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CAMPUSHASH: EVOLVING BUSINESS MODEL OF AN ENTREPRENEURIAL VENTURE

Atul Arun Pathak, Saroj Kumar Pani, and Anish Agarwal wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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It was late evening on January 30, 2016, and Sanket Saurav and Rohit Tirkey, co-founders of the Indian start-up CampusHash Technologies LLP (CampusHash) were returning home from a two-day technology training workshop in Bengaluru. CampusHash focused on conducting software-language training programs in engineering colleges in India. Saurav and Tirkey were discussing their company’s performance while they navigated the Bengaluru traffic. In the last few months, CampusHash had gained some traction and conducted over 75 training programs. However, the co-founders were not satisfied with the speed at which their company was growing. As Saurav recalled, they had not been very ambitious when they started the company. But now that they were seeing some success, they wanted more. The current model was limited in its scalability, so the pair needed to rethink their strategy to meet their ambitious growth targets. They had hoped that CampusHash would by now have scaled up so that its profits would be at least twice the potential salaries the partners had given up. The team was hoping to raise funds from an angel investor and were scheduled to pitch their business plan to a potential investor in a couple of weeks. They needed to ensure that their business model and projections were attractive enough to secure this funding.

Background

About the Founders

Saurav and Tirkey met in 2010 while pursuing bachelor’s degrees in computer science engineering at the prestigious National Institute of Technology (NIT) in Jamshedpur, India. Sharing a common passion for entrepreneurship, they started a web design firm called designfromtheheart in 2010, with the intent of earning some easy pocket money. They both had a flair for web design and received quite a few projects in this field. However, they soon got tired of doing the same type of work repeatedly and closed the venture in 2012.

By 2012, both Saurav and Tirkey had become excellent software programmers, and they often helped their friends and even their seniors at college with programming assignments. They also enjoyed teaching others how to write software code, so they decided to become trainers in this field. In December 2012, during their third year at college, they started CampusHash, a venture focused on software programming language training.

About CampusHash

Saurav and Tirkey realized that the computer science engineering course curriculum offered at NIT was not up to date. While the world of software engineering had moved on to areas such as social media, mobile applications, and big-data analytics, the institute’s curriculum was still teaching students rudimentary software-engineering related concepts and did not expose them to cutting-edge technologies. Students therefore found it difficult to present themselves as industry ready during job interviews for software programming roles in information technology (IT) companies. To be ready for jobs in the IT industry, engineering students needed to be equipped with both conceptual knowledge and hands-on skills in the latest technologies. This gap became the genesis of CampusHash’s initial offering.

Saurav and Tirkey started by themselves mastering the programming languages and technologies that were aligned with the latest trends in the IT industry. Then they started offering informal sessions on these topics to their peers at college. They quickly realized that if students of premier engineering institutes like theirs were facing these challenges, the situation was likely to be much worse among students at lower-ranked engineering colleges. Thus, with the intention of equipping fellow engineering students with skills in the latest technologies, Saurav and Tirkey started conducting two-day software-training programs at various engineering colleges in and around Jamshedpur.

In the early days of their venture, Saurav and Tirkey spent a lot of time refining the content and structure of their training programs. They designed a highly interactive, hands-on workshop where participants were exposed to the latest concepts in IT and given opportunities to solve problems and practice writing working software code. The two tried to align the workshops with the needs of the IT industry, keeping campus-recruitment interviews in mind. They also offered participants the opportunity to complete take-home assignments, which they subsequently evaluated. After each workshop, Saurav and Tirkey encouraged participants to contact them via email to resolve any questions.

Noticing that many IT companies were engaged in projects in social media, website development, and mobile applications development, Saurav and Tirkey conceptualized two training programs: Web Development Using Google App Engine,[[1]](#footnote-1) and Python[[2]](#footnote-2) for Beginners. During this phase, CampusHash was getting an average of about 20 participants per program and charging each participant ₹1,000[[3]](#footnote-3) to attend a two-day program. Their workshops were less expensive than those of their competitors, who were charging about ₹1,500–2,000 per participant for similar training programs. Net of all costs, CampusHash was managing a 70 per cent profit margin from these programs.

Within a few months, CampusHash began receiving a large number of invitations from colleges that wanted Saurav and Tirkey to conduct training programs on their campuses. Typically, this meant that they spent six to eight hours per day in class as trainers whenever a program was conducted. Since their workshops were entirely dependent upon their own availability as trainers and they were offering the workshops while continuing their own studies at NIT, they could only manage a handful of workshops each month, mostly on weekends. Their workshops soon became popular, and they received significant word-of-mouth publicity. CampusHash received further visibility when it was made the official training workshop partner for the annual PyCon India 2013 Python programming language conference, which attracted the best Python programmers from across the country and abroad.

During their final year at college, Saurav and Tirkey managed to conduct training programs at nearly 50 colleges across India in collaboration with PyCon. Given the early success of their venture, they decided to take this further on a full-time basis upon graduation from NIT. Tirkey recalled,

Saurav was quite bullish about CampusHash and opted out of the institute’s job placement process. Initially, I was not very sure, and therefore I went through a few interviews and landed a job at IBM, with a pay package of ₹40,000 per month, while still in my final term at NIT. However, by the time I finished college, I was seeing CampusHash as the dream that I wanted to pursue and therefore never ended up joining IBM.

Saurav and Tirkey moved from Jamshedpur to Bengaluru after finishing college. Bengaluru had nearly 60 engineering colleges, which produced approximately 40,000 engineers every year. Most of these engineers looked for jobs with leading and small software companies.

THE indian IT industry

In fiscal year (FY) 2016, the IT industry in India employed about 3.9 million people in IT services, business process management (BPM), software products, engineering services, and hardware segments.[[4]](#footnote-4) Revenues from the IT-BPM industry (excluding hardware) were estimated at US$130 billion and were growing at about 8 per cent annually[[5]](#footnote-5) (see Exhibit 1), with exports playing a major role overall (see Exhibit 2). The top 10 firms had about 40 per cent revenue share and employed over 35 per cent of the total employees. The industry also included 150 medium-sized players, about 1,000 emerging players, and 15,000 small players[[6]](#footnote-6).

Most IT firms recruited entry-level programmers from college campuses in large numbers. About 130,000–150,000 graduates entered the Indian IT industry every year, most through on-campus hiring (see Exhibit 3). About 2 per cent of total industry revenue was spent on training employees, and 40 per cent of this training budget was used for training entry-level employees to make them job ready[[7]](#footnote-7) (see Exhibit 4).

The industry was evolving rapidly, and new technologies were becoming increasingly popular. Further, customers were becoming highly demanding, expecting high-quality work at low costs, and IT firms were faced with a constant requirement to increase revenue per employee. Hence human resource (HR) managers in IT firms were constantly under pressure to make the recruitment process faster and easier and to hire quality talent while reducing the overall costs of hiring. The HR managers faced numerous recruitment-related challenges in hiring entry-level employees and mid-level managers (see Exhibits 5 and 6), and they needed to design efficient and quick hiring processes while controlling fixed and variable costs. However, they also needed to ensure they selected high-quality candidates so that these new employees could be made billable quickly. It was typically challenging to identify and attract the best talent from engineering campuses, and the companies needed to do both effectively and efficiently.[[8]](#footnote-8)

Current status

Near the end of 2014, Saurav and Tirkey welcomed a new partner, Iliyas Shirol, an experienced technologist who had worked for around eight years in various leading IT companies and had a job with a monthly salary of about ₹250,000. Shirol had industry experience that CampusHash’s initial co-founders lacked. He also had a wide network of contacts in the IT industry. With Shirol’s input, CampusHash redesigned its training programs to make them more effective and attractive to students. In particular, it started conducting hackathons, or programming competitions, on the second day of each training program. The hackathons helped CampusHash in multiple ways: participants’ performance in these events helped CampusHash measure the effectiveness of its programs and, more importantly, the hackathons helped CampusHash identify good programmers from among the participants. Soon, the team realized that they could refer a few participants who performed well in the hackathons as potential internship candidates at IT companies.

Shirol helped CampusHash approach companies like Ibibo Group Private Limited (Goibibo), a leading online hotel booking engine and airline ticket aggregator, to pitch the idea of CampusHash identifying and selecting skilled engineering interns for them through its workshops. CampusHash approached other IT companies with this idea, and a few showed interest. In return for some social media publicity, a few IT companies started to sponsor CampusHash’s events. Once engineering students learned that CampusHash workshops could potentially result in IT internships, the average number of participants in the training workshops grew significantly, from 20 to 40 per program. To leverage this increased demand, CampusHash increased its fees to ₹1,250 per participant for its two-day program.

The students were happy to have the opportunity to intern with good IT firms. In return, the IT firms paid the interns a small stipend and used them to do billable software programming work. The IT firms also used the internship periods to thoroughly evaluate candidates and made permanent job offers to those who fit their requirements. CampusHash was not charging any fees or commissions to either the IT companies or the candidates for its role in facilitating these internships. This activity helped CampusHash build contacts with HR teams of IT companies and establish the CampusHash brand.

The IT companies found that the CampusHash interns were of above-average quality. For instance, when Shirol sought feedback from Vikalp Sahani, the chief technology officer at Goibibo, about his experience with CampusHash interns, he stated,

CampusHash-trained and selected interns were adequately skilled and could write entire software applications for us. We were pleasantly surprised to see that, despite [their] lack of work experience, these interns understood technology architectures and functionality. They were [the] right fit for the intern roles we had in mind.

By the end of 2015, with CampusHash’s business growing rapidly, the three co-founders got together to make a few critical decisions regarding expanding their technical training and recruiting marketing teams. The co-founders felt that they had done well to launch their venture early and iterate the offerings as their understanding of the market improved. However, they realized that since the workshops had to be delivered in person by high-quality trainers, their business model was limiting CampusHash’s ability to scale up revenues. At present, CampusHash was achieving about a 60 per cent net margin in these training workshops. However, this profit margin was achievable because none of the co-founders was presently drawing a salary for delivering the training. The co-founders were not sure whether to hire training professionals to deliver the workshops. They were worried that using new trainers might affect the quality of training, and they were also concerned about protecting their intellectual property and client relationships. One option they considered was to continue as they were for now, rather than expanding rapidly.

However, Saurav felt that investing more money, time, and creative energies into the current idea would make it more difficult for them to subsequently change their business model. While CampusHash’s performance was picking up, he felt that it was not yet good enough, given the team’s high aspirations and high opportunity costs. He felt that adding new features like hackathons and approaching companies for internships had certainly improved their business performance; however, he was worried that they were not working toward a business model that was scalable and would give them a sustainable competitive advantage. Saurav was of the opinion that CampusHash’s co-founders needed to seriously consider whether they needed to change their business model entirely. One option was to focus more on the needs of the company’s corporate clients. Alternatively, they could focus on providing more services to engineering students looking for internships and jobs. “But then, we were a young company,” Saurav recalled. “Was I being too impatient and hasty in thinking of radical changes?”

deciding The road ahead

Tirkey and Saurav had heard from HR managers of many IT firms about the challenges that these firms faced when recruiting engineers for entry-level positions. CampusHash was keen to make use of this market understanding to further refine its offerings. Tirkey recalled,

I felt that Saurav was keen to make some radical changes. He mentioned to me that while we should keep one foot rooted in what we had learnt so far, we should also consider making fundamental changes to our business strategy. He stressed that we ought to take more risks in order to realize the true potential of our business.

Recruitment screening

Most of the smaller IT companies that CampusHash interacted with were finding it difficult to recruit good-quality engineering talent for their teams. CampusHash already knew that part of the problem was that aspirants’ formal engineering education did not meet the IT industry’s cutting-edge needs. Secondly, the small IT firms did not have robust recruitment processes to help them identify quality resources from among the hundreds of applicants during campus recruitment. Most companies followed a fairly subjective process of assessing potential recruits in the initial screening round. This screening was typically done by either a hiring manager or an experienced technical team member.

From his first-hand experience, Saurav explained to his co-founders that experienced technical employees in most IT companies were generally extremely busy with project deliverables and saw recruitment screening as an extra burden. They were unable and usually unwilling to devote the necessary time and attention to the assessment process. In certain cases, companies used practical assignments where candidates had to solve problems that tested their programming skills. Saurav felt that this was a good method of assessing programmers’ skill levels but that the problems chosen were typically not ideal. He explained:

Either the problems were extremely elementary, drawn from standard textbooks, or the same problems were reused multiple times. Thus, candidates’ abilities were not truly tested. As such, candidates were able to clear the screening process but were later unable to perform well in their roles.

CampusHash realized that a refined version of its hackathon offering could potentially address these issues, particularly for small IT companies such as Goibibo, the event management platform Explara, and the health management platform ZeOmega, which did not have adequate resources to efficiently screen their potential recruits. Saurav observed that programming hackathons had been gaining in popularity in India in recent years, and many companies were keen to hire developers who had performed well in such competitions. Online platforms such as HackerRank and HackerEarth catered to these needs by conducting hackathons on their portals. Saurav felt that the assessment methods used by these competitors were rather simplistic and were inadequate for effectively differentiating between good and ordinary programmers. He believed that there was a need for a high-quality automated assessment platform that could help companies recruit good-quality employees who were skilled in various technologies.

Saurav, Tirkey, and Shirol got together to discuss the road ahead. Saurav suggested that they could consider getting out of training altogether. He proposed that they could focus entirely on solving the employee-screening needs of IT companies. They could achieve this by engaging with IT companies and carrying out hackathons in engineering colleges as part of the IT companies’ campus recruitment processes and also during lateral-hiring drives. To do this, CampusHash would need to build a strong business-to-business (B2B) sales team to approach the HR managers of IT companies. It would also need to develop capacity and capabilities to carry out multiple hackathons simultaneously in different locations, if the demand for these services grew in the future. Shirol, however, was not entirely convinced by Saurav’s arguments. He asked, “Would we be taking full responsibility [for] the screening and hiring decisions, or would we limit ourselves to conducting the hackathon and giving the candidate performance scores to the company?”

Tirkey thought that it would be better to allow each client company to judge for itself the candidates’ solutions in terms of logic, code quality, and semantics. He felt that it would also be best if the client companies decided the weighting of these parameters in their recruitment processes. He believed that CampusHash ought to limit itself to simply preparing the test questions and providing the client companies with performance reports about the candidates. Focusing on doing this much would not require too many additional resources. Tirkey estimated that it would cost CampusHash about ₹10,000 for travel, ₹5,000 for lodging, and about ₹5,000 for client-specific customization and creation of new programming problems for each hackathon. The company would also need to spend about ₹6,000 per day for professional fees to compensate its trainers to run each hackathon.

Saurav did not agree with Tirkey’s point of view. He noted that they had ambitious objectives for CampusHash, and he believed that they needed to consider taking on greater scope to meet these objectives. He felt that the more responsibility CampusHash took in the recruitment process, the more value it would add for its clients. Saurav was confident that CampusHash could charge about ₹100,000 to each client IT company for a hackathon, which would typically screen about 100 candidates. CampusHash’s value proposition, in this case, was that it would be reducing the client’s recruitment-related operational expenses and also assuring them of high-quality recruitment screening. Saurav estimated that each trainer could do one program a week, and if CampusHash marketed this offering effectively, it was likely to get 16 such assignments per month.

Outsourced Software Development

Tirkey changed the direction of the discussion altogether. He felt that CampusHash’s main strength was the three co-founders’ expertise as great programmers who had learned how to spot other good-quality programmers. He proposed that they could leverage this strength to create offerings beyond mere recruitment and could instead try to get outsourced software-programming projects from Indian IT companies.

Shirol was not entirely convinced and asked Tirkey why IT companies would consider a small nondescript venture such as CampusHash as a potential outsourcing partner. Further, he wanted to understand the risks involved in this business model. Tirkey explained that while he was not entirely sure whether it would work, they could try to seek software-development assignments from IT product and services companies; CampusHash could break each assignment task into smaller problem statements and use these as coding problems in its training hackathons. This way, they could get the software-development work done for free by hackathon participants, and the students would be exposed to the actual industry problems they would be expected to solve once they entered the industry.

Tirkey was confident that CampusHash could thus create a business that would yield about a 50–60 per cent gross margin. He explained that for this approach, they would need to hire four sales professionals focused on getting software-development projects from IT companies. The sales professionals would each have to be paid a salary of about ₹30,000 per month. CampusHash would also need to recruit five software developers, each costing about ₹50,000 per month, to carry out quality control and choose the right solutions from among the candidates’ submissions to deliver to the client companies. Tirkey was confident that CampusHash would be able to get about two to three assignments of this nature every month and that it could charge about ₹300,000 for each assignment.

Scaling Up with an Online Platform

Saurav was strangely quiet for some time. When his partners asked why, he stated, “I was thinking of something different. Why don’t we consider offering end-to-end recruitment and employee management solutions to these small IT product and services firms?”

Saurav explained that this would require CampusHash to continually focus on developing a wide variety of recruitment-related assessments. The company would have to convince recruitment managers of IT companies that these assessments were superior to those they were currently using in their software developer recruitment processes. CampusHash would have to work continually to understand the requirements of each client company and would have to change its assessment models accordingly. Using these customized models, CampusHash would be able to provide client recruitment teams with selections of candidates who had been pre-assessed for further processing and final hiring-related decision-making.

In addition, CampusHash could leverage its understanding of the HR requirements of IT firms by creating a talent management offering. This would help HR managers of IT firms assess the technical proficiency of their existing software developers on an ongoing basis. For CampusHash, this would entail providing clients with a suite of simulated assessments that supported various popular and emerging technologies such as full-stack development, data sciences, artificial intelligence, and machine learning. Through these assessments, CampusHash would be able to provide clients with detailed reports highlighting their employees’ technical proficiencies.

Shirol stated that this option would require a lot of groundwork and operational changes to CampusHash’s current offerings. He explained that this would involve CampusHash moving to a B2B or enterprise sales model, which would typically result in high volumes. The company’s profit margins would depend upon its ability to negotiate well with corporate clients and manage operational costs tightly.

Tirkey commented that one way CampusHash could scale up revenues in a non-linear manner, while not having to add as many employees as before, would be to create technology solutions with increased automation possibilities. For instance, it could create an online platform that allowed client companies to register, create their own assessment tests, or give CampusHash the requirements to create customized tests for them. Tirkey explained that CampusHash’s database of assessment questions would ultimately grow to a scale where the marginal costs of servicing each subsequent client assignment would reduce significantly. Tirkey believed that if this business took off, they would no longer need to deliver candidate assessments on-site at college campuses. All they would require was a good B2B sales team and a strong technology backbone.

Tirkey estimated that it would take CampusHash a year and cost about ₹1.0 million to develop this online platform. (It was assumed that the IT platform would depreciate at a rate of 33 per cent using a straight-line depreciation method.) The co-founders agreed that it would cost a further ₹100,000 per year to maintain this platform. To implement this option, CampusHash would require a team of about five salespersons, each costing about ₹30,000 per month, and six technical persons, costing about ₹300,000 per month in all. It was likely that CampusHash would be able to get eight recruitment assessment assignments each month. In each assignment, CampusHash would need to process about 500 job candidates; it would be able to charge ₹200 per candidate for this service. Additionally, CampusHash would be able to get four assignments a month where it would carry out proficiency assessments of existing technical employees for client IT firms. In each of these assignments, CampusHash would typically have to carry out comprehensive assessments of about 300 employees and would be able to charge the client company ₹1,500 per employee assessed. CampusHash estimated that it would have to raise about ₹7 million in equity as seed funding to successfully take this option forward.

While their detailed discussion had given all of them some ideas about what CampusHash could potentially do next, Saurav, Tirkey, and Shirol were unable to come to a decision within the meeting. Instead, they decided to consider these options for a couple of days and meet again to crystallize CampusHash’s strategy.

Conclusion

As their cab wove through the evening traffic, Saurav and Tirkey continued to reflect on the difficult and urgent strategic decisions that lay ahead. They realized that their success at their upcoming meeting with the potential angel investor depended on their ability to showcase a business plan that was both ambitious and practical.

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Exhibit 1: indian It–business process outsourcing sector, export revenues

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **FY2013** | **FY2014** | **FY2015** | **FY2016E** | **FY2017P** |
| Export Revenues (in US$ billions) | 76 | 86 | 99 | 108 | 120 |

Note: E = estimate; P = projection; FY = Fiscal Year; the value for FY2016 was an estimate and that for FY2017 was a projection.

Source: Adapted from IBEF India, *IT & ITeS*, January 2017, 35, accessed June 28, 2018, www.ibef.org/download/IT-and-ITeS-January-2017.pdf.

Exhibit 2: INDIAN IT–BUSINESS PROCESS OUTSOURCING SECTOR, revenue sources

(FY 2015, in US$ Billions)

| **Segment** | **Domestic** | **Exports** |
| --- | --- | --- |
| IT Services | 13.0 | 55.0 |
| Business Process Management (BPM) | 4.0 | 23.0 |
| Packaged Software and Product Development | 4.0 | 20.0 |
| Hardware | 13.0 | 0.5 |
| eCommerce | 14.0 | 0.5 |
| **Total Revenue (US$ billions)** | 48.0 | 99.0 |

Note: IT = Information Technology.

Source: Adapted from IBEF India, *IT & ITeS*, January 2017, 35, accessed June 28, 2018, www.ibef.org/download/IT-and-ITeS-January-2017.pdf.

Exhibit 3: Graduates added to talent pool in india

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **FY2010** | **FY2011** | **FY2012** | **FY2013** | **FY2014** | **FY2015** |
| Number of English-speaking graduates added to the workforce in India (millions) | 3.7 | 4.0 | 4.4 | 4.7 | 5.3 | 5.8 |

Note: The availability of English-speaking workers was a key driver in the growth of the Indian IT industry.; FY = Fiscal Year.

Source: Adapted from IBEF India, *IT & ITeS*, January 2017, 26, accessed June 28, 2018, www.ibef.org/download/IT-and-ITeS-January-2017.pdf.

Exhibit 4: INDIAN IT–BUSINESS PROCESS OUTSOURCING SECTOR,   
Training expenditures by sector

|  |  |
| --- | --- |
|  | FY2014 |
| Percentage of Indian IT-business process management industry revenue spent on training employees | 2% |
| Approximate total spend by the Indian IT-business process management industry on training its workforce | US$1.6 billion |
| Percentage of total training budget spent on training new recruits | 40% |

Note: IT = Information Technology; FY = Fiscal Year.

Source: Adapted from IBEF India, IT & ITeS, January 2017, 27, accessed June 28, 2018, www.ibef.org/download/IT-and-ITeS-January-2017.pdf.

Exhibit 5: Challenges faced in entry-level hiring

|  |  |  |
| --- | --- | --- |
| **Challenge Area** | **General Candidates** | **Professional Candidates** |
| Ascertaining ability of candidate for the job role | 56% | 56% |
| Finding appropriate candidate with relevant qualifications | 47% | 36% |
| Screening from large number of applications | 43% | 29% |
| Verifying the credentials | 36% | 23% |
| Trusting candidates’ presented credentials | 36% | 15% |
| Identifying candidate impersonation at recruitment test/process | 30% | 20% |
| Recognizing exaggeration of relevant experience | 20% | 29% |
| Managing external agencies that perform candidate verifications | 20% | 7% |

Note: Survey based on responses from 70 human resource managers and appropriate line managers from medium and large Indian organizations.

Source: Adapted from Pearson, *Assessing the Right Talent and Job Readiness for India’s Professionals: Challenges and Opportunities in the India Hiring Sector*, July 2015, 7, accessed June 28, 2018, https://home.pearsonvue.com/Documents/Report/Pearson-VUE-India-Employer-Survey-2015.aspx.

Exhibit 6: Challenges faced in mid-level hiring

|  |  |
| --- | --- |
| **Challenge Area** | **Percentage** |
| Availability/pool of suitable candidates | 69% |
| Finding appropriate candidate with relevant qualifications | 46% |
| Ascertaining ability of candidate for the job role | 45% |
| Trusting candidates’ presented credentials | 28% |
| Verifying candidates’ credentials | 24% |
| Screening applications | 19% |
| Managing candidate verification | 14% |
| Candidate impersonation | 8% |

Note: Survey based on responses from 85 human resource managers and appropriate line managers from medium and large Indian organizations.

Source: Adapted from Pearson, *Assessing the Right Talent and Job Readiness for India’s Professionals: Challenges and Opportunities in the India Hiring Sector*, July 2015, 6, accessed June 28, 2018, https://home.pearsonvue.com/Documents/Report/Pearson-VUE-India-Employer-Survey-2015.aspx.

1. Google App Engine (often referred to as GAE or simply App Engine) was a web-framework and cloud-computing platform for developing and hosting web applications in Google-managed data centres. [↑](#footnote-ref-1)
2. Python was a popular language for general-purpose programming. It emphasized code readability, and its syntax allowed programmers to express concepts in fewer lines of code. [↑](#footnote-ref-2)
3. ₹ = INR = Indian rupee; ₹1 = US$0.0147 as of January 30, 2016. [↑](#footnote-ref-3)
4. NASCOMM, *Indian IT-BPM Industry in India: Skilling for Digital Relevance*, September 2017, 4–5, accessed January 30, 2018, www.nasscom.in/knowledge-center/publications/indian-it-bpm-industry-skilling-digital-relevance-case-study. [↑](#footnote-ref-4)
5. NASCOMM, *IT-BPM Industry in India: Sustaining Growth and Investing for the Future*, June 22, 2017, 4–8, accessed January 30, 2018, www.nasscom.in/sites/default/files/NASSCOM\_Annual\_Guidance\_Final\_22062017.pdf. [↑](#footnote-ref-5)
6. IBEF India and Aranca, *IT & ITeS*, January 2018, 9–13, accessed January 30, 2018, www.ibef.org/download/IT\_-ITeS-Report-Jan-20181.pdf. [↑](#footnote-ref-6)
7. Ibid. [↑](#footnote-ref-7)
8. Raghav Poojary, “Key Recruitment Challenges in 2017,” People Matters, May 19, 2017, accessed February 3, 2018, www.peoplematters.in/article/strategic-hr/key-recruitment-challenges-in-2017-15482. [↑](#footnote-ref-8)