Mismatched skills, missed opportunities: Why engineering graduates are struggling to find work

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No jobs for engineering graduates?

Having been the gateways to promising careers for last many decades, India's top engineering colleges, including the esteemed Indian Institutes of Technology (IITs), are witnessing a stark departure from the past. Earlier, graduating from these institutes would virtually guarantee a prosperous professional journey. Yet, today's engineering students in India are grappling with unprecedented challenges in the job market. Shockingly, recent data from Right to Information (RTI) applications filed by IIT Kanpur alumnus Dheeraj Singh reveal that around 8,000 (38%) of IITians across 23 campuses remain unplaced this year.

“The primary reason for a general decline in placements for engineering graduates are factors such as economic slowdown, changing industry demands, and a mismatch between the skills acquired and those required by employers play a more significant role,” says Arvind Raj, Chief Human Resources Officer, Mindsprint.

According to a report by TeamLease Digital, just 10% of the 15 lakh engineers graduating this fiscal year would be able to find jobs, highlighting a concerning trend in the employability of engineering graduates. The World Economic Forum underscores this issue, stating that only one in five engineers and one in 10 graduates who join the workforce are deemed employable. The decline in placements for engineering graduates can be attributed to various factors, including the evolving landscape of job requirements amidst rapid technological advancements.

Ramesh Alluri Reddy, Chief Executive Officer at TeamLease Degree Apprenticeship says “We have witnessed a discernible inclination towards investing in specialised IT skills such as cybersecurity, data architecture, cloud computing, and software development, signalling a strategic pivot towards aligning with evolving technological exigencies. Additionally, there's a persistent rise in demand for skills like SAP expertise (12-15%

demand), automotive design (12-14% demand), and testing (10-12% demand), constituting key pillars of industry requirements."

He adds, despite challenges like the downturn in IT hiring activity, specific sectors such as E-commerce, technology startups (with 55% intending to hire freshers), engineering, infrastructure (with a 53% uptick in hiring), telecom (with a 50% increase in hiring), and manufacturing (with a 5-7% hiring uptick) stand out with buoyant hiring intentions, presenting fertile ground for fresh talent.

Generative AI Revolutionising Job Roles

Contrary to the belief that generative AI will eat up jobs, these industry experts believe the opposite. "The advent of generative AI technologies like ChatGPT are only creating newer opportunities as all industries are transitioning to capitalise on the benefits AI has to provide," says Raj of Mindsprint.

Generative AI, in particular, has revolutionised heavy engineering jobs by shifting the focus from routine tasks to innovation-driven approaches. Its automation capabilities enable engineers to tackle complex challenges, such as developing innovative materials or integrating renewable energy into existing infrastructure, while streamlining coding processes and enhancing coding proficiency. Moreover, Generative AI empowers engineers to explore vast design spaces, simulate diverse scenarios, and make informed decisions efficiently, ultimately driving innovation and creating sustainable solutions. Skilling, reskilling, and upskilling programs are crucial for engineers to fully leverage the potential of generative AI and collaborate effectively with AI tools to address evolving industry demands.

"The integration of AI promises to catalyse employment opportunities in sectors like pharma, retail, and healthcare. At the same time, foreign investments exceeding $1,200 million in electronic manufacturing are set to create over 20,000 job openings across various domains, reinforcing a sanguine outlook for talent acquisition in the country," adds Reddy.

Emerging Industries for Engineers

India's technology sector is undergoing a significant transformation, driven primarily by the integration of artificial intelligence (AI). This convergence has led to a surge in demand for skilled professionals proficient in Machine Learning and AI, especially in engineering roles, with growth rates ranging between 65% to 68%.

Renewable energy, sustainable infrastructure, supply chain management are some of the emerging industries today. "As the world increasingly focuses on sustainable development and leveraging technology for societal benefits, these industries offer promising career paths. Supply chain management in its essence has a growing demand, primarily because supply chain management is essential to every company's success," says Raj of Mindsprint.

India's National Green Hydrogen Mission propels this momentum, targeting the production of 5 million metric tons of green hydrogen by 2030 and creating employment opportunities for a skilled workforce of 600,000 individuals.

"Moreover, the electric vehicle (EV) industry is emerging as a significant player in the job market, set to create 10 million direct jobs and an additional 50 million indirect jobs by 2030. With roles spanning manufacturing, assembly, after-sales services, and research & development, the EV value chain presents diverse opportunities for engineering graduates," says Reddy. Additionally, the Ministry of Civil Aviation anticipates substantial investment and job creation in the drones and drone components manufacturing industry, expecting over Rs 5,000 crores in investments and over 10,000 direct jobs generated by FY 2023-24.

Furthermore, a rise is anticipated in demand for roles in chip design and manufacturing engineers, microfluidics engineers, embedded systems engineers, AI and machine learning engineers, computer vision

engineers, natural language processing engineers, cloud engineers, and user experience designers, set to play instrumental roles in these expanding fields to shape the future of engineering employment in India.

What Can Be Done?

As today the industry is highly driven by the emergence of disruptive technologies like cloud and AI, the traditional career pathways are becoming less relevant in the job market. This calls for a strong need for technical skills. “engineering graduates should focus on developing soft skills like problem-solving, critical thinking, and effective communication. Certifications in areas such as data analytics, cybersecurity, and project management can also enhance their employability,” says Raj.

As the mismatch between industry needs and the skills of young professionals entering the workforce poses challenges for industries striving to maintain a sustainable talent pipeline, aligning apprenticeship programs with formal education curricula and fostering more vital collaboration between academia and industry emerge as crucial strategies to address this gap.

Key sectors such as automotive, electronics, and ITES have emerged as major employers of apprentices, witnessing substantial growth in apprenticeship engagement. The National Apprenticeship Training Scheme (NATS) is pivotal in scaling white-collar apprenticeships, providing practical, hands-on training opportunities for graduate, diploma students, and vocational certificate holders. Covering a wide array of courses, including AI, DevOps, and Database Administration, apprenticeship programs in India cater to diverse skill requirements. “Expanding apprenticeships in India reflect a growing recognition of their importance, with significant growth observed over the past six years. From a mere 35,000 apprentices in 2018-19, the number has surged to a remarkable 9.26 lakhs in 2023-24, growing at an average pace of 35%-40% annually,” says Reddy.

By leveraging these initiatives and fostering a conducive ecosystem for skill development, India’s engineering talent can excel in the evolving job market.