Employability and Skills of Newly Graduated Engineers in India

Engineers are in great demand in India. Do new hires have the skills employers need? A recent survey explores the issue.

In India shortages of skills are among the main constraints to continued growth of the economy. Studies have shown that the problem is especially acute in industries relying on engineers, where employers complain that most newly graduated engineers lack suitable skills. Many attribute that lack to shortcomings in the education system. Responding to a surge in demand for engineers, India’s higher education system massively expanded the enrollment of engineering students—and that expansion is widely perceived as having led to a decline in the average quality of the students enrolled, the teaching, and, consequently, the graduating engineers.

The story of a recent engineering graduate is typical. Gopal graduated with a bachelor’s degree in computer science and engineering with a good academic track record. After going through a competitive hiring process, he joined a large information technology services company. A project manager responsible for delivering platform software for a mobile device assigned Gopal the task of developing a device driver for a simple peripheral and pointed him to all the relevant information sources. Given his academic background, Gopal was expected to be able to complete the task quite independently.

But Gopal began to flounder. He faced several problems. First, he was overwhelmed by the amount of information at hand and lacked the skill to filter out what he really needed to read for the task. Second, his academic projects had not prepared him to handle a large volume of code, and he did not have the skill to isolate just the interfaces for the device driver he had to develop. Third, he lacked the problem-solving skills he needed to tackle the design challenges of the task: picking a design that was efficient in system resources (critical for a mobile device) as well as robust, and integrating and testing the driver, which required that he have a big picture of the entire system and an understanding of how to use the debugging tools to probe the system at the appropriate level.

Despite many anecdotes like this one, little research has been done to identify which skills are in high demand and which are in short supply. A recent paper by Blom and Saeki addresses this gap in knowledge by presenting the results of an employer survey aimed at answering three questions: Which skills do employers consider important when hiring new engineering graduates? How satisfied are employers with the skills of engineering graduates? And in which important skills are the engineers falling short?

Conducted in 2009 across sectors and regions in India, the survey asked 157 employers to rate their satisfaction with new engineering hires with respect to 25 skills. The results confirm a widespread dissatisfaction with current engineering graduates. 64 percent of employers hiring fresh engineering graduates are only somewhat satisfied or worse with the quality of the new hires.

Similarly, the survey asked the employers to rate the level of importance of those 25 skills. Using factor analysis, Blom and Saeki classify the skills into three categories: core employability skills, communication skills, and professional skills. While the survey results show that all three skill sets are considered important, the authors find that employers perceive soft skills (core employability skills and communication skills) as the most important. Among all skills, communication in English is among those most demanded and also shows the smallest gap between the skill level demanded and that provided. Employers across India ask for a similar set of soft skills.

Employers rated graduates relatively high on lower-order thinking skills (remembering, understanding) but low on higher-order thinking skills (analyzing, evaluating, creating). These higher-order thinking skills are among the most important professional skills for engineers. Unlike for soft skills, employers’ demands for professional skills differ across sectors, company sizes, and regions.

The authors’ findings suggest that engineering schools should seek to improve the skill set of graduates and shift the focus toward higher-order skills and creativity.

Findings suggest that engineering schools in India should seek to improve the skill set of graduates and shift the focus toward higher-order skills and creativity.