility, streamline processes, and promote institutional inclusivity. However, as this transition unfolds, it is imperative to critically assess its long-term impact on institutional excellence, global comparability, and the overall credibility of higher education in India. While the simplicity and inclusivity of binary accreditation may encourage broader institutional participation, its inherent limitations—such as lack of granular differentiation, risk of subjectivity in assessments, and reduced incentives for continuous quality enhancement must be addressed to ensure that it does not inadvertently compromise academic standards. The binary system, in contrast, flattens this distinction, reducing accreditation to a mere compliance check rather than a dynamic quality enhancement tool. This shift may also weaken India’s position in global higher education rankings, as many international quality assurance frameworks rely on detailed, multi-tiered accreditation models.

Another critical issue that warrants attention is the potential for unhealthy accreditation practices. Institutions may resort to short-term compliance measures rather than genuine, long-term academic improvements without a rigorous, data-driven evaluation. Transparency, accountability, and adherence to ethical evaluation standards must be reinforced to prevent dilution of accreditation credibility. Process reformations by NAAC, by eliminating grading-related stress from RAF to the Binary Accreditation Framework, were intended to increase institutional participation and promote a more objective and transparent evaluation system by simplifying accreditation. Ultimately, the goal of any accreditation system should be to empower institutions, uphold academic rigor, and drive sustained educational excellence. If NAAC’s Binary Accreditation System is to serve as a transformative force, it must be continuously refined, globally aligned, and ethically administered. The future of Indian higher education depends not just on simplified accreditation mechanisms but on a robust,

transparent, and innovation-driven framework that fosters real institutional growth and global competitiveness.

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# Three Visions of Artificial Intelligence: The Good, The Bad, and The Ugly

Aerum Khan\*, Kulsoom Reza\*\* and Sadiya Shaheen\*\*\*

As technology advances, the world is ready for its fourth industrial revolution, fueled by Artificial Intelligence. It has become a new normal in every sector, whether banking, management, engineering, or education. This new technology can be defined in the words of John McCarthy as “the science and engineering of making intelligent machines.” However, according to the Encyclopedia Britannica, AI is a digital computer that works on tasks associated with beings. Basically, AI refers to the simulation of human intelligence or human intellectual behaviour in programmed machines that think, learn, and work like humans. AI is still evolving, and thus, it demonstrates different visions. If we talk about the ‘good’ (or positive), ‘bad’ (or negative), and ‘ugly’ (or scary) AI, then it refers to the usage of AI for three contrasting purposes, respectively. It may be called ‘good AI’ when it is used to benefit humans or human values for human welfare and development. ‘Bad AI’ when it is unintentionally or negligently utilized against humans, human values, or other beings. And the ‘ugly AI’ is the malicious potential of AI to harm when misused or left unchecked due to unethical exploitation of the regulatory framework. Recently, in a meeting with Bill Gates in March 2023, the Prime Minister of India acknowledged the potential of AI. He emphasized the beneficial implications of AI during the 2023 G20 Summit, especially for translation in different languages. It is also worth noticing that the Prime Minister also pointed out the use of AI for bad purposes by citing examples like deepfake content. His statement, “If we use AI as a magic tool, it will perhaps lead to a grave injustice,” to some extent, indicates the ugly aspect of AI. He emphasized that there is a great possibility for misuse of technology, especially in the field

of AI. In a democratic country like India, misuse might occur as the country gives equal freedom as well as equal opportunities to its citizens for using technology. Elon Musk, Steve Wozniak (co-founder of Apple), and Tristan Harris of the Centre for Humane Technology are among the more than 1000 signatories to an open letter urging “All AI labs to immediately pause for at least 6 months the training of AI systems more powerful than GPT-4” (Jermy Khan). Thus, AI has the potential to revolutionize and transform society, nation, or global scenario, but its potential challenges and ethical dilemmas to destroy mankind are grave. This paper is based on the critical scrutiny of the literature on AI, it tries to represent the main findings found in the literature under review. It not only gathers the existing findings related to the good, the bad, and the ugly aspects of AI, but it also provides a new insight into the possible solutions and remedies that pave the way for further research.

## Related Work

Below mentioned are some critically reviewed papers and analysis of modern approaches to the AI in a chronological order rather than thematic.

Krishna, V. V. (2024) in his essay “AI and contemporary challenges: The good, bad and the scary” emphasized AI and contemporary challenges and explored the positive and negative dimensions, as well as brought out the dangerous implications of this technological revolution.

Moses Alabi, V. G. (2024) in his study titled “Climate Change Mitigation and Adaptation using AI: Developing Sustainable Solutions” investigated the potential of AI for mitigation and adaptation to climate change by utilising AI in data analysis, predictive modeling, optimization techniques, and process automation. He concluded that realizing the potential requires a careful balance between technological advancement and ethical considerations to ensure sustainable, inclusive, and equitable AI-driven climate solutions.

Olawade, D. B., et al. (2024) made the study titled “Enhancing mental health with Artificial

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\*Associate Professor, Department of Teacher Training & Non-formal Education (IASE), Faculty of Education, Jamia Millia Islamia, New Delhi-110025. E-mail: akhan26@jmi.ac.in

\*\*Research Scholar, Department of TT & NFE (IASE), Faculty of Education, Jamia Millia Islamia, New Delhi-110025. E-mail: kulsoomreza02@gmail.com

\*\*\*Research Scholar, Department of TT & NFE (IASE), Faculty of Education, Jamia Millia Islamia, New Delhi-110025. E-mail: shaheen.0279@gmail.com

Intelligence: Current trends and prospects”. He explored that human empathy and understanding, which are essential in therapeutic interactions, are missing from AI. He studied that AI possesses considerable potential in mental health care, along with limitations that can be addressed by responsible and effective implementation of AI in healthcare by measures like data protection, transparency, and accountability.

Ueda, D., et al. (2024) in their study titled “Fairness of artificial intelligence in healthcare: review and recommendations” addressed the issue of fairness in the clinical integration of artificial intelligence (AI) in the medical field. Their review explores a comprehensive overview of concerns related to AI fairness, discusses strategies to reduce AI biases, and stresses the need for cooperation among physicians, AI researchers, AI developers, policymakers, and patients.

Akintuyi, O. B. (2024) highlights the dynamic nature of AI in agriculture, where technological advancements coexist with unique challenges. He emphasized that the adoption of sustainable and inclusive AI requires collaborative efforts, tailored approaches, and ongoing research to address the growing needs of farmers globally. He concludes that the integration of AI in agriculture will enhance food security, sustainability, and the well-being of farming communities around the globe.

Luck, M. (2024) in his study “Freedom, AI and God: why being dominated by a friendly super-AI might not be so bad” suggests that if a friendly super-AI harms, it won’t be because it takes away our freedom, as long as it is the right kind of AI agent. He explores whether this kind of AI rules humans; he is willing to give up some freedom in exchange for the potential benefits.

Wakchaure, M., et al. (2023) in their research titled as “Application of AI techniques and robotics in agriculture: A review” examined that the application of robots and autonomous systems in farming has raised the standard of farming and becoming more popular. They emphasized that the AI techniques provide data frequently in a real-time manner, leading to avoiding human errors and improving decision-making capabilities. They concluded that AI approaches and modern types of equipment perform better than traditional practices with minimal human effort and at the minimum required time.

Ifelebuegu, A.O., et al. (2023) investigated the prospects (good) of Artificial Intelligence in education (AIED) which included literature search and article analysis, academic writing, administrative tasks, homework assistance, answering queries, content generation, language learning, inclusive education, self-paced learning, professional development for educators, feedback provision, mental health support, and motivation and engagement. The potential challenges (the bad) of using AIEDs included reinforcement of bias, plagiarism, privacy and data security, misinformation, depersonalization of education, overreliance, accessibility, and the digital divide. The potential ethical challenges (the ugly) included ethical implications, threats to jobs, the erosion of human connection, and technical failures.

Baidoo-Anu, D., & Ansah, L. O. (2023) examined that, despite the possible educational advantages, ChatGPT currently has several serious inherent limitations, including producing incorrect answers and fabricating articles. They suggested that professionals, researchers, educators, and students use ChatGPT and other chatbots to exercise caution.

Brandtzaeg, P. B., et al. (2023, July) have conducted the study titled “Good” and “bad” machine agency in the context of human-AI communication: The case of ChatGPT. They examined how news reports highlighted ChatGPT’s positive effects, i.e., to help people deal with mental health problems, offer emotional support, provide informational and educational resources, access healthcare, or get financial aid. They provided insight into previous studies about the productive effects of generative AI and ChatGPT’s accuracy in providing information on cancer myths and misconceptions.

Dhar, P. (2020) studied that the researchers at the University of Massachusetts Amherst explored several natural language processing (NLP) training models to estimate the energy cost and cost of electricity needed to train them. The resulting figures showed that the carbon footprint of training an AI model requires about 300,000kg of carbon dioxide emissions, which is very significant to the degradation of the environment.

Trojecki, Mike (2019, June) wrote an article on the topic “Is Artificial Intelligence Good or Bad: Debating the Ethics of AI”. In this article,

he addressed the impact of AI on society as a complex issue. He discussed the positive outcomes of AI, such as improved healthcare, enhanced productivity, and personalized services. He showed concern about the existing issues regarding job displacement, biased decision-making, privacy infringement, and social inequalities. He emphasised that the net impact of AI on society will depend on ethical considerations, responsible deployment, and inclusiveness.

The objectives of the Study are:

- i. To explore the positive implications of AI (good AI).
- ii. To identify the challenges and risks of AI (bad AI).
- iii. To evaluate the potential ethical challenges associated with AI use (ugly AI).
- iv. To suggest measures for the ethical and responsible use of AI.

The Research Questions are:

- i. What are the beneficial applications of AI (good AI)?
- ii. What challenges and risks are associated with AI (bad AI)?
- iii. What are the potential ethical challenges of AI (ugly AI)?
- iv. What measures can be taken to ensure responsible and ethical use of AI?

### **Discussion on Three Visions of AI: The Good, Bad, and the Scary**

AI is different—different from other technologies and different in its effect on power. It does not just pose policy challenges; its hyper-evolutionary nature also makes solving those challenges progressively harder. That is the AI power paradox (Bremmer and Suleyman, 2022). Taking this quote into account, all three visions of AI are discussed below, along with the latest innovations in various sectors like agriculture, healthcare, education, climate change mitigation, as well as their implications.

#### **Beneficial Implications of AI: The Good**

##### *AI in Everyday Life*

AI technologies have become an integral part of our everyday lives, from virtual assistants on our smartphones to personalised recommendations on

streaming platforms. The impact of AI technologies on daily life is predicted to increase as they develop further, which will bring in a new era of intelligent automation and customised services.

##### *Personalized Recommendations*

AI plays a significant role in your personalized content recommendations on platforms like YouTube or Netflix and music streaming recommendations on platforms like Spotify, Apple Music, and YouTube Music. These systems analyze user behaviour and recommend content and music that is specific to each user's preferences using sophisticated algorithms and machine learning models.

Virtual Assistants, such as Google Assistant, Alexa, and Siri, use machine learning and natural language processing techniques to understand user queries and provide relevant responses. These assistants make daily tasks more convenient and effective.

##### *GPS and Navigation Systems*

AI has transformed GPS navigation systems like Google Maps, Waze, or Apple Maps into smarter, more efficient tools, improving everyday travel with real-time traffic updates, voice recognition, personalized routes, and predictive navigation.

##### *Generative AI*

Generative AI (GAI) tools like OpenAI's ChatGPT, Google's Gemini (formerly Bard), or Microsoft's CoPilot can create new written, visual, or audio content, summarizing complex data, generating code, assisting with repetitive tasks, or making customer service more personalized. India's Bharat GPT also offers support to multiple Indian languages for text, voice, and video-based conversational capabilities.

Chatbots such as Ask Diksha answer user queries on ticket reservation, refund status, PNR search, cancellations, probability of ticket confirmation, as well as other travel and tourism offerings of the Indian Railways subsidiary. PAi is chatbot assisting users with accurate information on National Payment Corporation of India (NPCI) products like FASTag, RuPay, UPI, AePS which will increase the adoption of digital payments among Indian citizens.

##### *AI in Agriculture*

The application of AI in agriculture has emerged as a powerful tool that is revolutionizing traditional farming practices and offering innovative

solutions to global food challenges (Javaid et al., 2022; Sharma, et al., 2022). In agriculture, artificial intelligence refers to the application of cutting-edge technologies, such as automation, data analytics, and machine learning, to improve agricultural processes (Smith, 2018; Misra, et al., 2020). AI enables accurate and effective resource management through the integration of AI technologies, improving crop yields, lessening the impact on the environment, and raising overall productivity.

- **Personalization:** Farmer.CHAT is an innovative solution that aims to address the challenges faced by farmers related to climate change and water security issues. Farmer. CHAT uses generative AI to create personalized and engaging content for farmers, such as videos, podcasts, and chatbots, that provide them with relevant information and guidance on best practices.
- **Optimizing Crop Yields:** Microsoft India collaborated with ICRISAT to develop an AI-enabled sowing app. The app sends sowing advisories via text messages to farmers on the optimal date to sow. This initiative helped farmers in Andhra Pradesh to improve their yields by up to 30 %.
- **Intelligent Farming:** John Deere Blue River Technology utilizes machine learning to build more intelligent farming machinery to help farmers make data-driven decisions. Their “See & Spray” technology uses machine learning to apply pesticides precisely to a field by using sensors, including cameras, to identify pests and target pesticides only to the required areas.
- **Translation in Native Languages:** *Kissan AI* is a multilingual AI agriculture assistant that helps in the translation of traditional agricultural knowledge to farmers in their native language. It empowers farmers with valuable guidance on irrigation techniques, pest control, and crop cultivation, which helps farmers optimize their farming practices, increase productivity, and make better-informed decisions. *Jugalbandi* is another AI chatbot that assists farmers and villagers in rural India to access information about various government schemes beneficial to them. This chatbot is accessible via WhatsApp, which retrieves relevant programs and translates them into the user’s native languages.

## **AI in Healthcare and Diagnostics**

AI is transforming healthcare by enhancing diagnostic accuracy, personalizing treatment, and accelerating drug discovery. AI-driven technologies improve the precision of medical imaging, predictive analytics, and pattern recognition, which leads to earlier disease detection and more effective treatments (Chen, X. (2024).

- **Early Diagnosis:** AI systems are used to develop risk assessment models for cancer diagnosis. These models analyze vast amounts of data to predict individual cancer risks. For instance, breast cancer impacts over 250,000 U.S. women annually, with AI providing crucial support in identifying high-risk patients early.
- **Predictive Analytics:** An AI system created by Google’s DeepMind Health can analyse retinal images and detect early signs of diseases like diabetic retinopathy. The NVIDIA Clara platform is a collection of AI-powered tools and frameworks created primarily for healthcare applications.
- **Drug Discovery and Development:** AI can accelerate the drug discovery and development process by analysing vast amounts of biomedical data, including genomic information, protein structures, and scientific literature. In the domain of protein folding, the Alpha fold program, developed by *DeepMind* has made a significant impact in the field of artificial intelligence.
- **Intelligent Imaging and Diagnostics:** AI-powered image analysis techniques can significantly enhance medical imaging, such as X-rays, CT scans, and MRIs, which assist in early disease diagnosis, detect abnormalities, and provide quantitative assessments. *NIRAMAI* “Non-Invasive Risk Assessment with Machine Intelligence” is an innovative method for screening for breast cancer, which is the most common cancer-related mortality among women nowadays. *Qure.ai* uses AI to make healthcare solutions affordable and accessible. It uses deep learning algorithms to interpret radiology images and scans—chest X-rays, head CT scans, POQUS, chest CT scans, etc.
- **Virtual Assistants and Chatbots:** Chatbots and AI virtual assistants are revolutionising the healthcare industry by increasing patient engagement and offering 24/7 support. AI-

powered chatbots, such as *Ada Health*, are transforming the ways patients evaluate their symptoms and get medical advice. *HealthifyMe* uses an AI-based virtual assistant, Ria that keeps in touch with its users to solve their queries and give dietary recommendations around fitness, nutrition, and health.

### ***AI in Education***

AI in education has created new opportunities for developing more effective learning activities and technologically advanced learning applications. Educational settings have enhanced the use of various AI applications such as personalised learning systems, automated assessments, social media sites, and predictive analytics tools to support students and teachers and enhance teaching and learning efficiency.

- ***Adaptive Learning:*** AI promotes the development of adaptive learning, which uses real-time analysis, learning analytics, data mining, and intelligent teaching systems. Adaptive learning aims to integrate all aspects of learning, practice, instruction, and assessment in the adaptive system to facilitate students (Van Der Vorst & Jellic, 2019).
- ***Educational Tools:*** *Jhungroo learning* is like a GPS in learning, which helps educators understand students' journey through an AI-based adaptive engine. A Web-based artificially intelligent assessment and learning system called Assessment and Learning in Knowledge Spaces (ALEKS) is extensively used in the United States.
- ***Intelligent Systems:*** Through the Real Skill online platform, students can prepare for TOEFL and IELTS. Systems can improve their test preparation level by performing intelligent scoring, behaviour analysis, sentence-by-sentence correction, essay-intensive lectures, and learning records (Deloitte, 2019).
- ***Automated Evaluation System:*** AI applications like computer vision, prediction systems, and image recognition make teaching assessments easier. AI improves the accuracy of evaluation results, diversifies teaching evaluation methods, and makes the evaluation process more scientific. According to Chen et al. (2018), American Educational Testing Service (ETS) which is a tool for automatically evaluating

student essays, has leveraged AI technology in spoken English assessments and created a Speech Rater engine to assist users excel in spoken English assessment.

- ***Accessible and Inclusive tools:*** AI tools must be designed to be accessible and inclusive, considering the needs of all potential users. This includes providing features such as text-to-speech for visually impaired individuals or predictive text for those with motor impairments (Khowaja et al., 2023).

### ***AI in Mental Health Support***

AI enhances mental health through early symptom detection, individualized interventions, and online therapy platforms. It evaluates large amounts of data, offers insightful analysis, and predicts possible mental health issues. AI-powered chatbots and virtual therapists can provide continuous support, reaching a larger population at lower costs, reducing social stigma, and improving accessibility.

- ***Cognitive Behavioural Therapy:*** Woebot is a chatbot that offers cognitive behavioural therapy for anxiety and depression. It is effective in reducing symptoms of depression and anxiety in clinical trials.
- ***Identifying Patterns:*** Moodfit is an AI-powered app that monitors and analyses users' emotions and moods. It can help users identify patterns in their moods and develop strategies for managing their emotions. (D.B. Olawade et al. 2024)
- ***AI-enabled Life Coach:*** India-based, *Wysa* is an AI-enabled Life Coach for mental and emotional wellness. It is a chatbot that provides support for a variety of mental health conditions, including depression, anxiety, stress, and loneliness. It helps users by providing positive psychology, mindfulness, and cognitive behavioral therapy.
- ***Innovative Approaches:*** *Sneh AI* is an innovative approach of AI-powered chatbot that provides a secure, personalized, and non-judgmental space for young people to share concerns and learn about issues related to sexual and reproductive health, issues like contraception, same-sex attraction, masturbation, as well as digital safety.

### ***AI in Combating Climate Change***

AI-enabled climate change adaptation makes use of AI's transformative potential to address

environmental issues and create resilient practices. This section highlights AI's potential to bring about significant change and promote a more sustainable and climate-resilient future, along with adaptive strategies for climate change.

- **Mapping Deforestation:** Space Intelligence, a company based in Edinburgh, Scotland, is using AI for mapping deforestation in more than 30 countries and has mapped more than 1 million hectares of land from space using satellite data.
- **Prediction Analysis:** The International Climate Initiative (IKI) uses AI technology to help predict weather patterns to adapt to climate change and mitigate its impact by improving access to clean energy, implementing proper waste management systems, and encouraging reforestation.
- **Recycling Waste:** Grey Parrot is a software startup based in London, United Kingdom that has developed an AI system that analyzes waste processing and recycling facilities to help them recover and recycle more waste material.
- **Clearing Plastic Pollution:** In the Netherlands, an environmental organization called The Ocean Cleanup is using AI and other technologies to create detailed maps of ocean litter in remote locations and help clear plastic pollution from the ocean.
- **Disaster Management:** Integration of AI in disaster management strategies like AI-powered early warning systems and AI-driven predictive analytics helps in mitigating the impact of natural disasters, providing valuable lead time for evacuation and emergency response and minimizing the adverse effects of natural calamities.

### Negative Impact of AI (The Bad)

Geoffrey Hinton, who is regarded by some as the godfather of AI, has resigned from Google so that he can freely express his concerns about the future of technology (Stileapp.com Report, 2023). The Bad AI has the potential to negatively impact different fields like agriculture, education, and healthcare, as well as adversely affect economic opportunities, job structure, and working hours in different sectors.

**Agriculture:** Although AI has opened the way for environment-friendly practices that support

sustainable agriculture, it also has the potential to harm the environment.

- **Carbon Emission:** AI and IoT technologies consume a significant amount of energy, use fossil fuels to power AI solutions, and advanced robots pollute the environment.
- **Constant Power:** IoT sensors and agricultural robots may increase greenhouse gas emissions and other problems related to global warming due to the minimal battery requirements and consistent power requirements (Patelli & Mandrioli, 2020).
- **Electronic-Waste:** The creation of AI solutions for agriculture uses non-renewable components, which results in e-waste and later they are discarded carelessly thereby increasing “technotrash” which is hazardous to the environment.

### Inequality

AI has the potential to increase inequality through power concentration, income inequality, as well as decline in labor share.

- **Power Concentration:** Joseph Stiglitz, Nobel laureate and professor at Columbia University, has raised questions about the potential concentration of power and wealth with the rise of AI and automation.
- **Economic Inequality:** Daron Acemoglu, a professor at MIT, has researched the impact of technology on labor markets and economic inequality. He has expressed concerns about the potential consequences of automation, including a decline in labor share and a rise in income inequality (MIT Report, 2018).

### Job Insecurity

- **Loss of Jobs:** McKinsey Global Institute reported that up to 800 million global workers might lose their jobs by 2030 (McKinsey Global Institute, 2017).
- **A Workforce of Machines:** A Chinese factory in Dongguan City replaced 90% of its workforce with machines, resulting in a 250% increase in productivity and an 80% decrease in defects. The company claims that a job that took 650 human workers to complete now takes about 60 robots and 60 humans.
- **Impact on Working Hours and Declining Roles:** According to the recent 2023 analysis

of the World Economic Forum, around 40% of all working hours could be impacted by AI large language models (LLMs) such as ChatGPT-4, says a report from Accenture (Accenture Report 2023). Many clerical or secretarial roles are seen as likely to decline quickly because of AI, according to the World Economic Forum's Future of Jobs Report (2023).

### Education

- **Job Losses:** Another significant drawback is the perception of AI as a threat to teachers' employment. Despite assurances from AI advocates that the technology only makes teachers' jobs easier, many educators fear job losses.
- **Reinforcement of Bias:** The reinforcement of bias by AI has a serious impact in the field of education, which can lead to stereotypes, misinformation, and discrimination, and undermine the concept of fairness, equality, and objectivity (Eubanks, 2018).
- **Over-reliance:** Over-reliance on AI could negatively impact the social aspects of learning. It would pose challenges to critical thinking, social learning, and the cultivation of a fair and unbiased learning environment.
- **Plagiarism:** The use of AI in education and research raises serious concerns regarding plagiarism. Plagiarism hinders the educational objectives of fostering original thinking and academic integrity.
- **Accessibility and Digital Divide:** Disparity in accessing technology can lead to the digital divide and can increase existing educational inequalities, creating a divide between those who can benefit from AI-enhanced learning and those who cannot.
- **Data Privacy:** When an AI tool is granted access to the information, there is a risk of data breaches or misuse, and sensitive information could be exposed, leading to significant harm to the individuals involved.

### Potential Ethical Challenges of AI (The Ugly)

The CEO of Tesla and SpaceX has warned about the need for careful regulation and consideration of Artificial Intelligence's societal impact to avoid potential risks. The ethical dilemmas represent the

darkest potential of AI to adversely affect beings in different fields like agriculture, healthcare, education, military, etc.

### Weaponization of AI

The weaponization of AI-technologies has raised concerns for global security and cyber warfare. It has the potential to develop more sophisticated and efficient cyberattacks and hacking tools that can automate processes like malware delivery, vulnerability scanning, and reconnaissance.

- **Deepfakes:** AI-generated deepfake videos and audio can have serious political and social consequences. It can be used to impersonate individuals, including political leaders, and spread disinformation or propaganda.
- **Biometric Spoofing:** To bypass biometric security systems, AI can be used to generate realistic biometric data, like fingerprints or facial features.

### Education

- **Ethical Implications:** The use of AI in education raises important ethical questions around fairness, accountability, and transparency which could reinforce stereotypes leading to misinformation or narrow-minded thinking or discriminatory practices.
- **The Erosion of Human Connection:** The integration of AI into education raises concerns about the erosion of human connection, social interaction, and the human touch in teaching and learning processes, which is important in fostering empathy, understanding, and collaboration.
- **Technical Failures:** Technical failures in the underlying AI algorithms can lead to the dissemination of incorrect or misleading information which can hinder academic progress as well as erode trust in digital learning tools.

### Healthcare

- **Risk of Misdiagnosis:** There is an ethical concern about misdiagnosis or missed diagnosis by faulty AI algorithms that can reverse the advantage of AI-Health solutions.
- **De-humanisation and Impersonalisation:** Doctor and patient relationship is based on trust and empathy, while AI- Health solutions will make tasks more routine and cannot reproduce the emotional virtues of humans.

- **Immoral decision-making:** The notion that AI-Health technologies are ethical is unrealistic, and letting them perform moral decision-making can lead to immoral and unfair results.
- **Overreliance on AI:** There is a risk that healthcare professionals might become over reliant on AI for decision-making, which could lead to a decline in their clinical judgment and their ability to effectively treat patients.

### Agriculture

- **Use of Data and Privacy Concerns:** In the agriculture industry, the information gathered might be used against farmers in a number of situations, such as regulatory enforcement, the imposition of taxes, fines, and limits by dishonest traders, competitor companies, or even officials.
- **AI replacing the Labor Force:** Another issue for ethical concern is the use of AI and robotics has the potential to eliminate jobs. “Intelligent” equipment for many farm tasks could lead to “technical unemployment”, cases of inequality and adverse social impact.
- **Access to Technology and Data:** Access to AI in agriculture is fairly expensive for smaller farms and accessible only to large cooperatives. The technical skills required are not freely available to them.

### Military

- **USA and China:** According to a report from FORTUNE, the U.S. military is developing autonomous weapons (Fortune Report, 2023). According to a report in the Time, ‘China and the U.S. Are fighting a major battle over killer robots and the future of AI’ (Melissa Chan, 2019).
- **Killer Robots:** AI in military domain has the potential to raise several ethical, legal, and scary issues. AI-powered autonomous weapons, also known as lethal autonomous weapons systems (LAWS) or “killer robots,” can identify and engage targets without human intervention which raises concerns about the potential for AI to make life-and-death decisions.

### Suggestions

As Sathya Nadella, the Indian-American CEO of Microsoft, suggests, we need to put ‘humans at the centre’ of AI with a human-centric approach

to technology development. This perspective emphasizes that AI should be designed and used to develop and empower human experiences, rather than replace or diminish them. Appropriate regulatory supervision and insight into AI-based technology are very significant in addressing transparency, safety, and ethical norms as a result of the rapid development of AI (Vinuesa, et al. 2020).

- **Fostering Critical Thinking:** It is crucial to combine the use of AI with critical thinking and information literacy skills. Users must be encouraged to scrutinize AI-generated content and cross-reference information from multiple sources.
- **Embracing Human-AI Relationship:** Balancing the use of AI tools with the need for human connection and interaction is key to ensuring a rich, engaging, and holistic educational experience.
- **Inculcation of Academic Honesty:** Educators should reinforce the importance of academic honesty and proper citation practices in the digital age to reduce potential instances of academic dishonesty.
- **Reinforcement of Bias:** Continuous monitoring and adjustment of the AI’s responses, as well as educating users about AI bias, is very important.
- **Mitigating Ethical Dilemmas:** Addressing these ethical dilemmas requires careful consideration, ensuring that while technology aids education, it does not compromise students’ growth, security, or values.
- **Addressing Climate Change:** Research and development can enhance the effectiveness and scalability of AI-driven solutions, which will unlock new pathways for addressing climate change challenges and fostering sustainability on a global scale.
- **Encouraging Interdisciplinary Research:** To overcome these barriers, it is necessary to strengthen cooperation between AI tool developers and learning experts, as well as to encourage interdisciplinary research involving the social sciences and humanities.
- **Deweaponization of AI-** Policymakers, security experts, and organizations are actively working to address these evolving threats and mitigate their impact on global security.

- **Eliminating Fear:** AI can perform many routine functions, freeing up teachers to tackle more complex tasks and interact more deeply with students. The elimination of fear is required as AI would support teachers but not replace them.

## Conclusion

In conclusion, Artificial intelligence is the transformative force with immense potential to revolutionize nearly every aspect of human life. The “good AI” determines progress and solves challenges in fields like healthcare, agriculture, education, environmental protection etc. However, the “bad AI” highlights the biases, privacy concerns, misinformation, and over-reliance that have the potential to diminish trust and erode human connections. Most concerning is the “ugly AI” where the ethical dimensions becomes urgent concerns because its misuse or lack of control will lead to threats, risking human security, human rights, or even human life.

In the words of Stephen Hawking, “*Success in creating AI would be the biggest event in human history. Unfortunately, it might also be the last, unless we learn how to avoid the risks.*” This perspective determines the need to strike a balance between the potential benefits of AI and its potential drawbacks while mitigating the risks of AI. The best path forward will be a balanced approach of placing the warmth, creativity, and empathy of humans at the centre of AI, to empower humanity towards more equitable and sustainable future. The comprehensive frameworks for the ethical use of AI, clearer policies on data privacy, and prioritizing transparency and accountability are all significant components of responsible use of AI.

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# Indian Agriculture: A Legacy of Innovation and Resilience

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**R Selvam (IAS), Executive Director, Council for Leather Exports, Chennai delivered the Convocation Address at the 45<sup>th</sup> Convocation Ceremony at the Tamil Nadu Agricultural University, Coimbatore from March 25, 2025. He said, “You possess something powerful: fresh ideas, new energy, unlimited potential. Every expert was once a beginner. Every leader starts at the bottom. Every success story begins with a challenge. The challenges before you are immense, but so is your potential. Dream boldly, face fears courageously, and persevere ruthlessly. This is how you’ll build the *Viksit Bharat 2047*, as envisioned by our Hon’ble Prime Minister.” Excerpts**

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Standing before you today as a proud alumnus, I am truly honoured to deliver the 45<sup>th</sup> commencement speech at this prestigious institution, which nurtured my academic journey and shaped my career.

Congratulations to each of you on your graduation! Today marks the beginning of an exciting new chapter in your lives. As you sit here in your graduation regalia, you inherit the legacy of an institution that has been pivotal in transforming Indian agriculture for 124 years.

Tamil Nadu Agricultural University (TNAU) stands for education, research, and extension, and it is an epicentre for innovation and genetic improvement of crops. With 948 developed crop varieties, 1,500 farming technologies, and 165 implements, TNAU plays a crucial role in feeding our nation. Varieties like CO 51 rice, COHM 8 Maize, PKM 1 Moringa and CO (BN) 5 forage grass are prime examples of how this university has revolutionized Indian agriculture. This university is at the forefront of innovation, employing drones, nanotechnology, and remote sensing, and also connecting farmers through Farmer’s Producers Organization. These technologies, empowered the state to receive “Krishi Karman Award” from GoI for 5 times in the past 8 years. Initiatives like One Student One Farm Family and six agribusiness incubation centres showcase, why TNAU is a model for agricultural universities across the country. This institution does not merely teach agriculture it transforms it.

Look around you. Among your classmates are future leaders, architects of Nations’ food security, policymakers, innovators, researchers, educators, and changemakers. There are many ways, but the foundation you’ve built here is unshakable.

## **Visionaries, Who Defied the Impossible**

As you step into the world beyond these halls, I want to share stories of individuals, who revolutionized agriculture against daunting odds.

In 1798, Thomas Malthus argued that the population would inevitably outgrow the food supply, leading to widespread famine. A century later, William Crookes foresaw European starvation as fertilizer sources decreased. By the 1960s, Paul and Anne Ehrlich declared, “the battle to feed humanity is over” in “The Population Bomb,” advocating population control measures that left painful scars on India’s history.

Yet, while the pessimists preached doom, visionaries created abundance. The Haber-Bosch process transformed agriculture by providing abundant nitrogen fertilizers, unlocking unprecedented crop yields. Science responded to desperation with innovation.

Consider Norman Borlaug. Born to humble Iowa farmers. Initially rejected by the University of Minnesota, this stubborn farm boy worked his way through college during the Depression, studying plant pathology.

In the muddy fields of Mexico in 1944, he hand-pollinated wheat, dismissed by local farmers. With minimal resources, he confronted wheat rust disease - considered unconquerable. Fellow scientists mocked his “shuttle breeding technique” for developing wheat varieties, in half the normal time.

Borlaug’s breakthrough came during the 1965 India-Pakistan War, when food shortages loomed large. He convinced both nations to adopt his drought-resistant, high-yielding wheat varieties with his observation that, “You can’t build peace on empty stomachs”.

When the Nobel Committee called him in 1970, they found a mud-covered man in a field, who thought their call was a prank. His work tripled wheat yields and saved a billion lives from famine.

“I’ve worked myself near to death,” later Borlaug recalled, “hunched over in the blazing sun... up to my

knees in mud.” For 16 years, he slept on a cot in fields, hand-pollinated thousands of wheat plants, and battled tropical diseases.

Borlaug’s legacy is not just in agricultural science but in the unwavering belief that science, persistence, and courage can overcome humanity’s greatest challenges.

Then there is M.S. Swaminathan, the man who fed India. After witnessing the Bengal Famine of 1943 and studying genetics at Cambridge, he dedicated his life to fighting hunger. When experts predicted inevitable starvation, Swaminathan proved them wrong by adapting high-yielding wheat varieties to Indian conditions and convincing farmers to adopt new methods. His holistic approach doubled India’s wheat production in just a decade, transforming the nation from food dependency to self-sufficiency. He also pioneered ‘Sustainable Evergreen Agricultural revolution’ to change the destiny of our nation.

His life’s work demonstrates how science, driven by compassion, can change the destiny of nations.

### **The Revolution in Indian Agriculture**

India’s agriculture is poised for revolutionary change today. Our vision now reaches beyond traditional food security to focus on farmer prosperity, doubling farmers’ income, sustainability, and technological innovation. Through initiatives like “*Prime Minister Dhan-Dhaanya Krishi Yojana*”, we aim to uplift 100 low-productivity districts and benefit 17 millions of farmers.

Quality seeds and judicious use of fertilizers remain foundational. “As you sow, so shall you reap” this ancient wisdom guides our modern innovations, like Urea Gold, with sulphur for enhanced nutrient uptake, balancing productivity with sustainability.

Climate-resilient agriculture is imperative. The “National Mission on Natural Farming & Sustainable Agriculture” is pioneering strategies to enhance water use efficiency, improving soil health and promote organic farming, mobilizing 25 millions of farmers toward sustainable practices under the *Paramparagat Krishi Vikas Yojana*.

Digital transformation is reshaping agriculture. The Agristack initiative is creating a digital backbone through farmers’ registries, geo-referenced village maps, and digital crop surveys. Tamil Nadu leads the nation in this effort, with over 80% of land parcels registered during Rabi 2024 achieved by our students.

The market linkages through e-NAM empower nearly 2 crore farmers and over 2.5 lakh traders.

The rise of agri- startups nearly 2,800 recognized by Startup India reflects the innovation potential that lies within your generation.

### **Three Principles for Your Journey**

Yet, a monumental challenge persists: by 2050, global food demand will surge by 70% to feed 10 billion people, while one-tenth of humanity remains hungry.

Remember this truth: when you improve a seed, you change a nation. When you transform a farming practice, you nourish generations.

As you prepare to write your own story and transform society, I urge you to follow these principles:

#### **First: Dream Big**

Each morning, when a young newspaper seller walked along the seashore, he didn’t just see his small town he saw possibilities. While others saw a poor boy from a boat owner’s family, he saw a future scientist. That young newspaper seller became India’s ‘Missile Man.’ Yes Dr. A.P.J. Abdul Kalam the then People’s President, often said, “Dreams are not what you see in sleep, they are the things that don’t let you sleep.”

Today, as you sit in your graduation robes, ask yourself: What dreams keep you awake at night? What vision of tomorrow makes your heart race? Because that’s your fire, that’s your calling.

Remember, Dr. Kalam didn’t just dream he worked tirelessly to turn those dreams into reality. Your dreams might seem impossible today, just as the presidency might have seemed impossible to a young newspaper seller.

But dream anyway. Dream bigger. And most importantly, let those dreams drive you to action. Like Kalam, don’t let your circumstances define your destiny. Let your dreams define it.

#### **Second: Have the Courage to Face Fear**

In 1933, as the Great Depression ruined America, banks were closing, people were losing jobs, and hope was fading. In this darkest time, a new president stood to speak. Franklin Delano Roosevelt said words that still echoes today: “The only thing we have to fear is fear itself.”

What makes these words powerful is that Roosevelt knew fear firsthand. At age 39, polio struck him. Doctors said he would never walk again. But he refused to let fear win. Every morning, he spent hours strengthening his upper body. He learned to “walk”

using heavy metal braces and canes. Each step was a battle, each movement required incredible strength, but he kept going. You'll face your own fears: research challenges, failed experiments, competitive exams, professional setbacks, and personal struggles. Roosevelt teaches us three powerful lessons about confronting fear:

Fear grows when we run from it. It shrinks when we face it. Hence Face it.

Small victories build courage. Celebrate each step forward.

Your struggles can become your strength. It will help you to understand people's pain.

Every failure is a new learning opportunity. Correct it and proceed until your dream becomes reality. Be optimistic. Focus on practical solutions. Transform fear into constructive action.

### **Third: The Power of Perseverance**

Allow me to share a final story this is your story too. one that resonates deeply with our roots. Picture a remote village in Tamil Nadu four decades ago, devoid of roads, electricity, phones, or even clean drinking water. In this arid land, the sounds of cattle and rural life fill the air.

Born into a farming family, this young boy attended the local Government Middle School. Each morning, he toiled in the agricultural fields with his father before school. His hands are hardened from farm work, but his mind searches for knowledge. He studied under the dim glow of a kerosene lamp.

Having failed to write English alphabets, Don Bosco Higher Secondary School initially refused to admit him. In 10th grade, when he failed in English in his quarterly exams, his classmates laughed. With each humiliation and rejection, he refused to stay buried, pushing like a germinating seed-breaking hard soil toward sunlight. His dreams of becoming a doctor were shattered, and he was admitted to the Agriculture University only in the fourth round of counselling, being the first graduate from his family. Private companies refused to employ him. He failed to secure admission to pursue a Ph.D. In each rejection, he worked harder.

He joined as an Agriculture officer in the state department, where a friend motivated him to appear for civil services exams at age 26. He failed in the Prelims. He tried again and failed in the interview. In the next attempt he was selected for the Indian Railway Traffic Service. He also failed in Indian Forest Service exams four times. But like a mountain climber who can see the peak, he knows he hasn't reached his ultimate goal.

In his fourth attempt, he failed in the Prelims itself. His determination grew stronger with each failure. After five years of struggle, he finally entered into the IAS. His journey transformed every stumbling block into a stepping stone, proving dreams don't see the social status, educational background, or past failures only the fire of determination and persistent effort.

The boy from that small village, who failed to write English alphabets, who faced rejection after rejection, who refused to let destiny write his story, stands before you today as an IAS officer delivering this commencement speech.

This story speaks to every dreamer: "Yes We Can Do it".

No dream is too big, no obstacle too formidable, and no destiny too rigid for someone willing to put in a ceaseless, determined effort. Your persistence is more powerful than any destiny.

As Thirukural states:

**"தெய்வத்தான் ஆகாது எனினும், முயற்சிதன் மெய்வருத்தக் கூலி தரும்."**

Hard work and perseverance will certainly bear fruit, proportional to the effort invested.

### **Your Sacred Calling**

Graduates of 2025, you must make a meaningful contribution to the world. Artificial intelligence, climate challenges, hungry & thirsty soils, diminishing returns, technology fatigue, pest incidences, growing disparity between farm and non-farm income, and socioeconomic inequality persist and grow.

The challenges before you are immense, but so is your potential. Dream boldly, face fears courageously, and persevere ruthlessly. This is how you'll build the *Viksit Bharat 2047*, as envisioned by our Hon'ble Prime Minister.

You possess something powerful: fresh ideas, new energy, unlimited potential. Every expert was once a beginner. Every leader starts at the bottom. Every success story begins with a challenge.

As you step into the world, remember that you are equipped with knowledge, passion, and the legacy of TNAU. Transform the future of agriculture, innovate, and inspire those around you. And also ensure no child knows hunger, no farmer faces ruin and no soil loses vitality. The journey ahead is yours make it extraordinary.

Your future is waiting. Your dreams are possible. Your time is now.

Thank you. Congratulations, Class of 2025! □

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## CAMPUS NEWS

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### Research Methodology Course

A ten-day Research Methodology Course was organised by the Department of Teacher Education, Nagaland University, Kohima Campus for Research Scholars. The event was sponsored by the Indian Council for Social Science Research (ICSSR), Shillong. The Inaugural Session was graced by the Prof, G T Thong, Pro Vice Chancellor, Kohima campus as a Chief Guest, Prof. Ramesh C Patel, Vice Chancellor, Indian Institute of Teacher Education (IITE), Gujrat as a Guest of Honour, Prof. G N Tiwari, Head of the Department, and Prof. P K Pattnaik, Course Director.

In his address, Prof. Ramesh C Patel, Vice Chancellor, Indian Institute of Teacher Education (IITE), Gujarat highlighted the expectation from the young researcher at the juncture of 100 years of Independent India (1947 to 2047). He urged the participants that special emphasis should be placed on basic understanding of research knowledge and practices in research, like sampling frame, research question, research objectives, etc. Prof. Patel also emphasized the intellectual honesty in research as it is the need of the hour in this era of artificial intelligence. Further, he elaborated that knowledge and understanding in research will ultimately influence policy-making and teacher education practices in India as well as in Nagaland.

Prof. Gyanendra Nath Tiwari, Head of the Department, in his welcome address, highlighted the significance of research methodology in academic and professional growth. Prof Tiwari emphasized the role of rigorous research practices in contributing to educational reforms and policy development, particularly in the context of teacher education. The background note of the Course was delivered by the Workshop Director, Prof. P K Pattnaik. He briefly elaborated on the need and importance of the research course and detailed all topics that will be covered by various resource persons from all over the country.

The Chief Guest, Prof., G T Thong, Pro Vice Chancellor elaborated on the importance of the scientific process of research in educational research. Besides this, he appreciated the efforts of the organisers to organize this coursework for the young research scholar so that they have the opportunity to learn new things.

The session was concluded with a formal Vote of Thanks by Dr. Sushil Kumar Singh, Associate Professor, Department of Teacher Education, Nagaland University, who acknowledged the presence of all dignitaries, resource persons, faculty members, and participants of the Course. Special appreciation was extended to the organizing team for their efforts in coordinating the event and to the participants for their enthusiastic involvement. The session was chaired by Dr. Seema R Thappa, Assistant Professor, Department of Teacher Education, Nagaland University. Further, the two technical sessions had been held. One session was taken up by Prof B C Mohapatra, Central University of Rajasthan on 'Research Trends in Social Sciences', and in the second session, Prof. Lungsang Zeliang, Department of Education, Nagaland University, discussed the 'Attributes and Pitfalls in Research' with the participants. The Technical Sessions were chaired by Dr. Neha Rawat, Assistant Professor, Department of Teacher Education, Nagaland University.

The Resource Person, Prof. P K Acharya, Head, Department of Education, Rajiv Gandhi University, Arunachal Pradesh deliberated on the topic 'Types and Steps in Research Process'. Prof. Acharya elaborated on sources of knowledge, classification of research, and steps for conducting the research process in social sciences. He also made a critical reflection on differentiating the qualitative and quantitative research approaches.

Prof. Shitaljit Singh, Head, Department of Teacher Education, Manipur University, discussed the sampling techniques. He stressed more on the importance of sampling techniques in the field of research, especially in the field of social science research. He pointed out that sampling techniques cannot be ignored or neglected in the research process. Prof. Singh also elaborated that sampling is a process used in statistical analysis in which a predetermined number of observations are taken from a larger population. He tried to differentiate the probability sampling with non-probability sampling by citing different examples in the field of social science.

Dr. Rashmi, Assistant Professor, Department of Teacher Education, Nagaland University chaired the next session. Prof. Anju Verma, Professor, Department of Teacher Education, Nagaland

University was the resource person for the 1<sup>st</sup> session. She elaborated on the topic 'Methods and Techniques of Data Collection'. She comprehensively gave her deliberations on various types of primary and secondary sources of data. Besides this, she also made the participants aware of the methods of collecting data from primary as well as secondary sources.

Prof. J N Baliya, Central University of Jammu, discussed the Observation and Questionnaire as an Effective Tool of Research'. In his deliberation, he explained the types of observation and steps for conducting observation in the process of research. Furthermore, he illustrated the criteria for framing a good questionnaire. The session ended with the question-answer round.

Dr. T Yolila Sangtam, Assistant Professor, Department of Teacher Education chaired the next sessions. Dr. Thiyagu, Associate Professor, Department of Teacher Education, Central University of Karnataka, took his deliberations on 'Measurement, Scaling and Data Analysis'. He explained the concepts with the help of practical and real-life examples. Moreover, Prof. Thiyagu explained the difference between a psychological variable and a physical variable. The session is followed by the assessment for the learning process through the booklet assessment tool.

Prof. Nityananda Pradhan, NCERT, discussed the 'Qualitative Research including Ethnographic and Phenomenological Perspective'. He elaborated on the key difference between the qualitative and quantitative approaches of research. Prof. Pradhan illustrated some of the common quantitative study designs, main features of qualitative research, and trustworthiness of qualitative data. Prof. Pradhan later on discussed the purpose of qualitative research, the format for qualitative research, data analysis to be adopted along with findings and results.

Prof. Parsenjit Pal, Assistant Professor, Department of Teacher Education, Nagaland University was the chair of the next session. Prof. Harish Kumar, Dean and Head, Faculty of Education, Amity University, Noida took the session on 'Testing of the Hypotheses (Parametric and Non-Parametric Tests). In his session, he comprehensively gave different types of tests with examples in a very effective way. Dr. Kumar provided in-depth insights into hypothesis testing, explaining its significance in research. He elaborated on parametric tests such as the t-test, ANOVA, Pearson's correlation, and

regression analysis, along with non-parametric tests like the Chi-square test, Mann-Whitney U test, and Kruskal-Wallis's test. Participants were given hands-on experience in applying these statistical techniques.

Prof. Sambit K Padhi, Head, Department of Education, Guru Gasidas Vishwavidalaya, interacted with the participants on the Research Methods and Approaches (Experimental and Descriptive). Prof. Padhi's session integrated both a practical and theoretical approach while explaining so many relevant correlations in descriptive research. In Descriptive Research: Methods such as surveys, case studies, observational studies, and content analysis were explained, emphasizing their role in analysing real-world phenomena without manipulation. The session covered variables, control groups, randomization, and hypothesis testing, highlighting the importance of maintaining validity and reliability in research. The online session, attended by participants from various institutions, was interactive and engaging. Prof. Padhi shared practical examples, guiding researchers on selecting appropriate methodologies for their studies. Participants appreciated the opportunity to connect with experts virtually, making the workshop more accessible and enriching.

Prof. Anju Verma, Department of Teacher Education, Nagaland University chaired the sessions of the next day. The first session was taken by Dr. Chanlang Ki Bareh, Deputy Librarian, Nagaland University, who spoke on 'Library Resources for Research'. Dr. Bareh, in his deliberations, talked about various applications and tricks to get the review for the research in a more refined way. Besides this, he also demonstrated some applications for reviewing research literature more effectively. Some of the concerns were, 'What are the most reliable data sources/database', 'Misinformed/disinformed sources and Predatory publishing', etc. The speaker went on to talk about the functions of libraries, which consist of selection criteria, procurement, organization, training, accessibility, assessment and decision. The speaker then talked about the types of Reading materials (literature), which consist of Information Sources that are divided into Documentary and non-documentary services. The speaker discussed framework models to frame research questions such as PEO (Population-Problem, Exposure, Outcome), SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research Type), etc. There was then an elaborate instruction on using the

SPIDER framework. There was a brief explanation on using the right keywords, and there was then a demonstration of the Boolean Operators, which was explained using a live demonstration. The session then moved to the topic of advanced Searches, which involves the usage of Truncation, wildcards and quotation marks and proximity.

Prof. Yukti Sharma, Department of Education, University of Delhi, Delhi, took her session on 'Research Report Writing and Referencing'. Prof. Sharma elaborated on types of academic reports. She also explained how a researcher should structure his/her research report. The discussion then came to the Research Report Structure, consisting of introduction and problem statement, literature review, methodology, results and analysis, discussion, conclusions and recommendations, and appendices. The speaker then talked of the key elements of an introduction while writing the report of research. Then, there was a detailed and elaborate discussion on all the processes involved in a Literature Review, where the speaker also gave the steps to successfully doing a literature review. Prof. Sharma came to the ethical considerations where the speaker talked of where ethics matter such as in Writing and Dissemination, Data analysis, Problem Selection and Data collection. The speaker then talked of the major types of Research, which are Qualitative, Quantitative, and Mixed Methods Research. The discussion next focused on the key components of the Research Design and Research Method Section. Then the session was followed by Queries related to the discussed concept.

Dr. Sushil Kumar Singh, Associate Professor, Department of Teacher Education, NU chaired the sessions of the next day. The first session was taken by Prof. S C Subudhi, Head, Department of Education, NEHU, Tura Campus, on 'Tool Development in the Research'. During his lecture, Prof. Subudhi elaborated on the need and importance of tools in the process of research. He also talked about the steps for the item analysis for constructing tools during the research work. Prof. Subudhi elucidated how to select domains, constructs, and indicators for item Construction in tool development. Besides this, he also detailed various methods for conducting validity and reliability testing of a tool. The session was concluded with the assessment of the learning among the participants.

Whereas, Prof. Yogendra Pandey, Banaras Hindu University, Varanasi took his session on

a very pertinent issue that is Plagiarism, Ethics and Copyright Issues in Research. Prof. Pandey defined plagiarism as the unethical practice of using someone else's work, ideas, or words without proper acknowledgment. Prof. Pandey cited various examples while discussing different types of plagiarism in research work. Prof. Pandey talked about some of the consequences of plagiarism, various applications for plagiarism Detection & Prevention. The session was concluded with a round of question hour, allowing participants to engage further with the topic.

Dr. Surendra Yadav, Assistant Professor, Department of Teacher Education, Nagaland University, was the chairperson of the proceeding sessions of the day. Prof. S C Subudhi, NEHU took the session on 'Descriptive Statistics, Correlation and Regression'. While delivering his lecture, he explained different descriptive tests, different types of correlations, and the regression equation for the data in social sciences. Apart from this, Prof. Subudhi explained the manual calculation of the partial correlations and the applications of these statistics in social sciences.

Prof. G N Tiwari was the Resource Person for the second session, and he demonstrated the SPSS for doing the calculation of the data in the social sciences. The session focused on 'Data Analysis through SPSS', providing participants with hands-on knowledge of statistical techniques using SPSS software. Prof. Tiwari covered key aspects such as Introduction to SPSS, an overview of its features and applications in research. Participants across the country experienced hands-on training sessions using SPSS software by applying independent t-test, Paired t-test, ANOVA, Pearson's correlation, Chi Square Test, Mann Whitney Test, Kruskal Test. Interpretation of outputs, understanding statistical results for academic research were emphasized. The interactive session allowed participants to clarify doubts, engage in live demonstrations, and gain practical insights into data analysis. Prof. Tiwari emphasized the significance of accurate data interpretation and the role of SPSS in simplifying complex statistical calculations. The Department of Teacher Education extended its gratitude for supporting the initiative and to Prof. G.N. Tiwari for sharing his expertise.

Dr. Neha Rawat was the chairperson on the next day. Prof. V P Joshith, Central University of Kerala took his session on 'Academic Writing by Using Technological Tools'. In his deliberations, he talked about various Models to be followed for

Bibliometric Analysis and SLR Technique. Later on, he gave hands-on practice related to the usage and application of these techniques. In this session, the speaker also shed light in detail on bibliometric and systematic literature review (SLR) frameworks that are essential for research scholars. It was emphasized that the significance of citation counts, noting that Scopus articles typically receive an average of 250-300 citations. The usual word count for these articles ranges from 8,000 to 10,000 words, with designated sections such as introductions (1,000-2,500 words) and literature reviews (around 1,500 words). The PICO (Population, Intervention, Comparison, Outcome) and PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) frameworks are underscored for SLR, while the PCC (Population, Concept, Context) framework, along with specific models like PRISMA discussed in the context of scoping reviews. The speaker emphasized the importance of Utilizing software such as VOSviewer or Citespace to perform bibliometric analysis. He also suggested and encouraged the participants to begin writing and submitting research articles, aiming to have at least 3-5 articles published by the end of the first year of their research period. A demonstration on how to export data to CSV and Excel was provided. Various models, including TAM and SRMR, were discussed, particularly concerning structural equation modeling (SEM) and its intricacies. The significance of aligning theoretical models with data using tools like Amos and Smart PLS was underscored, along with the necessity for thorough data analysis and compliance with publication standards.

In the second session, Prof. Laxmidhar Behera, Head, Department of Education, RIE, Bhuvneshwar, NCERT, talked about the Professional Writing and Publication Skills: From Researcher to Author. Prof. Behera discussed dos and don'ts of writing a research paper for reputed journals. He also explained various key aspects of the research paper. Then the speaker went on to talk about the essential writing and publication skills which included topics such as Paper Writing Skill For Publication in Journal, Paper Writing Skill For Seminar/Conference Presentation, In-Text Citation Skills, Referencing Style Skills, Similarity Index, Plagiarism Detection Software, Analysis Of Academic Integrity Regulation 2018, How to Minimize Similarity Index, Impact Factor, Skills To Find Journals In Scopus, Web Of Science Database, Exploring In Online Resources. Prof.

Behera also answered various questions of the participants regarding writing a research paper.

The Valedictory Session was graced by the Chief Guest, Prof. Bhagirathi Panda, Director, ICSSR, NERC, Shillong, Prof. G N Tiwari, Head, Department of Teacher Education, Nagaland University, and Prof. P K Pattnaik, Course Director, Nagaland University. Dr. Yolilla T Sangtam was the Chairperson for the valedictory programme of the event. Prof. Panda blessed the participants and appreciated the efforts of the organisers and blessed the participants for their future endeavours in the research context in different fields and subjects. Prof Panda emphasized that if research work remains in the theses and dissertation, then it is of no use; we should publish it in the public domain for implementation in society. He further elaborated that the promotion of multidisciplinary efforts in the field of social sciences so that there is a connection between theory and practice. He also emphasised recommendations of NEP-2020, which support the promotion of critical thinking and contestation among the learners towards research. Prof. G N Tiwari, Head, Department of Teacher Education, in his welcome address, learning is not confined only to these ten days of this research methodology course, it will help develop a spark to do the research. Dr. Seema Rani Thappa, Course Co-Director, detailed about the whole report of different sessions in this ten-day Research Methodology Course. She also told that in this course different resource persons across the country of National and International repute had delivered the talk. Prof. P K Pattnaik, Course Director, proposed the formal Vote of Thanks to all the dignitaries, participants and organising team for making this event happen.

### **International Conference on Sustainable Management Strategies**

A three-day International Conference on 'Sustainable Management Strategies for India's Future' is being jointly organized by the IIM Kashipur, Uttarakhand and Brunel University of London from May 09-11, 2025. The event aims to provide a comprehensive understanding of how traditional wisdom and modern practices can converge to create innovative and sustainable business solutions for India of tomorrow.

India's growth story is a remarkable journey of economic transformation and resilience. Over the past few decades, India has emerged as one of the world's

fastest-growing major economies. Today, India is the fifth-largest economy in the world and aspires to grow further. The road ahead has its challenges and opportunities. This event aims to bring together thought leaders, academicians, and industry experts to explore the management contribution and insights for the Future of India. The Tracks of the event are:

***Track 1: Indian Knowledge Systems and Values: Applications in Management***

- Indian Management Thoughts.
- Indian Psychology.
- Indian Mindset and Its Implications for Management.
- Indian Values and Ethos.
- Indian Values and Ecology.
- Psychological Wellbeing and Interventions.
  - i. Yoga.
  - ii. Meditation.
  - iii. Vipassana.
- Yoga and Management.
- Spirituality and Leadership.
- Spirituality at Workplace.
- Stress Management and Interventions.
  - i. Ayurveda.
  - ii. Meditation.
  - iii. Vipassana.
  - iv. Yoga.
- Digital Addiction and Indian Interventions.
- Positive Organizational Psychology.
- Indigenous Management Practices.

***Track 2: Sustainability in Business***

- Sustainable Finance.
- Sustainability Reporting.
- Pro-Environmental Behaviours.
- Sustainable HRM.
- Corporate Sustainability.
- Strategies for Sustainability in VUCA World.
- Green Innovation.
- Frugal Innovation and Sustainability.
- Green Marketing.
- Sustainable Consumption.

- Frugal Purchase and Consumption.
- Buying Local, Regional, and Seasonal Products.
- Shifting Towards Planet-Based Diets.
- Sustainable Procurement.
- Green Operations and Supply Chain Management.
- Circular Economy.
- Sustainable Production.
- Sustainable Project Management.
- Green Healthcare.
- Decarbonisation and Net Zero.
- Sustainable and Natural Resource Management.

***Track 3: Marketing Management***

- Cultural Tourism and Marketing.
- Medical Tourism and Marketing.
- Healthcare Tourism and Marketing.
- Wellness Tourism and Marketing.
- Transformative Service Research.
- Brand Building and Brand Equity.
- Consumer Behaviour.
- Rural Marketing.

***Track 4: Performance Management***

- Healthcare Efficiency.
- Agriculture Efficiency.
- Banking Efficiency.
- Logistics and Supply Chain Efficiency.
- Performance Management of Employees.
- Technical, Environmental, Revenue, Profit Efficiencies of Groups/Firms/Cities/Districts/Countries.
- Ranking of Groups/Firms/Cities/Districts/Countries.
- Performance of Groups/Firms/Cities/Districts/Countries in Uncertain Environment.
- Productivity Change Over Periods.
- Natural Resource Utilisation Efficiency.

For further details, contact Organising Secretary, Indian Institute of Management Kashipur, Kundeshwari, Kashipur, U S Nagar, Uttarakhand, Mobile No: 07088270882 / 07900444090,91,92,93, 501, 633, 508, E-mail: [smsifconf@iimkashipur.ac.in](mailto:smsifconf@iimkashipur.ac.in).

For updaters, log on to: <https://www.iimkashipur.ac.in/smsif>

### **International Conference on Waste Management**

A two-day International Conference on 'Waste Management' is being organized by the Waste Management Research Group, Department of Civil Engineering and School of Agro and Rural Technology, Indian Institute of Technology, Guwahati, Assam from June 05-06, 2025. The event aims to bring together all the researchers, scientists, professionals, industry personnel, and citizens to bridge the gap between research and practice. It will provide an excellent platform for discussing and sharing ideas, methods, and approaches for effective waste management, emphasising the core issues of solid waste management, water, and wastewater. The topics of the event are:

- Waste Management Policies and its Legislation.
- Generation, Collection, Storage and Transportation of Solid Waste.
- Biological Treatment and Energy Production.
- Thermal Treatment and Advanced Technologies.
- Reduce, Reuse, Recycle, Remediation Concepts and Implementation Strategies.
- Wastewater Treatment and Reuse.
- Landfilling.
- Microplastics and Contaminants of Emerging Concern.
- Circular Economy and Implementation Strategies.
- Any Other Issues in Waste Management.

For further details, Prof Ajay S Kalamdhad, Department of Civil Engineering, Indian Institute of Technology (IIT) Guwahati, Assam–781039. Contact No: 09394157796 / 09395369217 /07999728066, E-mail: [recycle2k25@iitg.ac.in](mailto:recycle2k25@iitg.ac.in) / [recycle2k25@gmail.com](mailto:recycle2k25@gmail.com). For updates, log on to: [www.iitg.ac.in/events/](http://www.iitg.ac.in/events/)

### **Short-term Training Programme on Advances in Material Processing and Design**

A five-day Online Short-term Training Programme on 'Advances in Material Processing and Design' is being organized by the Department of Mechanical Engineering, Sardar Vallabhbhai National Institute of Technology, Surat, Gujarat from April 28 – May 02, 2025. It aims to provide a platform in which participants get knowledge about the advanced materials and design of machine elements as well as its industrial applications. It will help to bridge the gap between theory and its real application in industry. This program is interdisciplinary in nature, so faculty members, research scholars and PG students from all backgrounds of engineering, mathematics, and basic sciences may participate in the event. Scientists who are working in the R&D organizations/ Industry persons may also participate. The objectives of the event are to provide a platform for interaction and exchange of ideas in the field of Advances in materials processing and its applications from national academic institutes, research laboratories, and relevant industries. The Topics of the event are:

- Advanced Material Processing Techniques.
- Stir Casting Process for Composites.
- Tribological Behaviour of Composites.
- Advanced Materials.
- Advanced Coating Materials.
- Composite Materials.
- Advanced Material Characterization Techniques.
- Theories on Friction and Wear.
- Hydrodynamic and Hydrostatic Bearing Design.
- Rolling Element Bearing.
- Bearing Failure Analysis.
- Vibration Analysis.
- Nanolubricants.

For further details, contact Chairman, Dr A A Shaikh, Head, Department of Mechanical Engineering, Sardar Vallabhbhai National Institute of Technology, Surat-395007, Gujarat. Contact Nos are 097273 37702 / 094289 71929 /097234 55853. For updates, log on to : [www.svnit.ac.in/events/](http://www.svnit.ac.in/events/) □

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# THESES OF THE MONTH

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## SOCIAL SCIENCES

A List of doctoral theses accepted by Indian Universities  
(Notifications received in AIU during the month of February- March, 2025)

### Business Administration

1. Singh, Aishwarya. **Study on maritime tourism destinations of India: A blue economy perspective.** Department of Business Administration, Hindustan Institute of Technology & Science, Chennai.

### Commerce

1. Divya. **Impact of cyberloafing on employee behaviour and productivity.** (Dr. Mahabir Narwal), Department of Commerce, Kurukshetra University, Kurukshetra.
2. Goel, Shashi. **Analysis of financial performance through principal component analysis: A case study of selected logistics companies in India.** (Dr. Shweta Gupta), Department of Commerce, IIS University, Jaipur.
3. Jain, Priya. **Hoteliers GST perception in golden triangle of India.** (Prof. MK Sharma and Dr. Shweta Gupta), Department of Commerce, IIS University, Jaipur.
4. Malviya, Saloni. **A study on behavioral factors influencing individual's investment decision-making in Madhya Pradesh with reference to Indore City.** (Dr. Anupama Pardeshi), Faculty of Commerce, Medi-Caps University, Rau, Indore.
5. Midha, Sheenam. **Behavioural biases in the investment decisions of investors in Rajasthan: A comparative study on the basis of gender.** (Dr. Ruchi Jain), Department of Commerce, IIS University, Jaipur.
6. Panigrahi, Anwesweta. **Analyzing the link between employee engagement, organizational citizenship behaviour and life satisfaction in banking industry.** (Dr. Arya Kumar), Department of Commerce, Kalinga Institute of Industrial Technology, Bhubaneswar.
7. Priti. **A comparative study on e-banking services and customer satisfaction with reference to selected public sector and private sector banks in Jind District, Haryana.** (Dr. Tanveer Ahmad Dar), Department of Commerce, Bhagwant University, Ajmer.

8. Shekhawat, Rajshree. **Examining the relationship among governance, liquidity and profitability: Indian evidence.** (Dr. Preeti Sharma), Department of Commerce, IIS University, Jaipur.
9. Verma, Devendra. **Analysis of financial and social performance of microfinance institutions: Special reference to Madhya Pradesh.** (Dr. Anupama Pardeshi), Faculty of Commerce, Medi-Caps University, Rau, Indore.

### Education

1. Bharati, Aishorya. **Effect of critical pedagogical approach on critical thinking skills, metacognition skills and academic performance of secondary school students.** (Dr. Nisanth P M), Department of Education, Rajiv Gandhi University, Itanagar.
2. Borah, Prachurjya. **Growth mindset of higher secondary students and its relation to self-efficacy, psychological well-being and school engagement.** (Dr. Nisanth P M), Department of Education, Rajiv Gandhi University, Itanagar.
3. Parmar, Heena Rameshbhai. **A study of emotional intelligence upper primary school teachers in contest to their intelligence and educational qualification.** (Dr. Aartibahen Patel), Department of Education, Gujarat Vidyapith, Ahmedabad.
4. Sandeep Kumar. **Academic achievement, stress and happiness of secondary school students in relation to their academic procrastination.** (Dr. Amisha Singh), Department of Education, Kurukshetra University, Kurukshetra.
5. Shah, Sunil Kumar Revabhai. **Construction and effectiveness of e-content for environment education.** (Dr. Ashok Parmar), Department of Education, Gujarat Vidyapith, Ahmedabad.
6. Singh, Akhil Kumar. **Madhyamik istar ke vidhyarthiyoan kee aavato kee alochnatamak adhyayan, Jila Gazipur ke vishesh sandarbh mein ek adhyayan.** (Dr. Neeru Verma and Dr. S P Tripathi), Department of Education, Bhagwant University, Ajmer.

7. Toral, Prafulchandra Panchal. **Construction and validation of activity-package for panchkoshatmak development of children of pre-primary education.** (Dr. Sitaram P Deshmukh), Department of Education, Gujarat Vidyapith, Ahmedabad.
9. Singh, Shweta. **A critical study of child trafficking in Meerut Division.** (Dr. Seema Modi), School of Law and Constitutional Studies, Shobhit Institute of Engineering & Technology, Meerut.

#### Journalism & Mass Communication

1. Mishra, Atul Kumar. **Impact of media on voter's decision making process: A study.** (Dr. Bindu Sharma), Department of Journalism & Mass Communication, Kurukshetra University, Kurukshetra.

#### Law

1. Agarwal, Vikas. **Critical analysis of recovery laws of debts in banking sector in India.** (Dr. Priya Jain), Faculty of Juridical Sciences, Rama University, Kanpur.
2. Baig, Tabassum. **Secularism as a core of human rights: A critical study with special reference to Islamic Jurisprudence.** (Dr. Mohd Imran), Department of Law, Shobhit Institute of Engineering & Technology, Meerut.
3. Deep Shikha. **Different vicissitudes of the Right to Privacy: A critical study.** (Dr. Amit Ludri), Department of Law, Kurukshetra University, Kurukshetra.
4. Karthik, A. **A study on cybercrime, legislation and faceless financial crimes in cyberspace with a special emphasis on the role of Tamil Nadu police.** School of Law, Hindustan Institute of Technology & Science, Chennai.
5. Mishra, Amrita. **Protection of Odisha handloom sector under Intellectual Property Rights regime: A socio-legal analysis.** (Prof Prabir Kumar Pattnaik), Department of Law, Siksha O Anusandhan University, Bhubaneswar.
6. Nectu Rani. **Law and policy related to data privacy in e-commerce: A comparative and critical study of UK and India.** (Dr. Mohd Imran), Department of Law, Shobhit Institute of Engineering & Technology, Meerut.
7. Shweta. **Trade liberalisation and environment protection: A study with reference to Cartagena Protocol on biosafety.** (Dr. Amrit Ludri), Department of Law, Kurukshetra University, Kurukshetra.
8. Singh, Bhanu Pratap. **Juvenile Delinquency in India: A socio legal study of the problems in the enforcement of the J J (C & P) Act, 2015 with special reference to Barabanki Jurisdiction.** (Dr. Rohit Prakash Singh), Department of Law, Bhagwant University, Ajmer.

10. Sirohi, Neelima. **Tracing connection between Intellectual Property Rights and competition law: With special reference to India, United States and European Union.** (Dr. Mohd Imran), Department of Law, Shobhit Institute of Engineering & Technology, Meerut.
11. Sukumaran, Aswathi. **Insider trading in India: Challenges to the contemporary corporate world- A critical study.** School of Law, Hindustan Institute of Technology & Science, Chennai.
12. Suman. **Examination of constitutional validity of anti conversion laws in India.** (Dr. Mohd Imran), Department of Law, Shobhit Institute of Engineering & Technology, Meerut.
13. Surya, K S. **Place of refuge for cargo ships in distress: Need for international concern.** School of Law, Hindustan Institute of Technology & Science, Chennai.

#### Library & Information Science

1. Ingole, Sima A. **Uses of digital resources and services in the central library of deemed universities in Maharashtra State: An evaluative study.** (Dr. Subhash Chavan), Faculty of Interdisciplinary Studies, S.N.D.T. Women's University, Mumbai.
2. Lalrokhawma. **Use and users satisfaction towards library resources and services by teachers and students of selected colleges in Mizoram: An evaluative study.** (Prof. Manoj Kumar Verma), Department of Library and Information Science, Mizoram University, Aizawl.

#### Management

1. Al-Rasbi, Ali Saud Khamis. **Strategic management for sustainable development: A study of Sultanate of Oman.** (Prof. Ashok Kumar), Department of Management, Shobhit Institute of Engineering & Technology, Meerut.
2. Jaiswal, Nitu. **A study of buying behaviour of middle class women in e-commerce.** (Dr. Anuj Goel), Department of Management, Shobhit Institute of Engineering & Technology, Meerut.
3. Mohanty, Aishwarya. **Post-purchase buying behavior of electric two-wheeler in Odisha.** (Dr. Jitendra Mohanty), Department of Management, Kalinga Institute of Industrial Technology, Bhubaneswar.

4. Mujalde, Santosh. **The impact of advancing tourism contribution to poverty reduction and development in Madhya Pradesh.** (Dr. Sunil Mishra), Faculty of Management Studies, Medi-Caps University, Rau, Indore.
5. Mungamuru, Nirmala. **Leveraging HR analytics: A study of employee Churn and retention of special education professionals.** (Dr. Pukhraj Dadhich), Department of Management, Bhagwant University, Ajmer.
6. Nair, Vinitha G. **Impact of digital currency in the financial system.** (Prof. Ankur Saxena), Faculty of Management, Medi-Caps University, Rau, Indore.
7. Rohtash Kumar. **Factors influencing organizational commitment among the faculty members in self-financed colleges.** (Dr. Manish Dhingra), Faculty of Commerce and Management, Rama University, Kanpur.
8. Saini, Tarun. **Performance evaluation of exchange traded funds in Indian stock market.** (Dr. Sudesh), Department of Management, Kurukshetra University, Kurukshetra.
9. Sharma, Sakshi. **Predicting bankruptcy using data analytics: A study of selected Indian companies.** (Dr. B S Bodla and Dr. Anil Kumar Mittal), Department of Management, Kurukshetra University, Kurukshetra.
10. Shivani. **Impact of sentiments on stock market: An empirical study.** (Dr. B S Bodla), Department of Management, Kurukshetra University, Kurukshetra.
11. Tonk, Ujjaval Kumar. **Role of e-marketing in consumer buying behavior: A study of non-durable goods in selected cities of Western U P.** (Dr. Ritika Moolchandani), Department of Management, Bhagwant University, Ajmer.

#### Physical Education & Sports

1. Patel, Kevalkumar Kantilal. **A study of the effects of specific circuit training on physical ability and skill related aspects of hockey players.** (Dr. Arvind Rami), Department of Physical Education, Gujarat Vidyapith, Ahmedabad.

#### Political Science

1. Lowang, Chalak. **Insurgency in Arunachal Pradesh: A case study of Tirap, Changlang and Longding Districts.** (Prof. P K Panigrahi), Department of Political Science, Rajiv Gandhi University, Itanagar.

#### Psychology

1. Chauhan, Nishaben Rajeshbhai. **The role of parent child relationship, birth order and type of family in moral development and emotional competences among adolescent.** (Prof. B D Dhila), Department of Psychology, Children's Research University, Gandhinagar.

#### Public Administration

1. Jaswinder Singh. **Role of administration in the field of Yog Vidya: A study of Haryana State.** (Dr. Rajesh Kumar), Department of Public Administration, Kurukshetra University, Kurukshetra.
2. Lalrammawia, Johny. **National social assistance programme in India: A case study of Indira Gandhi National Disability Pension Scheme in Mizoram.** (Prof. A Muthulakshmi), Faculty of Interdisciplinary Studies, Mizoram University, Aizawl.
3. Phalguni. **Health care delivery system in Haryana: A performance evaluation study based on select indicators.** (Dr. Ajmer Singh Malik and Dr. Gian Chand), Department of Public Administration, Kurukshetra University, Kurukshetra.
4. Vikas Kumar. **Urban finance administration in Haryana: Comparative study of urban institutions.** (Dr. Rajesh Kumar), Department of Public Administration, Kurukshetra University, Kurukshetra.

#### Social Work

1. Chaudhari, Dharmeshkumar Devsinghbhai. **An evaluative study of Eklavya Model Residential School (EMRS) considering the tribal are of Gujarat.** (Dr. Anandibahen Patel), Department of Social Work, Gujarat Vidyapith, Ahmedabad.
2. Christi, Anamika Kantibhai. **Juvenile delinquency in Gujarat: A social problem and its solutions: A study (With special reference to children that have come in conflict with law and staying in observation home to the state).** (Dr. Geetabhen Vyas), Department of Social Work, Gujarat Vidyapith, Ahmedabad.
3. Gamit, Anjaliben Gamanbhai. **Impact of land rights on women landowners after securing land right in Gujarat: In the context of women's empowerment (With special reference to nine districts of Gujarat).** (Dr. Daminibahen Shah), Department of Social Work, Gujarat Vidyapith, Ahmedabad.
4. Minde, Neha Nitin. **Study of problems faced by married  $\beta$ -Thalassaemia carrier women and the role of medical social workers in Mumbai.** (Prof. Vandana Chakrabarti), Department of Social Work, S.N.D.T. Women's University, Mumbai.

#### Sociology

1. Dhila, Parvatiben Velabhai. **A sociological study of Gandhidham City.** (Dr. Hasmukhbhai Panchal), Department of Sociology, Gujarat Vidyapith, Ahmedabad. □

## **Announcement**

### **Special Issue of 'University News'**

A **Special Number of University News** on the theme '*Envisioning Future Higher Education: The Pivotal Role of India*' is being brought out on the occasion of the **AIU Centenary Celebrations and AIU Annual General Meet and National Conference of Vice Chancellors'—2024-25 in May/June, 2025.**

The **Special Issue** will cover the articles of eminent educationists on the afore-mentioned theme. Readers of the University News are also invited to contribute to the Special Number by submitting papers/articles on the above theme by **April 30, 2025**. The papers will be published in the Issue subject to the approval of the Editorial Committee of the University News. The contributions are invited on the following Subthemes:

#### ***Technological Integration in Higher Education***

- Blended Learning Models.
- Integrating Emerging Technologies like AI, Virtual and Augmented Reality in the Learning Process.
- Cyber Security and Data Privacy in Higher Education Institutions.

#### ***Leadership and Governance in Higher Education***

- Developing Academic Leadership.
- Governance of Public and Private Universities.
- Autonomy and Accountability in HEIs.

#### ***Rethinking Assessment and Evaluation***

- Innovative Assessment Methods and Experiential Learning.
- Viability of One Nation One Exam System.
- Continuous Comprehensive Assessment.

#### ***Globalisation and Internationalisation***

- Strategies for International Collaboration.
- Global Classrooms (Attracting International Faculty and Students).
- Challenges and Opportunities in Internationalisation of Higher Education.

#### ***Equity, Diversity and Sustainability***

- Incorporating IKS in Curriculum and Pedagogy.
- Catering to Equity and Diversity on Campuses.
- Creating Green and Sustainable Campuses.

#### ***Any Other Relevant Subthemes***

The final decision on the acceptance or otherwise of the article rests with the Editorial Committee. The manuscripts submitted for the Special Issue may be considered for general issues, if not published in the Special Issue. The detailed guidelines for contributors are placed on the AIU Website. Manuscripts may be sent to Dr Sistla Rama Devi Pani Editor, University News, Association of Indian Universities, AIU House, 16 Comrade Indrajit Gupta Marg (Kotla Marg), New Delhi- 110 002 through E-mail: [ramapani.universitynews@gmail.com](mailto:ramapani.universitynews@gmail.com) with a copy to: [universitynews@aiu.ac.in](mailto:universitynews@aiu.ac.in) on or before **April 30, 2025**.

**Anekant Education Society, Baramati**  
**(Jain Minority Institute)**  
**Jaysingpur College, Jaysingpur**  
**Shirol-wadi Road, Jaysingpur – 416 101**  
**Tal-Shirol, Dist-Kolhapur (Maharashtra)**  
**(Affiliated to Shivaji University, Kolhapur)**

### **WANTED**

Applications are invited from eligible candidates for the following posts:

Sr. No.	Name of Post	Vacant Post	Reservation
A.	Principal	1	Open to All - 01

Place :  
Date :

Principal Jaysingpur College, Jaysingpur	Secretary A.E. Society Local Committee Jaysingpur	President A.E. Society Local Committee Jaysingpur
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Note:- For detailed information about post, qualifications and other Terms and Conditions, please visit University website : [www.unishvaji.ac.in](http://www.unishvaji.ac.in).

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## **Shri Govindprabhu Gramin & Shahri Vikas Sevabhahvi Sanstha's GODAVARI INSTITUTE OF PHARMACY, KOLPA**

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### **RECRUITMENTS**

Applications are invited from the eligible candidates for the various positions on permanently Non-granted basis. The applications with supporting documents should reach to the undersigned, "**President, Shri. Govindprabhu Gramin & Shahri Vikas Sevabhahvi Sanstha's Godavari Institute of Pharmacy, Kolpa, Post: Kasarkheda, Tq & Dist: Latur-413512**" within 21 (Twenty One) days from the date of publication of this advertisement. Applications with incomplete information or documents, or received after the due date will not be considered.

The detailed about the vacant positions, Reservations, Education Qualifications, Experience and other requirements, Pay Scale, Terms and Conditions and the procedure for application is available on the College website ([www.godavaripharmedu.com](http://www.godavaripharmedu.com)) and University website ([www.dbatu.ac.in](http://www.dbatu.ac.in)).

Place : Kolpa

Date : 19/04/2025

sd-

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**Shree Rishikesh Shikshan Prasarak Mandal, Navi Mumbai's  
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Devad -Vichumbe, New Panvel, Dist. - Raigad, Pin - 410 206**

APPLICATIONS ARE INVITED FOR THE FOLLOWING POST FROM THE ACADEMIC YEAR 2025-26:

**UN-AIDED**

Sr. No.	Cadre	Total No. of Post	Post Reserved For
1	Principal	01	01- OPEN

The above posts is open to all, however, candidates from any category can apply for the post.

Reservation for women will be as per University Circular No.BCC/16/74/1998 dated 10<sup>th</sup> March, 1998. 4% reservation shall be for the person with disability as per University Circular No. Special Cell/ICC/2019-20/05 dated 05<sup>th</sup> July, 2019.

Candidates having knowledge of Marathi will be preferred.

**The Educational Qualification, Experience & pay – scale for the post of Principal are as prescribed by the University of Mumbai, AICTE from time to time.**

Please refer University Circular No. मशिमार्क/विशिमार्क/तंत्रशिक्षण/११/२०२०-२०२१ दिनांक ११ जानेवारी, २०२१ for qualifications and experience at the time of interview.

Applicants who are already employed must send their application through proper channel.

Applicants are required to account for breaks, if any, in their academic career.

Applications with full details should reach to the **CHAIRMAN, Shree Rishikesh Shikshan Prasarak Mandal, Navi Mumbai's, Shri. D. D. Vispute College of Pharmacy & Research Center, Gut No.104, Devad - Vichumbe, New Panvel, Navi Mumbai, Dist. - Raigad, Pin.- 410 206 within 15 days** from the date of publication of this advertisement. **This is University approved advertisement.**

Sd/-  
CHAIRMAN

## NADED EDUCATION SOCIETY, NADED

### WANTED

Applications are invited for the post of Principal (Granted) to be filled in **Nanded Education Society's Science College, Nanded Dist. Nanded (Maharashtra)**. Eligible candidates should submit their application along with all necessary documents **within Fifteen days** from the date of publication of the advertisement by Registered post only. This advertise is published as per NOC Letter – JDHENanded/NOC/2025/47 Date: 01.04.2025.

Sr. No.	Name of the Post	Name of College	No. of Post	Reservation
1.	<b>Principal</b>	<b>Science College, Nanded</b>	<b>One (01)</b>	<b>Unreserved</b>

#### **Educational Qualifications: -**

##### **A. Eligibilities: -**

1. A Master's Degree with at least 55% marks (or an equivalent grade a point scale wherever grading system is followed) by a recognized University.
2. A Ph.D. Degree in concerned/allied/relevant discipline (S) in the institution concerned with evidence of published work and research guidance.
3. Professor/Associate Professor with a total experience of fifteen years of teaching/research in Universities, College and other Institutions of Higher Education.
4. A minimum of 10 research publication in peer reviewed or UGC listed journals.
5. A minimum of 110 research score as per Appendix II, Table 2 of UGC regulations 2018.
6. Academic Eligibility and other rules regulations as per UGC Regulation 18 July 2018 and Govt. Resolution No Misc2018/C.R.56/UNI-I Date 08 March 2019.
7. The vacant post is being filled subject to the decision of Hon'ble High Court Petition No. 12051/2015.

##### **B. Tenure: -**

A College Principal shall be appointed for a period of five years, extendable for another term of five years on the basis of performance assessment by a committee appointed by the University, constituted as per these Rules.

##### **Salary & Allowances: -**

Pay Scales as per the UGC, State Government of Maharashtra & Swami Ramanand Teerth Marathwada University, Nanded Rules from time to time.

##### **NOTE:-**

1. Prescribed application form is available on the University website ([www.srtmun.ac.in](http://www.srtmun.ac.in))
2. No T.A./ D.A. will be paid to attend the interview.
3. Eligible Candidates those who are already in service should submit their application through proper channel.
4. All attested Xerox Copies of certificates and other relevant documents should be attached with the application form.
5. The original certificates must be provided at the time of interview.

##### **Correspondence Address:**

The President/ Secretary,  
Nanded Education Society,  
Peoples College Campus,  
Sneh Nagar, Nanded-431605.

Secretary,  
Nanded Education Society, Nanded

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**APPLICATIONS ARE INVITED FOR THE FOLLOWING POSTS FROM  
THE ACADEMIC YEAR 2024-25**

**UNAIDED**

Sr. No.	Cadre	Subject	Total No. of Posts	Posts Reserved For							
				SC	ST	DT (A)	NT (B)	OBC	SEBC	EWS	Open
1	Professor	Computer Engineering	01	--	--	--	--	--	--	--	01
		Mechanical Engineering	01	--	--	--	--	--	--	--	01
		Civil Engineering	01	--	--	--	--	--	--	--	01
2	Associate Professor	Computer Engineering	02	01	--	--	--	--	--	--	01
		Mechanical Engineering	02	01	--	--	--	--	--	--	01
		Civil Engineering	02	01	--	--	--	--	--	--	01
3	Assistant Professor	Computer Engineering	05	--	--	01	--	01	01 – SEBC / EWS		02
		Mechanical Engineering	04	01 - SC/ST		01	--	01	01 – SEBC / EWS		--
		Civil Engineering	06	01 - SC/ST		01	--	01	01 – SEBC / EWS		02
4	Librarian	---	01	--	--	--	--	--	--	--	01

**For Assistant Professor (Horizontal Reservation)**

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The posts reserved for the Backward Class candidates will be filled in by backward category candidates (Domicile of State of Maharashtra) belonging to that particular category only.

Reservation for women will be as per University Circular No. BCC/16/74/1998 dated 10<sup>th</sup> March, 1998. 4% reservation shall be for the persons with disability as per University Circular No. Special Cell/CC/2019-20/05 dated 05<sup>th</sup> July, 2019. Candidates having Knowledge of Marathi will be preferred.

**The Educational Qualification, Experience & pay-scale for the post of Professor, Associate Professor, Assistant Professor and Librarian are as prescribed by the University of Mumbai, AICTE & DTE from time to time.**

**Please refer University Circular No. मशिमाक/विशिमाक/तंत्रशिक्षण/११/२०२०-२०२१ दिनांक ११ जानेवारी, २०२१ for qualifications and experience at the time of interview.**

Applicants who are already employed must send their application through proper channel. Applicants are required to account for breaks, if any, in academic career.

Application with full details should reach the **PRINCIPAL, G. M. VEDAK INSTITUTE OF TECHNOLOGY At-post & Taluka-Tala, Mumbai-Goa highway, Near Indapur, Dist. Raigad. Maharashtra- 402111, within 15 days** from the date of publication of this advertisement. **This is University approved advertisement.**

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# UNIVERSITY NEWS

*A Weekly Journal of Higher Education*

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