# Leveraging Engineering and Research Talent in India with Global Capability Centers

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*Multinationals can leverage engineering and research talent in India with global capability centers.*

India recently launched an **unmanned spacecraft to the moon**, the first one to land near the moon's Southern pole. More creditable is the fact that India's program cost just **$75 million**, while comparable missions, the U.S. Apollo 10, Russia Luna 25, and China Chang'e-1 in inflated-adjusted dollars cost **$2.5 billion**, **$195 million**, and $278 million, respectively. This achievement emphasizes two things. First is the depth, scale, and capabilities of the engineering and research talent available in India. Second is the cost of that talent. We describe how multinationals are leveraging this resource by opening global capability centers (GCCs) in India. We then argue that every multinational company that competes with knowledge capital and research and development (R&D) must have a GCC in India to survive and thrive. We provide seven suggestions on how other companies can open their own GCCs to leverage research and engineering talent in India.

Not that long ago, U.S. corporations looked primarily toward India to perform low-end technology work, such as adding two more digits to **their software codes to fix their Y2K problems**. Opening of satellite offices in India was mostly about **operating cost-effective call centers**. At that time, one could hardly visualize that the center of gravity of firms' research activities would shift to a foreign location, least of all **to India**. In the last two decades, however, things have changed. Engineers from India have proven their talent, so much so that the tech giants such as Alphabet, Microsoft, IBM, and Adobe are now headed by engineers educated in India. Top multinational technology companies such as Microsoft, GE, Facebook, Bosch, SAP, 3M, Oracle, Volvo, and SKF have opened GCCs in India that employ an army of researchers who perform activities comparable to, if not even more advanced than, what they have in their own home offices. Most important, those centers are not only about cost cutting but also about **doing cutting-edge innovation research**, which is almost impossible to replicate, at scale, in their own home countries because **of restricted manpower availability and visa regulations**.

# Illustrations of Success Cases

We first describe a few success cases and how they have progressed over years.

# Microsoft

One of Microsoft's largest R&D centers—after its home office in Redmond, Washington—is the **India Development Center (IDC)** in Hyderabad, India. IDC works on a wide range of products and services, including Windows, Azure, Office, and Dynamics 365. IDC is also home to several Microsoft research labs, which conduct basic and applied research in areas such as artificial intelligence (AI), cloud computing, data analytics, natural language processing (NLP), and quantum computing.

Microsoft chief executive officer (CEO) Satya Nadella said in an interview with *Economic Times* in January 2023: "India has an advantage when it comes to human capital, which will play a key part in building technologies of the future such as AI and quantum computing."

# Bosch

Bosch's largest R&D center outside of Germany is in **Bengaluru (formerly Bangalore), India**. It works on crucial areas such as driver assistance, passive safety, active safety, anti-lock braking systems (ABS), electronic stability programs (ESP), and hardware development. The center also works on big data and software solutions related to the Internet of things (IoT). Bosch's new Center of Excellence in Hyderabad will focus on enterprise information technologies, cloud technologies, artificial intelligence of things/machine learning (AIoT/ML), cyber and embedded security, connected products, and connected industry solutions.

Bosch chairman Stefan Hartung **said in February 2022** that the company plans to make a Rs 2,000 crore ($260 million) investment by 2025–2026. Half of that will go into advanced automotive technologies; the other half, into building digital mobility solutions. "Software is a key differentiator in products and services. And India is a global software powerhouse. We have over 25,000 employees connecting sensors, software and services," Hartung said.

# 3M

With a team of more than 100 engineers, **3M's R&D center in Bengaluru** focuses on application development, engineering, and product development. In addition to local projects, the center contributes to global research work.

Shaun Braun, senior vice president (SVP) of digital transformation at 3M, **said in March 2022** that the company was planning to add a new technology center of excellence in Bengaluru to accelerate its digital charter at scale. He added that the tech hub in Bengaluru is the cornerstone for transforming to a digitally connected company that combines its material and digital sciences through advanced capabilities to solve customer challenges. He called Bengaluru "a city of digital innovation" and referred to "a digital renaissance" happening at Bengaluru.

# Oracle

Oracle's Indian R&D centers are an integral part of the company's global product development, working in the domains of databases, cloud computing, enterprise software, and hardware. Safra Catz, CEO of Oracle Corporation, **said in 2016**: "Our entire product lines are done out of here … India is our front office … it is from where we serve the world." Referring to the strong developer skill set, she called it "an unbelievable source of intellectual capital" and said that "the technology knowledge is so deep and we are making it in India for the world."

# GE

By the end of 2021, **GE India had more than 6,000 scientists**, researchers, and technologists, working on innovations in various fields: aviation, health sector, and materials solutions; electric power (gas turbines and renewable energy, among others); thermosciences; physical-digital analytics; imaging; and controls and optimization. GE

India is working on technologies and areas such as 5G-enabled use cases, next-generation medical technology, AI/ML, IoT, big data, edge computing, and cybersecurity. GE India had filed more than **3,500 patents**.

Vic Abate, SVP and chief technology officer of GE, **said in 2020** that he always looked at India as a country that adds value for its global business and not just for the cost-arbitrage it offers. He went on to say that "we go to India more and more because it has the best team to solve problems . . . it is not about the costs."

# Facebook

Meta CEO Mark Zuckerberg **said in 2021**: "I am really excited about the role that India will play in building this future. India's talent pool—the engineers, developers and creators, and your whole vibrant start-up ecosystem are playing a huge role in shaping the future. India is on track to have the largest app developer base in the world by 2024, and already has one of the largest Spark AR developer communities."

# Mercedes

Mercedes-Benz Research and Development India (MBRDI) is the **largest research and development center** for Mercedes-Benz Group AG outside of Germany. MBRDI's expertise includes developing new technologies such as connected, autonomous, and electric in the mobility world—driving digital acceleration, leading excellence in-car software, and paving the way for sustainable mobility.

Ola Källenius, CEO of Mercedes-Benz, **said in January 2023**: "We have more than 5,000 engineers in Bangalore working on the future innovations for Mercedes everywhere in the world." He added, "So there's a piece of India in every Mercedes that we sell around the world." He mentioned fields such as software and digital, electricals, and classical mechanical technologies.

# Thermo Fisher

Thermo Fisher's new India Engineering Center (IEC) in Hyderabad, which includes an engineering lab, will support new product development for laboratory and analytical solutions for the company's global sites. IEC will design and develop instruments, perform product reliability performance testing and verification, and carry out product validation. Tony Acciarito, president, Asia Pacific & Japan, Thermo Fisher Scientific, **mentioned in April 2022**: "Hyderabad city is a hotspot for talent acquisition, home to world-renowned R&D institutes, and is one of India's fastest-growing engineering, life sciences and IT knowledge hubs."

# ABB

ABB Innovation Center (AIC) is one of the company's largest centers hosting 2,500 technologists in a new, **AI-enabled eight-floor facility in Bengaluru**. The team there focuses on end-to-end competence in R&D, engineering and operations, digital technologies, and services spanning the entire life-cycle management. The team works on providing solutions with next-level AI, ML, data analytics, three-dimensional and digital wins, multiphysics modeling, and IIoT technology. It also plays a key role in the development of ABB's global digital solutions such as ABB Ability® Genix.

Peter R. Voser, ABB chairman, **mentioned in 2019**: "India is one of the countries where we do everything—we have research and development, digital development centers, we have the back office services etc." He added that the India center helps ABB in positioning for two major revolutions: the energy revolution and the automation robotics revolution.

# Qualcomm

Qualcomm's development centers in Bengaluru, Chennai, and Hyderabad **make India its largest research base** outside of San Diego, California.  The centers are focused on developing a wide range of technologies, including wireless modems, multimedia software,

digital signal processing and embedded applications, and digital media networking solutions. The centers are also at the forefront of research into next-generation technologies such as 5G, artificial intelligence, and extended reality.

Chris Patrick, SVP and general manager, **said in 2022**: "There's almost nothing we do at Qualcomm that the India team doesn't have a strong role to play from start to finish." He emphasized that "[t]he Qualcomm India team is absolutely essential, really indispensable in terms of everything we do all over the world."

# Honeywell

Honeywell R&D India is the company's **global center of excellence**. It is headquartered in Bengaluru, with additional facilities in Pune and Gurugram, and works on a variety of cutting-edge technologies in aerospace, building technologies, performance materials and technologies, and safety and productivity solutions.

Former Honeywell CEO and current chairman Darius Adamczyk **said in 2018**: "We have close to 10,000 engineers in India. So, we are not chasing something new. And we're leveraging not just for the local business but for the global business as well."

# Walmart

**Walmart Labs** in Bangalore is responsible for building platforms and products to power Walmart's e-commerce and digital shopping experiences. The center researches competitive intelligence and analytics (CIA) platform using machine learning, while focusing on e-commerce; supply chain management; big data and analytics; social, mobile, and cloud technology.

While Walmart has no direct customer touchpoints in India, many of its operations are powered by India's tech talent. Its chief technology officer and chief development officer, Suresh Kuma, **mentioned in April 2023** that Walmart Global Tech (WGT) centers in India

are the retailer's tech backbone and that they support numerous areas, from supply chain optimization and merchandizing technology to payments and customer experience improvements.

## Advanced Auto Parts

In mid-2022, Advance Auto Parts chose Hyderabad for its GCC, which would act as a **hub of innovation**, providing critical transformational support and automotive solutions across IT, digital, finance, and human resources for its North American markets. The GCC in Hyderabad **aims to help accelerate innovations** for the brand's automotive solutions related to supply chain optimization, competitive pricing, store operations, and customer interface. Advance Auto Parts president and CEO Tom Greco **said**: "Setting up a GCC in India . . . was a strategic move to support Advance's transformational journey by leveraging India's talent to deliver efficient solutions for complex process, participate in innovation programs, and develop digital capabilities."

In addition, India has emerged as the largest employment center for auditing and management consulting organizations, such as Accenture (**350,000 employees in India**), Deloitte USI  (**76,000**), E&Y (**80,000**), KPMG (**40,000**), Bain (**3,000**), BCG (**3,000**), and McKinsey (**5,000**), for high-value functions such as strategic consulting, analytics, and digital transformation. Many of these firms have established their major research and innovation centers in India, taking advantage of the highly skilled labor force in the country. The presence of such a large workforce in India allows these global firms to offer round-the-clock services and maintain a competitive edge in the global market.

# Suggestions for Opening GCCs in India

We offer seven suggestions for firms and managers considering opening GCCs in India.

# 1. Cities

Talent availability, digital skills, dynamic culture, international flights, and strong industry ecosystem are some of the **key drivers for selecting cities for GCCs**. Bengaluru accounts for 30% of total GCC units in India and 34% of the total GCC talent present in India. Hyderabad, Pune, and Gurugram, near Delhi, have emerged as other hubs.

# 2. Schools

**Indian Institutes of Technology (IITs)** are world renowned for the talent they have supplied to numerous companies around the world. In addtition, National Institutes of Technology (NITs), Birla Institute of Technology and Science (BITS), Vellore Institute of Technology (VIT), SRM University, and Delhi College of Engineering are among students' top choices. Tata Institute of Fundamental Research and Indian Institute of Science offer trained scientists and researchers.  GCCs also broaden their recruitment pool by considering candidates from other leading engineering institutions, as well as Tier II and III colleges in India.

For roles in management, finance, and human resources, GCCs shift their focus to **premiere management institutions**. They actively recruit from the Indian Institutes of Management (IIMs), Indian School of Business, Faculty of Management Studies at the University of Delhi, S.P. Jain Institute of Management and Research, XLRI—Xavier School of Management, Narsee Monjee Institute of Management Studies, Management Development Institute in Gurgaon, and Symbiosis Institute of Business Management in Pune.

# 3. CEO

A firm usually brings a person of Indian origin who has worked in its global operations to head its GCC operations in India. That improves alignment between the GCC and the parent company, by communicating effectively while understanding local nuances. India has its unique complexities, from social interactions to business etiquette, that a foreigner may have a difficult time understanding. This understanding is essential to building

relationships with key stakeholders in India, such as government officials, local firms, suppliers, business leaders, and customers. More important, that understanding is essential to making the right recruitment decisions and shaping workforce development strategies.

## 4. SEZs

**Special Economic Zones (SEZs)** provide a range of incentives such as tax exemptions, customs duty waivers, simplified administrative processes, flexibility in employment, and robust infrastructure support. Given the significant growth in the number of SEZs—from 143 a decade ago to 378 as of January 2023—located in prime IT hubs such as Bengaluru, Hyderabad, Pune, Delhi, and Mumbai, these zones offer a conducive environment for GCCs to thrive while enjoying fiscal and operational advantages.

## 5. Cross-Border Teams

GCCs should not be just satellite offices. They should be composed of cross-border teams from both the parent organization's home country and the Indian talent pool. This will allow for smooth knowledge transfer between the parent company and the new center while ensuring an agile and informed decision-making process. Home-country members can offer expertise in established corporate practices, while Indian members can provide insights into local norms,  human resources and recruitment practices, and local regulations. Cross-border teams are also essential for operational continuity across multiple time zones.

## 6. Reverse Innovation

India has emerged as a fertile ground for **reverse innovation**, with multinational corporations such as GE, Samsung, and Siemens leveraging the country's technological prowess to first develop cost-effective solutions for India's local market and then launching them in global markets. GE's portable and cost-effective **MAC 400 electrocardiogram (ECG) machine and Discovery IQ PET/CT scanner** were initially aimed at local challenges

but found broader applications, such as the MAC 800 in Europe and North America. Similarly, Samsung's R&D Institute in Bangalore has been a **hotbed for next-generation communications technologies** such as 5G and 6G. Bosch's Indian entity has also been a **key contributor to cutting-edge solutions**, ranging from intelligent transportation management systems to healthcare devices such as retinal eye screening cameras.

# 7. India Stack

**India Stack** is the moniker for a set of open application programming interfaces (APIs) and digital public goods that aim to unlock the economic primitives of identity, data, and payments at population scale. By providing a unified set of APIs, it revolutionizes how users interact with various services, enabling integration without the need for multiple accounts or passwords. Its open architecture fosters innovation and collaboration, paving the way for developers to create applications that can easily merge with existing digital infrastructures. This democratization of technology is particularly impactful for businesses of all sizes and sectors, making it a globally applicable model. More and more countries around the world are likely to adopt this model. Experimenting and succeeding with India Stack will enable companies to be ready for global launches as and when more countries adopt digital technologies for day-to-day businesses.

The high number of employees based in India underscores the country's critical role in hosting global capability centers. India's role in these operations serves not only as an outsourcing hub for lower-end tasks but also as a vital component for high-value functions such as strategic consulting, analytics, and digital transformation. Many firms have established their major research and innovation centers in India, taking advantage of the highly skilled labor force in the country. The presence of such a large workforce in India allows these global firms to offer round-the-clock services and maintain a competitive edge in the global market.

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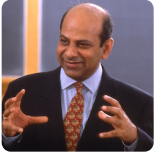


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