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GERMANY'S INDIA ADVANTAGE

Leveraging India Hubs for Innovation and Growth

SEPTEMBER 2025

FOREWORD

The global economy is in flux. Traditional growth models are under strain, and structural shifts — from talent shortages to supply chain realignments — are reshaping industries faster than ever. For Germany, Europe's industrial powerhouse, these pressures are not theoretical. They are being felt today, in slowing growth, strained Mittelstand resilience, and increasing competition from global peers.

German enterprises are grappling with widening STEM and digital skill gaps, wage inflation, and compliance complexity. The Mittelstand, long regarded as the country's innovation backbone, is under pressure from high costs, regulatory burdens, and a shrinking workforce. At the same time, Germany's industrial edge in sectors such as automotive and machinery is being challenged by agile, tech-led rivals. These realities demand bold, new responses.

Global Capability Centers (GCCs) have emerged as a critical lever in this transformation journey. By leveraging India's unmatched talent pool, cost-efficient scale, thriving innovation ecosystem, and digital readiness, German companies are not only addressing immediate operational gaps but also laying the foundation for long-term competitiveness. Today, over 80 Germany GCCs* in India are already shaping the future — building engineering excellence, anchoring AI/ML leadership, and delivering global business services with speed and resilience.

This report titled **"Germany's India Advantage: Leveraging India Hubs for Innovation and Growth"** has been developed to decode these shifts — to analyze how German enterprises can harness India's scale, agility, and innovation depth to overcome domestic challenges and build future-ready organizations. It is a guide to understanding the contours of Germany's GCC journey in India: the opportunities it unlocks, the transformation levers in play, and the strategic pathways for leaders navigating uncertainty.

At a time when the "how" is as critical as the "why," this report aims to provide clarity, context, and conviction

LEADERSHIP QUOTE

The German Mittelstand, with its deep-rooted DNA of resilience, precision, and customer-centricity, stands to unlock unprecedented value by leveraging the established GCC ecosystem in India. Karnataka, home to more than half of India's GCCs, offers the perfect convergence of talent, innovation, and collaboration. As family-owned SMEs embrace the GCC model, they can transform from global challengers to global leaders—scaling innovation, driving sustainable business outcomes, and shaping the next chapter of Indo-German excellence

Madhusoothanan Vijay
Regional Director
Indo-German Chamber of Commerce

LEADERSHIP QUOTE

Germany's 80 GCCs in India have moved far beyond cost efficiency — they are driving some of the most evolved engineering and digital transformation work globally. With an average headcount of over 1,600 professionals per center and access to India's unmatched engineering expertise, German firms are uniquely positioned to deliver sector-defining solutions.

From powering mobility innovation with thousands of engineers in automotive R&D hubs, to advancing healthcare breakthroughs through AI-driven imaging and diagnostics, India has become the heartbeat of German innovation. Germany GCCs have leaned more heavily into core engineering, product innovation, and advanced manufacturing.

Over time, Mercedes, Bosch, Continental, Knorr-Bremse etc. have defined a playbook for large-scale engineering-led transformation. They are no longer support arms — they are strategic co-creators of Engineering, Product, AI and digital platforms that are reshaping industries and strengthening Germany's position on the global stage.

Nilesh Thakker
President - GCC Business
Zinnov

LEADERSHIP QUOTE

Germany stands at a critical juncture, where its engineering leadership is being tested by talent shortages, regulatory pressures, and cost headwinds at home. In this context, India has emerged as a vital partner, enabling German firms to sustain and accelerate their global competitiveness.

Today, over 80 Germany GCCs in India are building advanced capabilities across automotive, industrial, and manufacturing sectors, representing the largest continental European cohort. By leveraging India's world-class engineering and technology talent, these centers have been able to significantly extend their delivery capacity and drive newer innovations that shape global industries. With nearly 90% of these centers operating as multi-functional hubs — often 45% larger in scale than the average GCC in India — German companies are using India not just for back-office work, but for cutting-edge Engineering, Software Development, AI and digital transformation.

The Mittelstand, the backbone of Germany's economy, is also finding fertile ground in India's ecosystem, collaborating with startups and academia to reimagine processes, scale innovation, and redefine global operating models. Over three decades, these GCCs have evolved into strategic engines of innovation and resilience — ensuring Germany's industrial edge remains globally competitive.

Mohammed Faraz Khan
Partner - GCC Business
Zinnov

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DEFINITIONS

GLOBAL CAPABILITY CENTER (GCC)

- Global Capability Centers (GCCs) are offshore services units established by Multinational Corporations (MNCs) to perform strategic functions, leveraging knowledge-based talent, cost and operational efficiencies
- GCCs encompass the Technology, Engineering, and Operations functions, including Shared Services Centers of MNCs in India

MNCs NOT QUALIFYING AS A GCC

- Service Providers (SPs) (Technology/Engineering/Operations/Digital functions) or Integrators supporting Product/Solution/Platform development
- Staffing companies generating revenue by outsourcing talent or contingency staff
- Pure-play Sales entities selling products or customized tools/software to India and nearby regions
- Professional Services companies that have a dual model (in-house and third-party)

GERMANY GCC

- Germany GCCs are India-based GCCs of companies headquartered in Germany, delivering strategic functions through India's talent and ecosystem

OUR UNDERSTANDING OF THE GERMAN MITTELSTANDS

- A family-owned or founder-led independent German company with strong regional roots, long-term vision, and deep expertise in a specific niche. While typically small or mid-sized, many have evolved into global leaders in their specialized domains—driven by technical excellence, close customer relationships, and continuous innovation. Some Mittelstand companies may be publicly traded, but a significant share usually remains under family ownership and control.
- Mittelstand organizations from Germany that have established GCCs in India driving ER&D, IT or BPM have been termed as Germany Mittelstand GCCs

METHODOLOGY

This report has been developed utilizing a mix of primary and secondary research, including proprietary and government databases, and in-depth discussions with GCC leaders and other stakeholders in the ecosystem.

Germany's growth engine is stalling, squeezed by talent shortages, a strained Mittelstand, and rivals overtaking its industrial edge

Talent Shortages in Germany pose increasing risk

STEM* Workers Shortage
(Includes vocationally trained STEM roles, academic STEM experts, specialists, master craftsman, and technician roles)

163 K+

Mechanical/Automotive Engineering Shortage

32 K+

Additional STEM Specialists needed to meet Germany's R&D target

50 K+

From MINT Spring Report 2025

137 K+

IT Experts Deficit (Industry 2025)

Includes:

- Software Developers
- Data Scientists
- Cybersecurity Experts
- Cloud Engineers
- AI/ML Engineers

60%

Companies report lacking employees with digitization skills

Germany's growth potential is constrained by a widening skills gap — the shortage of digital and engineering expertise is slowing innovation and choking the ability to compete globally

Germany's Mittelstand is cracking under pressure

Germany's Mittelstand is the backbone and accounts for ~99% of the companies

58%

of SMEs expect difficulty filling jobs over the next five years

Key Contributing Factors

- High costs
- Low profit margins
- Need to digitize rapidly
- Shrinking workforce
- Bureaucratic burdens
- Complex regulation
- Market share losses
- Supply chain issues

High costs, shrinking workforce, and regulatory burdens are straining the Mittelstand's ability to adapt

Germany's Industrial Edge is being replaced

Market Share of global exports of Industrial Machinery (in %)

5-year decline in industrial production can threaten up to 20% of GDP

China vs. Germany Automotive suppliers in the TOP 100 rankings (2024 & 2030e)

	2024	2030e
China	9	17
Germany	17	13

BOSCH → CATL

CATL to replace Bosch as world's largest supplier by 2030

Global rivals are seizing ground in Machinery and Automotive supply chains, signaling that Germany's traditional strengths need reinvention to retain leadership

Source: MINT Spring Report 2025 (STEM Workers Shortage), Bitkom (IT Skills Gap & Digitization Skills surveys), KfW Research (Mittelstand Study), Germany Trade & Invest (GTAI), Berylls (Automotive suppliers), Zinnov Research and Analysis

Note: *STEM refers to Science, Technology, Engineering, and Mathematics. In Germany, this is commonly referred to as MINT (Mathematik, Informatik, Naturwissenschaften, Technik)

Regulation, stagnation, and energy costs are eroding Germany's competitiveness and driving production abroad

GDPR Slowing Businesses

>2/3

of companies in Germany feel slowed down by data protection

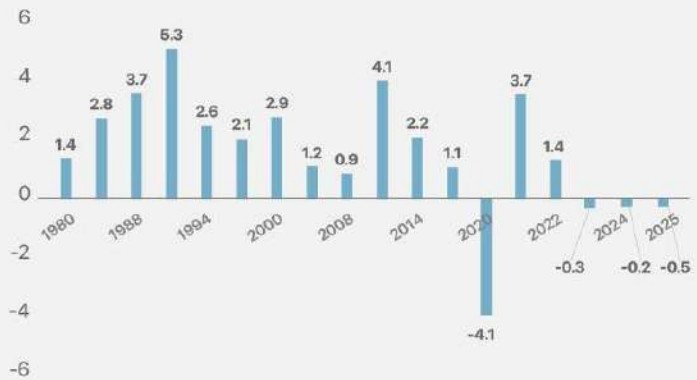
70%

have abandoned innovation plans at least once due to data protection requirements

GDPR's complexity and broad lawful bases, like "legitimate interests" and contractual necessity, can turn data protection rules into a barrier to digital transformation

Germany's Economic Stagnation

Germany GDP growth (annual %)

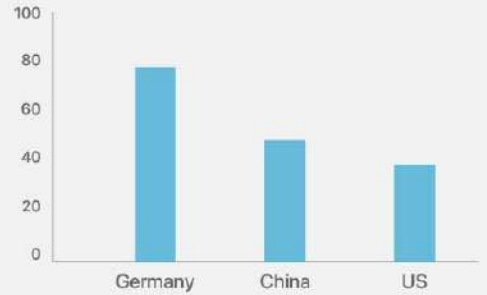


- Two straight years of GDP contraction mark a rare low point
- Forecasted growth for 2025 remains well below trend at 0.1-0.5%

Economic stagnation is weighing on growth and undermining confidence in Germany's recovery

High Energy Costs

Industrial Electricity Prices 2025 (in EUR/MWh)



Germany's costs are 2–3x higher than China and the US

76.5%

Overall Germany manufacturing utilization falls short of the optimal 80–90% range

Impact on Key Sectors

- Automotive output (75% utilization)
- Chemicals production under pressure
- Material manufacturing decline

Soaring energy costs are forcing German industries to cut domestic output and shift production abroad, heightening reliance on global markets and exposure to volatility

Source: Bitkom 2025 (GDPR Impact), IMF World Economic Outlook 2025 (GDP growth rate), CEIC (Manufacturing capacity utilization), Eurostat, Zinnov Research and Analysis

LEADERSHIP QUOTE

German Global Capability Centers (GCCs) play a significant role in driving innovation and delivering value by leveraging technical expertise and a skilled talent pool, developing cutting-edge solutions, conducting advanced research and development, and optimizing costs through efficient operations. India has emerged as the GCC capital of the world with the largest base of 17% of global technology capability centers.

Germany has been a key player in the establishment and evolution of GCCs in India. Over time, the GCCs have transformed into high-value innovation hubs that contribute strategically to global research, engineering, and product development. German companies in India contribute significantly to patent filings and global engineering advancements.

Dileep Mangsuli
Senior Vice President
Siemens Healthineers

To counter these challenges, Germany organizations are increasingly establishing global hubs in India, which now represent the third-largest GCC cohort

1700+
Total Number of GCCs (FY 2024)

80+ Total Number of Germany GCCs (FY 2024)

2975+
Total Number of GCC Units (FY 2024)

150+ Total Number of Germany GCC Units (FY 2024)

EUR 59.7 Bn
India GCC Revenue (FY 2024)

EUR 4.08 Bn Germany GCC Revenue (FY 2024)

1.9 Mn+
Total Installed GCC Talent (FY 2024)

130K Total Installed Germany GCC Talent (FY 2024)

~4.6%
CAGR: Number of GCCs (FY 2024)

~6.5% CAGR: Number of Germany GCCs (FY 2024)

EUR 33.6 Bn
India GCC ER&D Revenue (FY 2024)

EUR 2.77 Bn Germany GCC ER&D Revenue (FY 2024)

Overall India GCC Landscape

Germany GCCs in India

Source: Zinnov GCC Database FY2024, Zinnov Research and Analysis

Germany GCCs have expanded in scale as well as scope leveraging India's mature ecosystem and skilled talent

Germany GCC Evolution in India

TOTAL NUMBER OF GERMANY GCCS (FY 2024)	TOTAL GERMANY GCC UNITS (FY 2024)	GERMANY GCC TALENT (FY 2024)
80+	150+	130 K+

Automotive	Industrial and Chemicals & Materials	Software & Internet and Diversified	Medical Devices and Pharmaceuticals	Electrical and Transport & Heavy Engineering
BOSCH, ZF GROUP, Volkswagen, Mercedes-Benz, Continental, DAIMLER TRUCK, KNORR-BREMSE	BASF, LANXESS, vitesco TECHNOLOGIES, GEA, STULZ, EagleBurgmann	SAP, SOBIS, SIEMENS, thyssenkrupp, software AG	SARTORIUS, BAYER, Boehringer Ingelheim, MERCK, DFE pharma, SIEMENS Healthineers	Giesecke+Devrient, FEV, MARQUARDT, BOSM, ams OSRAM, RITTAL, SCHMERSAL THE DNA OF SAFETY

Key Insights

- **13+** new MNCs from Germany have established their GCCs in India between FY 2021 and FY 2024
- Germany GCCs have been choosing India for over three decades, with global giants like **Bosch, Deutsche Bank, SAP Labs, and Mercedes-Benz** , leveraging India's skilled workforce and technological capabilities
- Germany's **small and medium-sized businesses (SMBs)** are increasingly tapping into India's specialized technical talent pool, with companies like **Valtech Mobility, SOBIS Software, and Piller Blowers & Compressors** leading this strategic shift beyond traditional large-corporation investments
- Over **43%** of Germany GCCs in India have a presence in **Bengaluru**, indicating a strong preference for the Silicon Valley of India
- Germany GCCs in India are predominantly in the **Automotive** sector, followed by **Industrial** and **Chemicals and Materials**
- A notable **18%** of the Germany GCCs established in India are **Fortune Global 500 companies**, including Volkswagen, BMW, and Allianz

Source: Zinnov GCC Database FY2024, Zinnov Research and Analysis

Note: Professional services not included in this analysis

The logos are illustrative only

Automotive GCCs (20%) dominate, while Industrial GCCs are growing fastest, signaling a sectoral shift in Germany's India footprint

Top 5 Verticals of Germany GCCs in India

Verticals	Number of GCCs	Illustrative Logos
Automotive	17+	Continental, ZF GROUP
Industrial	10+	GEA, EagleBurgmann
Chemicals and Materials	9+	BASF We create chemistry, LANXESS
Software & Internet	7+	SAP, software AG
Medical Devices	6+	SIEMENS Healthineers, ZEISS

5 Emerging Verticals of Germany GCCs in India

Verticals	Number of GCCs	Illustrative Logos
Electrical & Electronics	5+	Giesecke+Devrient, ams OSRAM
Pharmaceuticals	5+	Boehringer Ingelheim, MERCK
Transportation, Construction and Heavy Engineering	4+	Hapag-Lloyd, FEV
Retail	3+	METRO, adidas
FMCG	2+	Henkel, Beiersdorf

Source: Zinnov Research and Analysis The logos are indicative only Note: Professional services not included in this analysis

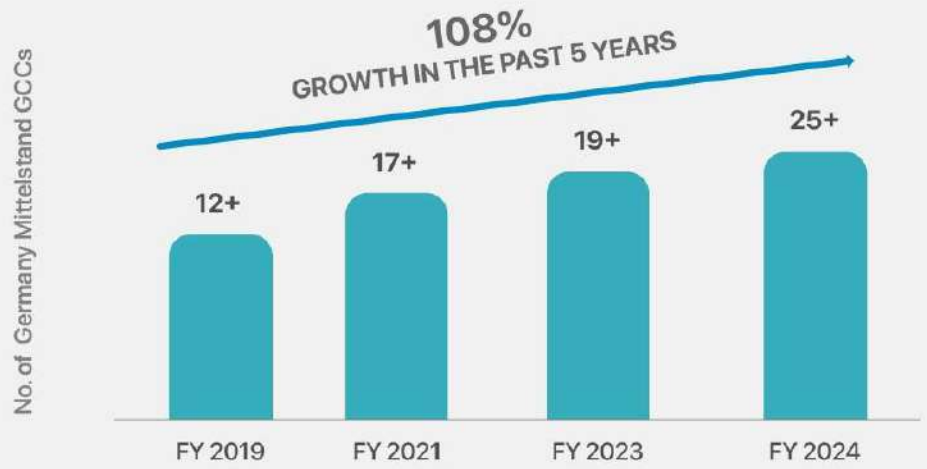
LEADERSHIP QUOTE

India offers deep software and AI capabilities that strongly complement the engineering strengths of German industrial and product organizations. This convergence creates a unique opportunity for GCCs in India to be a competitive edge, driving significant impact on both bottom-line and top-line for German enterprises. Also, over the years, a robust ecosystem of German GCCs has taken root in India, enabling local talent to develop a nuanced understanding of German business culture - an essential factor for success. This cultural alignment, coupled with industry progress from 'serve to spec' to 'spec the next', empowers Indian GCCs to contribute long-term, strategic value.

Dattatri Salagame
CEO
President & MD
Bosch Global Software Technologies

Germany Mittelstand GCCs in India are scaling fast, anchored in engineering-heavy Automotive and Industrial sectors

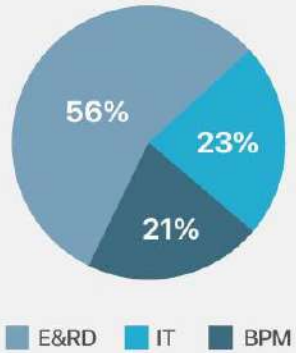
Germany Mittelstand GCCs Landscape



GERMANY MITTELSTAND GCCS (FY 2024)	GERMANY MITTELSTAND GCC UNITS (FY 2024)	GERMANY MITTLELSTAND GCC TALENT (FY 2024)
25+	33+	7.3 K+

Germany Mittelstand GCCs Talent Landscape

Germany Mittelstand GCCs Headcount Split based on Functions (FY 2024)



Mittelstand GCCs in India have a higher engineering focus than broader Germany GCCs, reflecting their product innovation DNA and India's role in driving niche specializations.

Key Insights

- Nearly **1 in 3** Germany GCCs in India belong to Mittelstand companies, Germany's well-known small and mid-sized businesses
- Most of these Mittelstand GCCs come from the **Automotive and Industrial sectors**, with **Brose and STULZ** having some of the largest teams
- Engineering and R&D are the core focus, with over **90%** of these companies setting up engineering operations in India
- **Pune and Bengaluru** are the main hubs for Germany Mittelstand GCCs and their teams
- Pune leads in engineering talent, thanks to big teams from **Brose, FEV, and Marquardt**, and also has strong IT operations from **Knorr-Bremse**
- Bengaluru is the top location for business support functions (BPM), with **Carl Zeiss** playing a key role in driving that growth

Automotive and Transport & Heavy Engineering	Electrical and Telecom & Networking	Industrial	Biotechnology and Medical Devices	Software & Internet
BOM, brose, FEV, Huf, CLAAS, KNORR-BREMSE, SCHAEFFLER, dSPACE, RLE INTERNATIONAL, Webasto	MARQUARDT, SCHMERSAL, ROHDE&SCHWARZ, RITTAL, Giesecke+Devrient	TRUMPF, STAHL, HAIMER, STULZ, PILLER	Dräger, ZEISS, Miltenyi Biotec	SOBIS, P3

Source: Zinnov Research and Analysis

The logos are illustrative only

Note: Professional services not included in this analysis

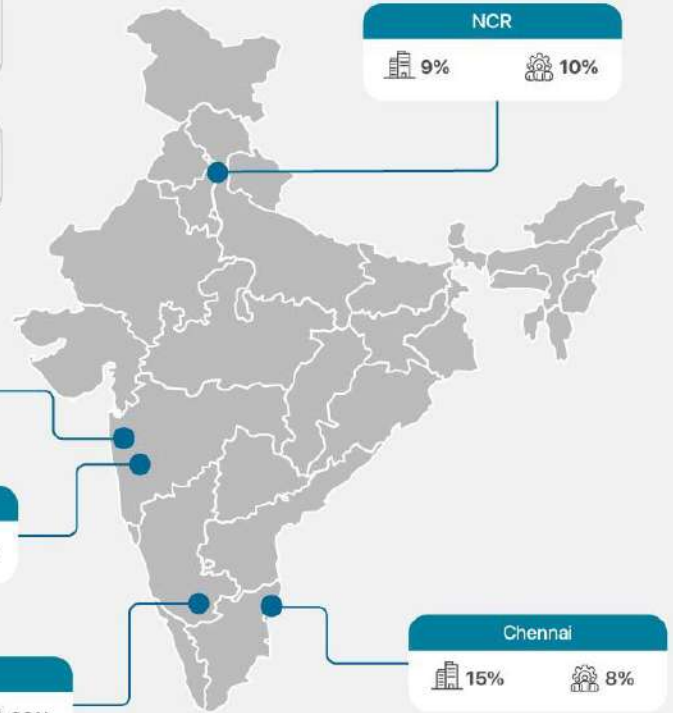
Germany Mittelstand GCCs are heavily concentrated in Pune, Bengaluru and Chennai

Germany Mittlestand GCC Units & Talent Distribution across India

Germany Mittelstand GCCs (FY 2024) **25+**

Germany Mittelstand GCC Units (FY 2024) **33+**

Germany Mittlelstand GCC Talent (FY 2024) **7.3 K+**



HQ States of Germany Mittelstand GCCs in India

Source: Zinnov Research and Analysis

Note: *Others include all the Tier-II and Emerging cities in India

The logos are illustrative only

LEADERSHIP QUOTE

German companies have long been synonymous with precision, engineering excellence, and a deep-rooted commitment to quality. In India, they've found a natural partner — one that not only complements these strengths but amplifies them with unmatched speed, scale, and innovation.

What began as a focus on cost efficiency has rapidly evolved into a strategic collaboration grounded in advanced capabilities. From cutting-edge AI and deep tech innovation to world-class R&D, business model transformation, and global product ownership — India's talent ecosystem is delivering on both complexity and scale. The depth of expertise and the maturity of delivery have positioned India as a cornerstone in the global innovation strategy of many German firms.

But this partnership goes beyond capabilities. What truly makes it thrive is a foundation of shared values: a relentless pursuit of quality, a culture of continuous innovation, and a high-trust mindset that underpins long-term collaboration. These values resonate strongly across both countries — creating not just efficient partnerships, but enduring ones.

For Germany-based Global Capability Centers (GCCs), India is no longer just a delivery hub. It's where future-ready capabilities are being built, tested, and scaled — every single day. In many ways, this partnership is more than a collaboration; it's a blueprint for shaping what's next, together.

Sindhu Gangadharan
MD | Head
Customer Innovation Services
SAP Labs India

India's world-class physical and digital infrastructure enables GCC scale and speed

Physical Infrastructure

One of the Largest Transport Networks

India **ranks #2 in roads** (6.6 Mn kms), **#4 in railways** (68,000+ kms), **and #5 in metro coverage** —on track to become the world's third-largest metro network

Grade-A Office Infrastructure

India absorbed **79 Mn sqft in 2024**, with **GCCs accounting for ~37%** of total leasing across major metros—Bengaluru, Hyderabad, Mumbai, Delhi-NCR. New supply reached approx **52 Mn sqft** in 2024, with Bengaluru, Hyderabad, and Pune driving ~67%

Significant Growth in Aviation Capacity

Operational **airports are set to double from 148 to 300 by 2047**, with ~ EUR 11 Bn planned across 15 key projects to boost regional air connectivity

Data Center Capacity

India's data centre capacity is set to grow **77% by 2027**, hitting **1.8 GW**, after crossing **1 GW in 2024** with a strong **24% CAGR** since 2019. Growth is driven by **Cloud Service Providers** (54% demand) and rising **AI workloads**

Robust Public Investment driving Momentum

The 2024–25 budget earmarks **EUR 123.7 Bn for infrastructure (11.1% increase)**, supported by a **EUR 1.2 Tn National Infrastructure Pipeline already underway**

Campus-scale & Green Building Potential

India has **~882 Mn sqft of office space across top 7 cities**; ~27% of the total office stock in India is over 15 years old and 23% is ~10–15 years old—ripe for retrofitting into future-ready campuses

Digital Infrastructure

India Stack

The India Stack is a collection of Digital Infrastructure designed to drive transformation into a digital economy. It integrates technologies for Digital Identity, Payments, Data Management, and Service Delivery. Recognized by the IMF and World Economic Forum, it serves as a pioneering model for global digital transformation, offering valuable lessons for other countries

Key Components of India Stack

Unified Payments Interface (UPI)

UPI, India's real-time payment system, processes ~13 Bn transactions monthly, serving 350 Mn users. Reaching a transaction value of EUR 264 Bn in 2025, its success has inspired global adoption like Singapore, Nepal, and Bhutan integrating UPI into their systems

AADHAAR

Aadhaar, the world's largest Biometric ID System which had 1.4 Bn enrollments by 2025, facilitates over 10 Mn e-KYC transactions daily and is endorsed by the World Bank as a powerful platform for Public and Private Service Delivery

Account Aggregator (AA)

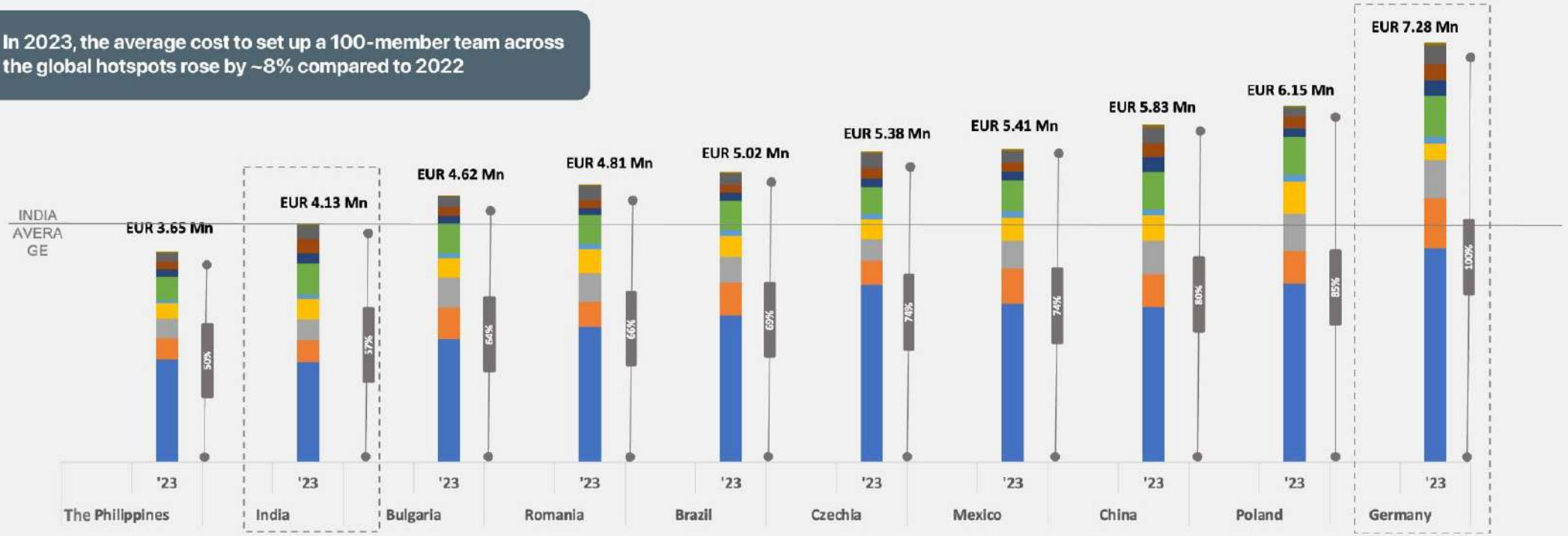
The AA framework enables secure, consent-based financial data sharing across 112 institutions, with 112.34 Mn users linked. It is often compared to the European Union's Payment Services Directive (PSD2), with both aiming to democratize financial data

Source: IBEF, PIB, MEA, NPCI, CBRE, JLL, Zinnov Research and Analysis

India offers the strongest cost-to-skill advantage among global GCC hubs

Cost Analysis of Setting up a 100-member Team: By Location

In 2023, the average cost to set up a 100-member team across the global hotspots rose by ~8% compared to 2022



Source: Zinnov COE Hotspots 2024, Zinnov Research and Analysis

Germany GCCs are delivering innovation across industries from India

Automotive	A premier German Automotive leader's R&D centers in India, spread across Bengaluru, Pune and Chennai, represent its largest development hub outside Germany. These centers drive digital innovation and vehicle engineering excellence through cutting-edge CAD/CAE, embedded systems, and telematics solutions. Housing over 7,000 skilled engineers, the facilities contribute critical software, electrical systems, and mechanical engineering expertise to every vehicle in the company's global portfolio
Telecommunications	A leading German Telecom giant's digital labs in India, located in Pune and Bengaluru, serve as a key innovation hub. Focused on AI, IoT, and Cloud solutions, the labs enhance global operations by delivering advanced digital transformation tools and services. With a team of over 1,000 experts, they drive Automation, Cybersecurity, and 5G innovations, supporting the company's global network infrastructure and customer-centric solutions
Chemicals & Industrial	A Germany-based Engineering leader in Chemical and Industrial Plant Construction operates a strategic center in India, leveraging its expertise for global project execution and innovation. With 1,200+ professionals across two cities, the center specializes in EPC solutions for fertilizers, petrochemicals, cryogenic storage, and biopolymer plants, evolving from support to leading execution, driving efficiency, sustainability, and innovation globally
BFSI	A German Financial institution's Indian technology hub employs 18,000+ engineers across Mumbai, Bengaluru, Pune, and Jaipur, representing 45% of its global tech workforce. As its largest innovation center globally, this strategic powerhouse drives digital transformation through next-generation AI, Cloud Computing, and Machine Learning solutions. The operation has evolved from a service provider into a key asset, pioneering proprietary technologies that shape the bank's worldwide digital future
Software & Internet	A leading German Enterprise Tech firm's Indian hub, is its second-largest R&D center, drives ERP, business tech platforms, supply chain, and customer experience innovation. With developers, ML engineers, and Cloud architects, it focuses on AI, microservices, and sustainability. Hosting a startup accelerator and digital government initiatives, it evolves from a cost center to a strategic innovation powerhouse
Medical Devices	A German Healthcare technology firm's Bengaluru hub is one of four global innovation centers, representing their largest Indian investment (EUR 160 Mn) and houses 50% of its global software workforce. Employing developers, AI Engineers, and Scientists, it focuses on medical imaging, diagnostic platforms, and therapy systems. Teams drive innovation in embedded systems, Cloud Architecture, and Digital Twins, while SREs support entry-level medical systems and research advances healthcare with AI and computer vision

Source: Zinnov Research and Analysis

Examples are illustrative only not exhaustive

Knorr-Bremse India is shaping global safety with innovation and engineering excellence — a blueprint for Mittelstand transformation

Overview

KNORR-BREMSE

Knorr-Bremse's India Global Capability Center has emerged as a cornerstone in the company's global operating model, combining engineering depth with digital expertise to strengthen its worldwide innovation agenda. The center functions as an extended arm of headquarters, enabling end-to-end product development, advanced technology research, and scalable support across critical functions.

- Industry: **Industrial/Automotive**
- India GCC headcount: **400+**
- Global Year of Inception: **1947**
- Year of Inception in India: **2013**
- India GCC Locations: **Pune**

Evolution Timeline

1993	2003	2012	2015	2024	
Entered Indian rail sector, now a leading subsystem supplier to Indian railways	Incorporated as Knorr-Bremse India Private Ltd.; commercial operations at Hinjawadi (Pune) started in 2005	Technology Center India (TCI) founded in Pune, focusing on R&D and engineering support for global operations	Appointment of Mr. S. Krishan Yogi as Managing Director, Commercial Vehicle Systems Division	Partnered with Alstom to equip 52 Movia metro trains for Madhya Pradesh Metro Rail Corporation Limited	Opened a global AI center in Chennai Became a key technology supplier to flagship projects like Vande Metro / Namo Bharat Rapid Rail

Knorr Bremse India's Transformation

Overview

- Became a hub for advanced braking systems (ABS), evolving from domestic supplier to global exporter of Anti-Slip Actuator (ASA) and viscous dampers, strengthening Knorr-Bremse's worldwide supply chain
- Introduced ABS8 modular system, delivering advanced safety features once exclusive to luxury vehicles, showcasing India's ability to engineer global-standard solutions
- Embraced "Make in India" not just for local markets but as a launchpad for exports, positioning India as critical in Knorr-Bremse's international strategy

Impact

- Enabled compliance with mandatory ABS law (2015) by rapidly supplying ABS kits and training mechanics, raising India's trucks and buses to global safety benchmarks
- Pioneered Hill Start Assist for trucks, enhancing safety in hilly regions, reducing accidents, and setting new standards for India's commercial vehicle segment
- Achieved 100% sales growth in 9 months, with multiple patents and innovations exported globally, cementing India as a leader in R&D and market growth.

Keys to Success

- Built strength through continuous training of workers and mechanics, creating demand for branded products while ensuring higher quality and trust in the market
- Implemented Lean Manufacturing, TQM, and Poka Yoke, ensuring error-proof processes, cost efficiency, and world-class reliability across production lines
- Offered end-to-end solutions from engine to braking, supported by validation, testing, and value engineering, enabling global customers to achieve both safety and cost advantages.

Integrated site with GCC and Manufacturing/Sourcing unit

As part of its India expansion journey, Knorr Bremse, with Zinnov's support, considered establishing integrated sites that combine Engineering, Technology, and Manufacturing capabilities which included :

- Location & Land Assessment
- Talent & Workforce Planning
- Supply Chain Integration
- Water Table & Sustainability Considerations
- Future-Ready Design

The benefits of Integrated Sites include:

- Efficiency & Cost Reduction
- Enhanced Flexibility & Scalability
- Accelerated Innovation
- Resilience & Sustainability
- Stronger Ecosystem & Policy Alignment

Source: Knorr-Bremse Group, Zinnov Research and Analysis

Levers of Transformation

Today, Germany GCCs are harnessing India's rich talent pool, vibrant ecosystem, and strong digital capabilities to drive large-scale transformation for their organisations. They have evolved into hubs of accelerated digital evolution and innovation, delivering breakthrough solutions and operational excellence across industries.

01 Establishing End-to-End Engineering Capability

02 Leading the AI Journey for the Org

03 Driving 10X Innovation

04 Building a Global Business Services (GBS) Powerhouse

Germany GCCs in India closely mirror the broader GCC maturity curve in the build-and-scale phases, shifting from support roles to innovation and transformation hubs

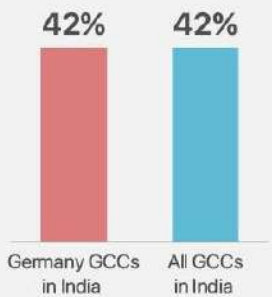
OUTPOST

FY2024

- Technology and Operational support to the global business
- Primarily supports the global organization, focusing on QA/QE* with limited involvement in development
- Emphasis on cost efficiency and talent advantages

SATELLITE

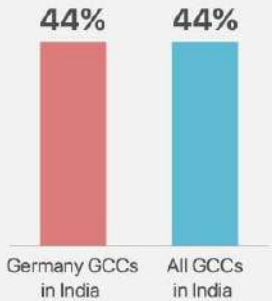
FY2024



- Comprehensive technology support with end-to-end ownership across select business lines
- Establish and strengthen global leadership roles
- Targeted investments and development for specific business segments

PORTFOLIO HUB

FY2024



- Developing unique capabilities through innovative pilot technology projects
- Centralized solution hub for diverse technology portfolios
- Presence of a few technology COEs in AI/ML/Generative AI, Analytics, Blockchain, etc.

TRANSFORMATION HUB

FY2024

- Lead technology-driven transformations, manage global change projects, and deliver substantial bottom-line impact
- Hub for global organizational vision in technology areas
- Significant ecosystem collaboration for innovation with Start-ups, Academia, etc.

WORK PORTFOLIOS DRIVEN FROM INDIA CENTERS

Source: Zinnov Research and Analysis

*QA/QE – Quality Assurance/Quality Engineering

Roles anchored in Germany GCCs are actively solving for talent shortages, industrial slowdowns and innovation bottlenecks

CORE ENGINEERING AND LEADERSHIP WORK PENETRATION ACROSS GCCs - FY 2024

Engineering Talent
Share of Global Engineering talent based in India

Architects
Share of Global Architect talent based in India

Product Management
Share of Global Product Management talent in India

Global Roles
Growth in number of Average Global Roles per GCC in India

Key Insights

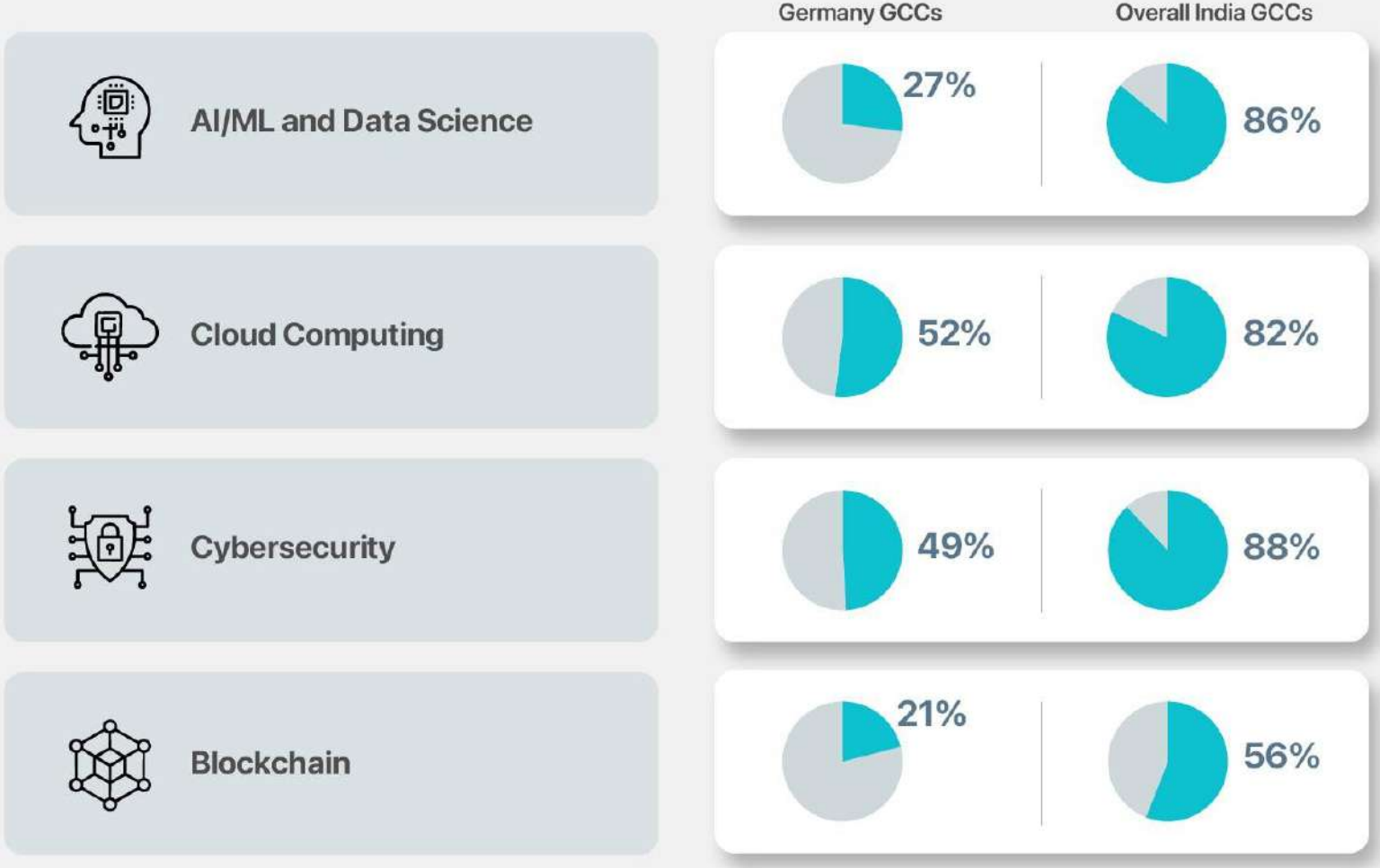
- **German GCCs in India have built strong engineering depth**, with ~24% of their India GCC workforce in engineering roles and ~19% in architect roles — helping offset skill shortages in Germany's core industries
- **Leadership roles are expanding:** Global roles per German GCC in India have tripled since 2019 (from <1 to ~3), showing HQs' trust in India to lead—not just support—critical functions
- **Product management talent is still nascent:** Only ~13% of German GCCs' India workforce is in product management, highlighting significant headroom to scale ownership-driven roles
- India's role in German GCCs is shifting from execution support to leadership in engineering and innovation, strengthening competitiveness against rising cost and energy pressures in Germany

Source: Zinnov Research and Analysis

Analysis based on a select number of companies N = 50+ companies

Germany GCCs in India, though relatively late to the shift, are now rapidly embracing critical digital roles

DIGITAL TECHNOLOGY PENETRATION ACROSS GCCs – FY 2024



Key Insights

- Only 27% of Germany GCCs have embedded AI/ML and data science in their operations, versus 86% across India GCCs—highlighting a major underleveraged lever for digital R&D, product intelligence, and automation at scale
- With high domestic costs and rigid on-premise systems, cloud-led Germany GCCs are reducing capex and enhancing agility, to address Germany's rising operational expenses and innovation friction
- Cybersecurity uptake at 49% helps manage rising digital and compliance risks amid growing regulatory burden and data governance challenges strengthening digital trusts and ensuring business continuity
- Blockchain-enabled GCCs are helping address Germany's supply chain issues and industrial production decline, by enabling transparency, traceability, and automation in manufacturing and logistics processes

Source: Zinnov Research and Analysis Analysis based on a select number of companies N = 50+ companies Figures represent % of Germany GCCs in India that have adopted the respective digital technology (vs. overall India GCCs) Note: Talent pools across certain skills may overlap

India is rapidly emerging as a global hub for AI innovation, driven by exceptional talent, vibrant start-up ecosystems, and strategic government initiatives

Building a Dominant Global AI Presence

Ranked #1 Digitally Advanced Country, as identified in Dell Technologies' Digital Transformation Index II

Ranked #2 The AI skills penetration rate stands at 2.75%, according to Stanford University's AI Index Report 2024

Ranked #14 in AI Research Rankings as per AI accelerator and ecosystem builder 'Change Engine'

India's Robust AI Ecosystem for a Next-Gen Future

Booming Talent and Start-up Ecosystem

~200K+ AI/ML Talent in India

AI and Big Data/Analytics talent in India costs 0.5-0.6X of the talent cost in London

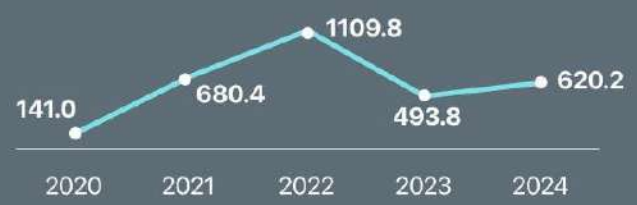
330+ AI start-ups in India newly funded (2013-2023)

100+ Generative AI start-ups in India

1350 Number of Generative AI-related patent families growing at 56% annually

Private and Public Investment

AI-Start-up Funding in India (in EUR Mn)



Government Initiatives

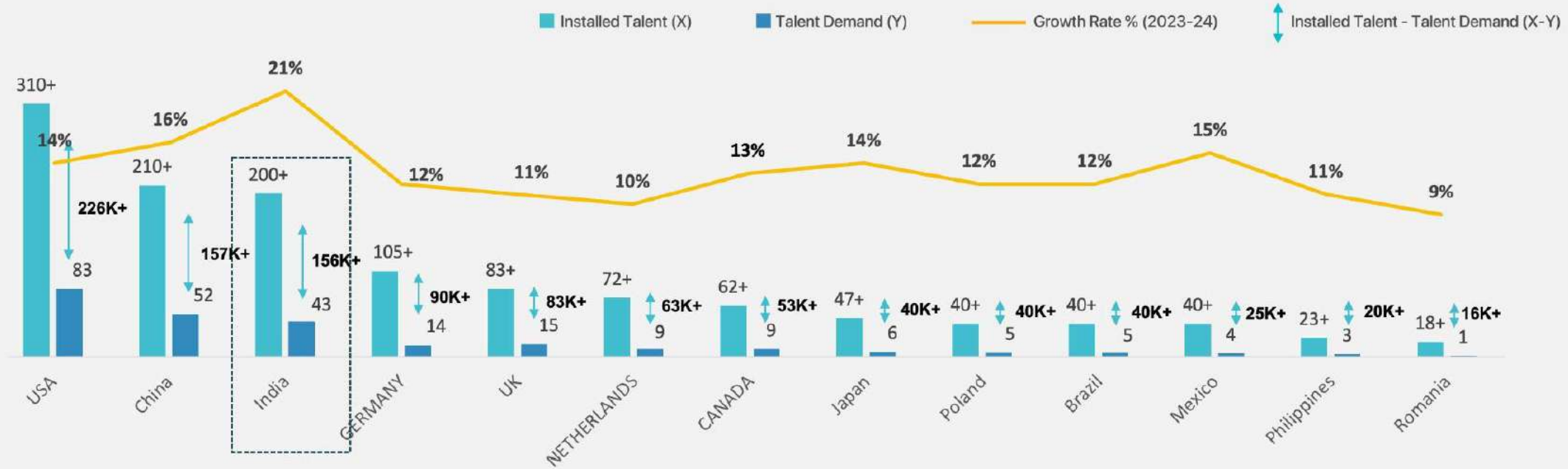
- The India AI Mission, approved in March 2024 with a EUR 1.1 Bn budget, aims to advance AI capabilities through 10,000+ GPUs*, innovation centers, a datasets platform, AI education expansion, and start-up financing, driving socio-economic transformation and responsible AI development
- India's National AI Strategy, launched in 2018, focuses on AI for inclusive growth, targeting Healthcare, Agriculture, and Education. It estimates AI could add USD 957 Bn to India's GDP by 2035, prioritizing innovation, ethical AI, and skill-building

Source: CB Insights, PIB, NITI Aayog

Note: * GPU- Graphics Processing Unit

India emerges as the world's fastest-growing, cost-effective AI talent hub powering global demand

Artificial Intelligence Talent Supply[1] (in 000s), Demand[2] (in 000s) & Growth Rate[3] (%) for Select Countries



Key Takeaways

- India boasts over 200,000 AI professionals and a surplus of 157,000, with talent supply growing at a remarkable 21% annually, making it the fastest-growing and most scalable AI talent market globally
- With AI job demand in India projected to reach 1.8 Mn by 2027, global firms are increasingly building teams locally, attracted by 2-3X cost advantages over US or China and a deep, growing talent pool
- Seven core industries using AI contribute 75% of India's GDP, namely BFSI, Retail, Manufacturing, Healthcare, Energy, Telecom, and Transport driving robust and sustained demand for AI talent

1.Installed Talent includes the professionals having relevant skills in the fields of AI/ML, Deep Learning, and Generative AI. 2.Annual Job Demand refers to the total number of job postings within 12 months across the analyzed job roles and geography. 3.Growth Rate refers to the annual increase or decrease in the employed talent pool for a particular job role(s) in that geography.

Source: Draup, Nasscom Report, AIM Research, Zinnov Research and Analysis

LEADERSHIP QUOTE

German based multinationals are increasingly considering India as a strategically important location for their growth and presence. India's robust economic resilience, skilled workforce, cost efficiency, and favorable business environment make it an ideal destination for GCCs. With the time zone advantage, cultural adaptability, and thriving innovation ecosystem, India provides a future-proof destination for German MNCs. India's transformation from an outsourcing hub to a global innovation powerhouse is undeniable—and German businesses are taking note. The rise of GCCs benefits both nations. German companies tap into India's skilled workforce, competitive costs, and expanding market, while India gains investment, jobs, and expertise

Krishnaswamy Jambunathan
Vice President and Head – Tech Center India
ZF Group

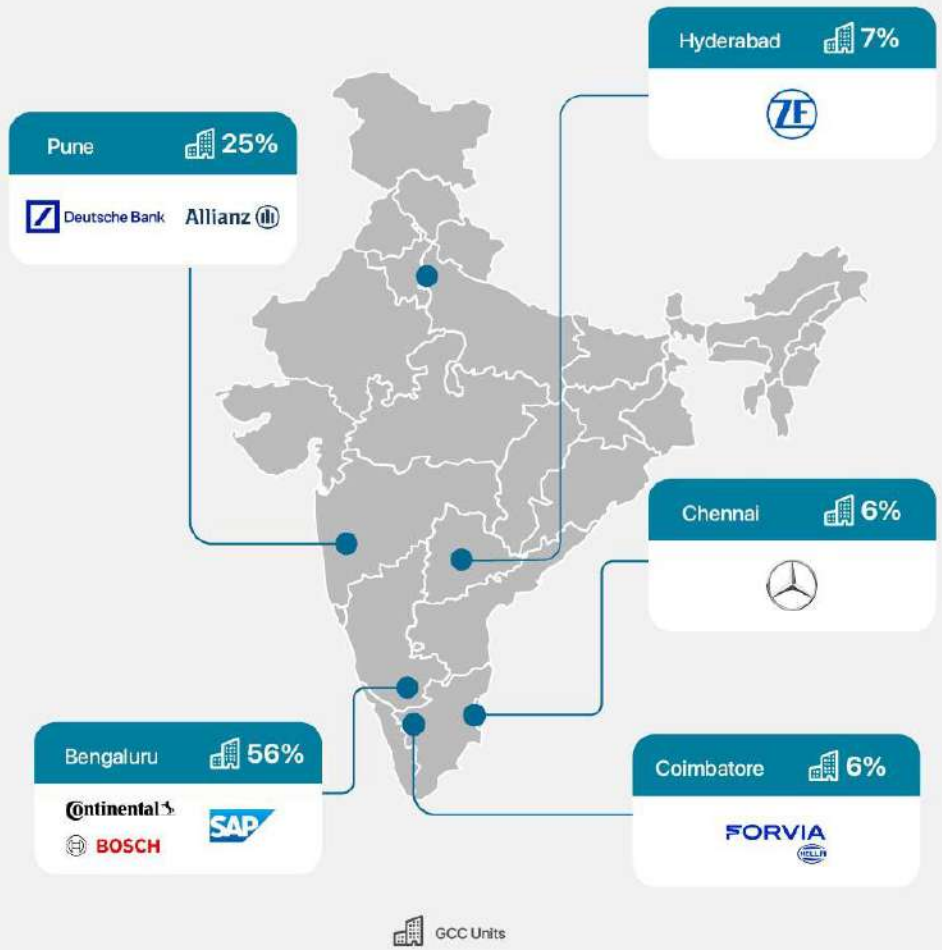
Bengaluru and Pune emerge as the top talent hotspots, comprising 80% of the total AI/ML talent for Germany GCCs

10+ GCCs with AI/ML Capabilities

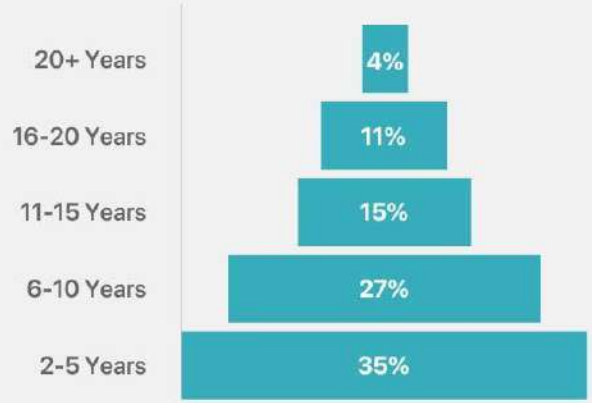
13+ Centers across GCCs with AI/ML Capabilities

Split of Germany AI/ML COEs in India by verticals

Split of Germany-Based AI/ML CoEs across Tier-I Locations in India



Experience Pyramid for Installed Digital Technology Talent for GCCs



Key Employers for Digital Technology Talent in India

SOCIETE GENERALE · UBS · NatWest Group · ABB · BNP PARIBAS · SIEMENS · ZEISS · NOVARTIS · CREDIT AGRICOLE · AVEVA

Source: Zinnov Research and Analysis

The logos are illustrative only

India's innovation ecosystem has been thriving, driven by several successful cross-collaborations

OPEN INNOVATION – Start-up Collaborations

34% of all Germany-headquartered GCCs have open innovation programs through strategic start-up partnerships

Merck launched Uptune Program for Indian startups in healthcare, life sciences and manufacturing

Siemens Healthineers partnered with nasscom CoE to accelerate digital healthcare startups in India

INTERNAL INNOVATION

31% of all Germany-headquartered GCCs integrate internal innovation through specialized initiatives and cross-functional collaboration

Boehringer Ingelheim India celebrated 20 years of excellence, earning Top Employer 2024 recognition through innovative initiatives including Boehringer University, achieving 60% employee development participation while fostering diversity, leadership growth and transformative healthcare solutions.

OPEN INNOVATION – Academia Partnerships

57% of all Germany-headquartered GCCs in India leverage industry-academia partnerships to drive innovation

SAP Labs India and PSG Institute partner for tech research, student development, and industry training

Mercedes-Benz R&D India and BITS Pilani collaborate on AI, electric mobility, and software research

M&A AND INVESTMENTS

25+ Unique investors, including VCs, corporate funds, private equity firms, and family investment offices from Germany, have actively invested in Indian start-ups between 2020 and 2023

Munich Re Ventures invests in early-stage startups focusing on insurance, health, and risk technology

BASF Venture Capital focuses on startups driving decarbonization, circular economy, AgTech, and digitalization

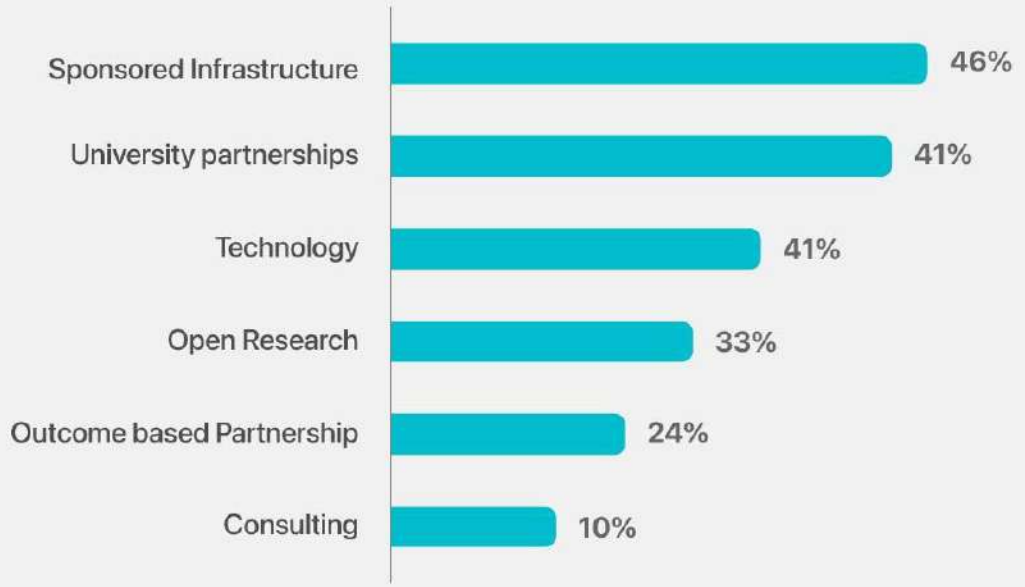
Source: Zinnov Research and Analysis

The logos are indicatve only

Germany GCCs anchor heavily on academic partnerships in India to build future capabilities

57% of the Germany-headquartered GCCs analysed* have formal collaborations or MoUs with colleges in India

Nature of Industry - Academia Collaboration



Case Snippet #1

Merck India actively bridges academia-industry gaps through strategic partnerships with educational institutions, fostering research advancement and practical skill development in life sciences and healthcare.

Key Focus Areas

- The GCC collaborated with Amity University to deliver practical certificate courses in Advanced Instrumentation, providing students hands-on industry exposure and technical training
- The partnership focused on strengthening research capabilities through shared expertise, advanced facilities, and industry-oriented curriculum development for next-generation life science professionals.

Case Snippet #2

Bosch India strengthens its commitment to innovation through strategic academia partnerships, marked by a significant EUR 22 Mn grant to IISc Bangalore under their global InterCampus Program

Key Focus Areas

- They collaborated to develop India-centric solutions in strategic sectors including mobility, healthcare, energy, and water.
- Established the Robert Bosch Centre for Cyber Physical Systems, strengthening research through a ten-year commitment to environmental and innovation initiatives.

Case Snippet #3

Deutsche Bank became the first financial institution to partner with IIT Bombay Research Park Foundation, strengthening academia-industry collaboration in digital banking innovation and financial technology.

Key Focus Areas

- They collaborated to bring together academics, students, financial experts, and startups to facilitate bank-initiated research projects advancing digital innovation
- The partnership developed resilient banking technologies and provided internship opportunities, with over 20 IIT students joining their Technology Centre in 2021

Source: Zinnov Research and Analysis

Note: *Analysis for top 50 most mature Germany-headquartered GCCs

Deutsche Telekom digital labs drives global telecommunications revolution by transforming complex data landscapes and customer engagement platforms

Overview

Deutsche Telekom, is a leading integrated telecommunications firm, operating in 50+ countries and serves over 252 Mn mobile customers. It specializes in digital product development, cloud, mobile applications, advanced analytics, AI/ML implementation & robust security systems. Its innovation hub, Deutsche Telekom Digital Labs (DTDL) in India, drives these initiatives, playing a key role in shaping cutting-edge digital solutions and supporting global operations

- Industry: **Telecom and Networking**
- India GCC headcount: **1000+**
- Global Year of Inception: **1995**
- Year of Inception in India: **2020**
- India GCC Locations: **Gurgaon, Pune, Bangalore**

Objective

To establish DTDL as Deutsche Telekom's premier innovation hub by developing enterprise-scale solutions that enhance operational efficiency and drive digital transformation across global operations.

DataHub Implementation

Challenge	Solution	Impact
Intelligent Document Summarization Tool	**AI-Driven Grant Application Prioritization**	**Intelligent Document Summarization Tool**
• Data teams struggled with managing hundreds of terabytes monthly, facing critical questions about data acquisition, content understanding, access protocols, and ownership tracking across multiple functional units • Multiple stakeholders experienced role-specific challenges: business teams lacked KPI visibility, analysts faced reduced productivity, and security teams struggled with compliance tracking and sensitive data management	• Selected DataHub based on UI accessibility, automatic scanning capabilities, and comprehensive end-to-end lineage support, deploying through Helm Chart for efficient system management • Executed systematic integration with key systems, including Nifi, Athena, Redshift, and Tableau, establishing metadata ingestion pipelines and implementing domain-specific organization structures	• Cut pipeline resolution time, reduced data-discovery calls from 5/day to near zero, and onboarding from weeks to days • Boosted security with personally identifiable information (PII) detection and dead pipeline removal, enabling scalable AI/ML use via API-driven data access • Empowers GenAI platforms and supports T-Labs' AI in network security, digital twins, and predictive systems

Push Notification System Enhancement

Strategic Initiative	Technical Architecture	Impact
• Developed in-house notification system to address third-party consent limitations, which previously restricted engagement to only 60% of users due to data sharing constraints. • Implemented flexible packet structure for real-time event ingestion, enabling personalized campaigns and comprehensive user behavioral analytics across multiple storage solutions.	• Created dynamic SQL generator interfacing with Central Data Lake*, automatically converting admin-defined rules into SQL queries executed via on-demand Spark clusters • Distributed user data across MongoDB* (profile information) and Elastic* (behavioral events), with raw data processed through multiple layers in Central Data Lake	• Established dual-flow system handling scheduled notifications through continuous running scheduler and real-time push notifications triggered by immediate user interactions • Integrated NCP (Notification Control Panel) for message customization and implemented comprehensive ledger logging to track notification delivery process steps

Source: Deutsche Telekom Digital Labs, Zinnov Research and Analysis

*Note: Central Data Lake - unified storage for raw enterprise data; MongoDB - NoSQL database for flexible user profiles; Elastic - search and analytics engine for behavioral events.

LEADERSHIP QUOTE

German organizations' delivery excellence is deeply rooted in their rigor for process, quality, engineering, and technology prowess.

In today's age, beyond just the cost play, India provides an unparalleled potential, fueling growth for German organizations to leverage talent at scale, lead digital programs, and drive transformation charters from here. All this, coupled with Digital India initiatives, being the World's 3rd largest start-up ecosystem and strength in manufacturing as well, positions complementing capabilities for both countries to lead the next wave of digitally led businesses for the world.

In addition, India's positive and impacting adaptability quotient around some of the factors as learning agility in multiple languages, technologies, being resilient with changing structures, policies and having a maximum overlap of working hours sets the right premise for not just German organizations, but EU as whole, highlighting the commitment to professional and personal cultural infusion to catalyze excellence and innovation.

Vishal Srirama
India Head
BSH Global Digital Services

India is the default hub for German GBS scale-ups: 13+ GCCs already operate mature GBS centers

80+ Germany GCCs present in India

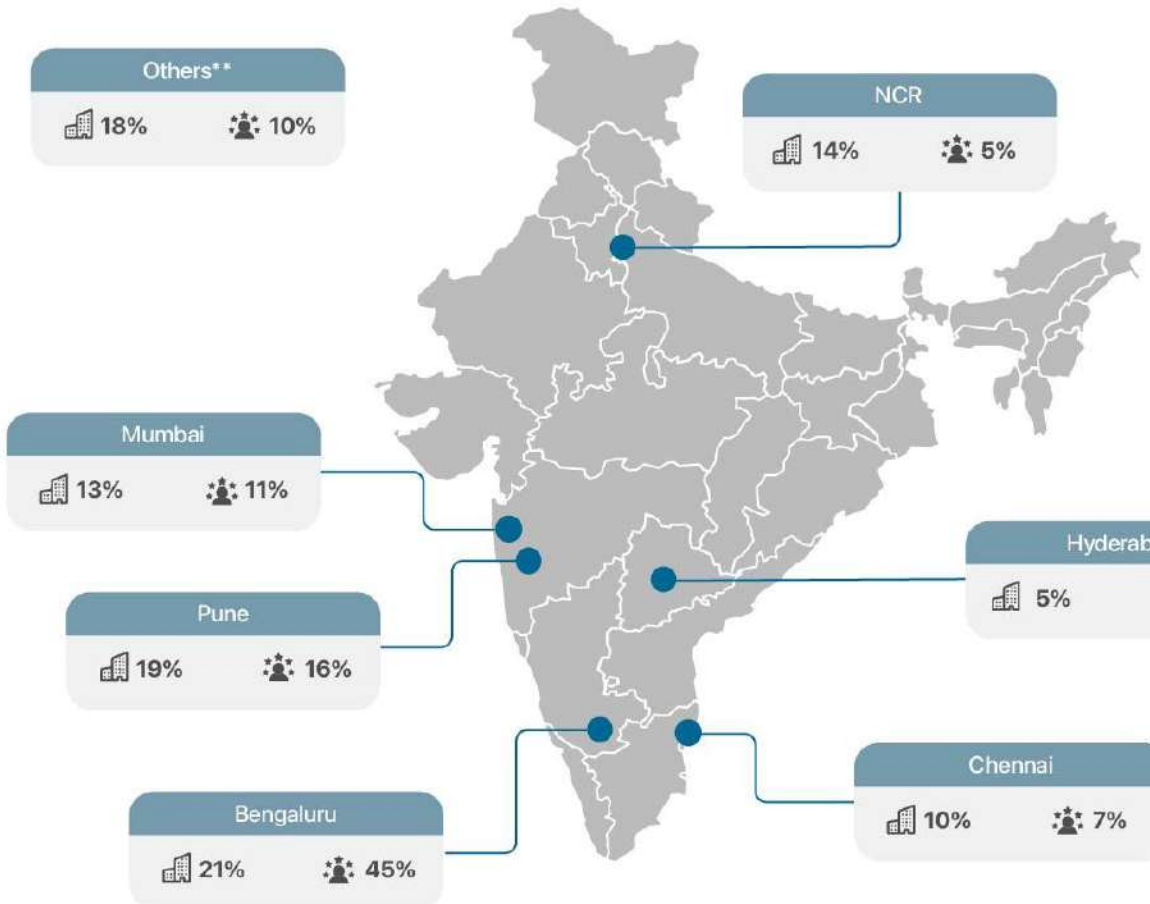
55+ Germany GCCs with Functional Shared Services Model

13+ Germany GCCs with Mature Shared Services Model / GBS* Construct

90K+ Installed Talent across Functional Shared Services Model

*GBS is a unique construct in which multiple Shared Services functions are co-located in the same entity with the aim of delivering high value outcomes for the parent organization. The GBS extensively leverages data, automation, and technology as key enablers to deliver high value for their global counterparts.

Distribution of Functional Shared Services Centers and Installed Talent across India



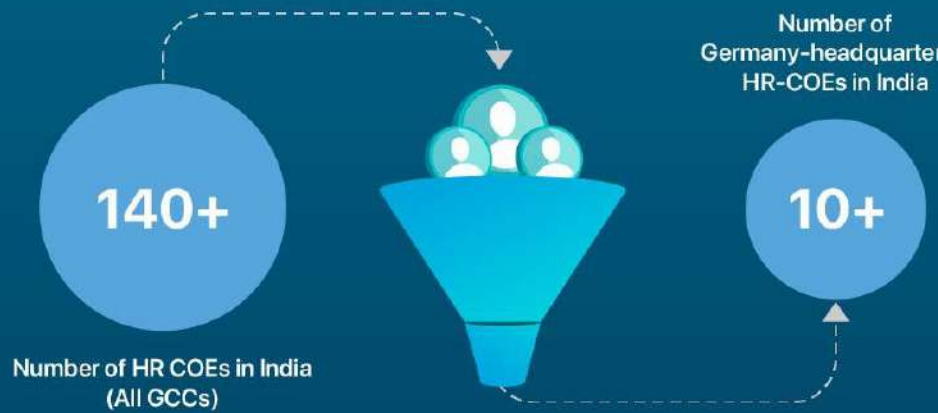
**Others include all the Tier II and Emerging cities in India

Germany GCC Units Germany GCC Talent

Source: Zinnov Research and Analysis

Germany GCCs are building next-gen HR & Finance COEs in India

Overview of Germany-headquartered HR COE Landscape



Workforce Administration & Leave Management and Compensation, Labor & Benefits

SARTORIUS · SIEMENS · BOSCH

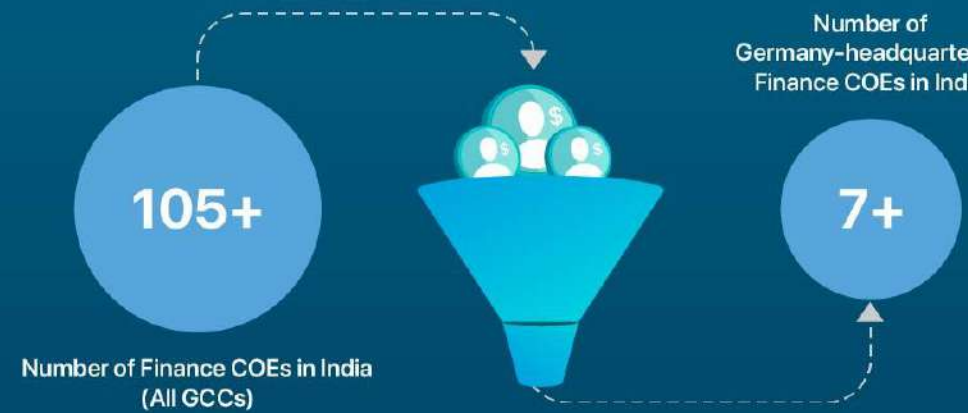
Recruiting & Staffing and Learning, Training & Performance

mks · ATOTECH · BASF We create chemistry · MERCK · SIEMENS Healthineers · ZF GROUP

Global Mobility and Strategy & Governance

ZF GROUP · BMW

Overview of Germany-headquartered Finance COE Landscape



Procure-to-Pay and Order-to-Cash

SIEMENS · MERCK · Allianz

General Accounting and Closing & Reporting

METRO · SIEMENS energy

Financial Planning & Analysis and Risk & Compliance

Deutsche Bank · Continental · BOSCH

Source: Zinnov Research and Analysis

*Illustrative logos only

India provides Germany the scale, innovation, and resilience to offset domestic challenges

Talent Supply

- India produces **1.5 Mn** engineers and **300 K+** IT graduates every year, ensuring a continuous supply of skilled professionals
- With **~40%** of the world's GCCs based in India, including **130 K** talent supporting Germany GCCs, India already serves as a trusted delivery base
- India's AI/ML talent pool is growing at **21%** annually, providing the niche digital expertise Germany urgently needs

SME Advantage

- Germany SMEs in India have grown **100%+** in five years, driven by significant savings in real estate, infrastructure, and talent, enabling rapid innovation and scale
- The **Make in India Mittelstand (MIIM)** initiative, spearheaded by India's Embassy in Berlin since 2015, functions as a one-stop market entry support platform—offering regulatory guidance, partnerships with Invest India, and tailored facilitation to ease entry for German SMEs

Tech Innovation

- India ranks as the world's 3rd largest startup ecosystem, with over **100–110** unicorns across sectors like **AI, SaaS, Deep Tech, Health Tech, Climate Tech, and Advanced Manufacturing**
- Germany GCCs based in India are not just support units—they drive **core engineering, product leadership, and end-to-end digital innovation**, bridging Germany's industrial gap

Regulatory Alignment

- With over **950 Mn** internet users and platforms like UPI processing **~13 Bn** transactions per month, India has built a digital-first economy that demonstrates scalable, reliable operations
- India's **Digital Personal Data Protection Act (DPDP Act, 2023)** closely mirrors GDPR principles, offering Germany organizations a familiar, compliant regulatory environment for data-driven operations

Growth Market

- India's real GDP is projected to grow **6.5–7%** per year through 2025; by nominal GDP, it is on track to become the world's third-largest economy
- With a **350 Mn+** middle-class, India enables Germany GCCs to build, localize, and scale solutions—creating playbooks for India-like growth markets

Energy Security

- India achieved a record of **29.5 GW** new renewable energy capacity in FY 2024–25, bringing its total to **220 GW**, with a historic **22 GW** added in just H1 2025
- Leveraging solar PV at around **EUR 0.03–0.05/kWh**, India offers clean and cost-efficient electricity, significantly cheaper than many conventional sources

Source: Zinnov Research and Analysis

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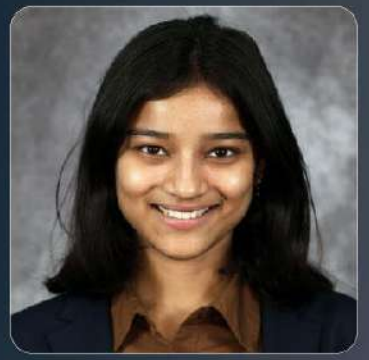

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Zinnov

Addendum

METHODOLOGY

This report has been developed by Zinnov through a comprehensive study to understand the Germany GCC Landscape in India.

This report analyzes the following:

- India's potential as a global GCC hub that is consistently attractive for MNCs from Germany.
- The current scenario and emerging trends that define the Germany GCC ecosystem in India.
- The role played by enablers such as academia, start-ups, government policies, and Service Providers in strengthening the ecosystem.

DATA AGGREGATION

ZINNOV DATA

DRAUP PLATFORM DATA

INTERVIEWS / DISCUSSIONS

INTERVIEWS WITH INDUSTRY-WIDE GCC EXPERTS

APPROACH

- Proprietary Databases: Proprietary knowledge repositories of Zinnov
- Primary Research: Includes primary interviews with industry leaders, CXOs across the GCC ecosystem
- Secondary Research: Includes company reports, analyst reports, expert commentary, news announcements
- SME Network: Includes connects with industry veterans, advisors, partners, etc.
- Currency conversion rate used: 1 USD = 0.92 EUR, (three-year average)

APPROACH

Source: Zinnov Research and Analysis

LIST OF DEFINITIONS (1/3)

Acronym	Expansion
BPM	Business Process Management (BPM) is a discipline that uses various methods to discover, model, analyze, measure, improve, and optimize business processes. A business process coordinates the behavior of people, systems, information, and things to produce business outcomes in support of a business strategy. It consists of HR Offshoring, Finance & Accounting Process, Procurement and Logistics, Marketing & Operations, Technical Support, and Knowledge-based Services.
CAGR	Compound Annual Growth Rate, or CAGR, is the mean annual growth rate over a specified period of time, longer than one year.
COE	A Center of Excellence (COE) is a specialized team within an organization that focuses on developing expertise in a specific field. It is dedicated to a specific field of technology, business or government, and aims to improve best practices, drive innovation, and facilitate collaboration within the organization. A COE is usually composed of subject matter experts and professionals who possess a comprehensive understanding of the domain.
Digital Talent	Digital Talent includes skills in technologies such as AI/ML, Big Data Analytics, IOT, Cloud Computing, Web & Mobile Development, Cybersecurity, RPA, Blockchain, AR/VR, 3D Printing, etc.
Engineering	Engineering Services include any activity that covers development, augmentation or optimization of products/services of an organization. Further, it comprises of any support activities related to manufacturing, engineering, project engineering, MRO, regulatory services, etc. It also consists of Software Product Development, Embedded Services, and Mechanical Engineering Services.
Fortune 500	The Fortune Global 500, also known as Global 500, is an annual ranking of the top 500 corporations worldwide as measured by revenue.
GDP	Gross Domestic Product (GDP) at current prices, in USD billion, measures the total value of goods and services produced using prevailing prices. In our analysis, it reflects the nominal economic output for FY2023-2024
GDP Growth Rate (%)	GDP Growth Rate (%) measures the inflation-adjusted change in a country's economic output over a specific period. In our analysis, it represents the growth rate for FY2023-2024.

Source: Zinnov Research and Analysis

LIST OF DEFINITIONS (2/3)

Acronym	Expansion
Global Business Services (GBS)	Global Business Services is a unique construct in which multiple Shared Services functions are co-located in the same entity with the aim of delivering high value outcomes for the parent organizations. The GBS extensively leverages data, automation, and technology as key enablers to deliver high value for their global counterparts.
Global Capability Center (GCC)	GCCs are the captive units that include MNC (headquartered outside India)-owned units undertaking work for the parent's global operations
Global Roles	Global Roles are the job roles within the organization that have a global or international scope rather than being restricted to a specific region or country. Global Roles involve working with teams and stakeholders from various parts of the world, where these team(s) report into the global leader who is based out of India.
IT	IT Services refer to the application of business and technical expertise to enable organizations in the creation, management, and optimization of, or access to, information and business processes. It consists of Application Development and Maintenance, IT Consulting, System Integration Services, and Infrastructure Management Services.
Market Size	Market Size in GCCs refers to the profitability generated by all the GCC centers, which is calculated on the basis of resource utilization (productivity), their billing rate, and working hours invested by the resources on an annual basis.
Movia	A family of metro and commuter trains developed by Alstom (earlier by Bombardier), widely used in global urban transport networks for their reliability, energy efficiency, and passenger comfort.
Namo Bharat (Rapid Rail)	India's first Regional Rapid Transit System (RRTS) branded as Namo Bharat, offering high-speed, modern, and sustainable commuter services between cities, starting with the Delhi–Meerut corridor.
Operations	The role involves planning, organizing, and overseeing business practices that enhance operational efficiency, and assuring that company processes are driving value with its operations. The role also includes preparing and supervising the practices that turn resources such as labor, equipment, and raw materials into goods and services, etc.

Source: Zinnov Research and Analysis

LIST OF DEFINITIONS (3/3)

Acronym	Expansion
Outpost	It is a GCC set up for a limited, specific responsibility or as a result of small acquisitions, and has engineering accountability limited to a few products.
Portfolio Hub	These GCCs are accountable for end-to-end ownership of Processes and Portfolios from India. The Portfolio Hub is responsible for the design and development of applications or products. In India, such hubs may also have an ownership of horizontal competencies, end-to-end.
Shared Services	Shared Services is the consolidation of business operations that are used by multiple parts of the same organization. It is cost-efficient as back-office operations used by multiple divisions of the same company are centralized, eliminating redundancy.
STEM	Acronym for Science, Technology, Engineering, and Mathematics—an education and career focus area driving innovation, research, and skilled workforce development worldwide.
Tier-I	Tier-I includes cities such as NCR, Mumbai, Pune, Bengaluru, Chennai, Hyderabad.
Tier-II and Tier-III	A Tier-II GCC Location is any city with fewer than 100 GCC units or a total installed GCC talent below 100K. Examples include Ahmedabad, Vadodara, Thiruvananthapuram, Chandigarh, Jaipur, Coimbatore, Kochi, Nagpur, Mysuru, Mangalore, Madurai, Kanpur, Indore, Visakhapatnam, and Goa.
UDAN	The UDAN (Ude Desh ka Aam Naagrik) scheme is an initiative by the Government of India aimed at improving regional air connectivity.
Vande Bharat	India's indigenous semi-high-speed train series designed by Indian Railways, known for modern features, quick acceleration, reduced travel times, and improved passenger amenities.

Source: Zinnov Research and Analysis

LIST OF ABBREVIATIONS (1/3)

Acronym	Expansion
5G	Fifth Generation (of Mobile Network Technology)
ABS	Anti-Braking Systems
AI	Artificial Intelligence
AI/ML	Artificial Intelligence/Machine Learning
APAC	Asia Pacific
API	Application Programmable Interface
AR	Augmented Reality
Arch.	Architecture
ASA	Anti-Slip Actuator
Bn	Billion
BFS	Banking and Financial Services
BFSI	Banking, Financial Services, & Insurance
BPM	Business Process Management
BPO	Business Process Outsourcing
CAGR	Compound Annual Growth Rate

Acronym	Expansion
CAD/CAE	Computer-Aided Design/ Computer-Aided Engineering
CIO	Chief Information Officer
COE	Center of Excellence
CX	Customer Experience
DevOps	Development and Operations
DNA	DeoxyriboNucleic Acid (here, 'core identity')
EMEA	Europe, the Middle East, and Africa
EPC	Engineering, Procurement, and Construction
ERP	Enterprise Resource Planning
ER&D	Engineering, Research & Development
FTE	Full-time employee
FY	Customer Experience
GAP	GCC Accelerator Platform
GBS	Global Business Services
GCCt	Global Capability Center

Source: Zinnov Research and Analysis

LIST OF ABBREVIATIONS (2/3)

Acronym	Expansion
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
GST	Goods & Services Tax
GTM	Go-to-Market
GW	Gigawatt
HQ	Headquarters
HR	Human Resources
ICT	Information and Communications Technology
ID	Identity
IIT	Indian Institute of Technology
IMF	International Monetary Fund
IOT	Internet of Things
IP	Internet Protocol
IT	Information Technology
ITeS	Information Technology-enabled Services

Acronym	Expansion
ITOM/ITSM	IT Operations Management/ IT Service Management
KM	Kilometres
KPI	Key Performance Indicator
kWh	kilowatt-hour
KYC	Know Your Customer
L&D	Learning & Development
LATAM	Latin America
LLM	Large language model
M&A	Mergers & Acquisitions
MD	Managing Director
Mgt.	Management
ML	Machine Learning
Mn	Million
MNC	Multinational Corporation
MR	Mixed Reality

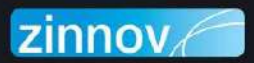
Source: Zinnov Research and Analysis

LIST OF ABBREVIATIONS (3/3)

Acronym	Expansion
MSME	Micro Small & Medium Enterprises
NCR	National Capital Region
OEM	Original Equipment Manufacturer
OI	Open Innovation
OS	Operating Systems
PII	Personally Identifiable Information
QA	Quality Assurance
QA/QE	Quality Assurance/Quality Engineering
R&D	Research & Development
SMB	Small and Medium-sized Business
SOP	Standard Operating Procedure
SPD	Software Product Development
SRE	Site Reliability Engineering
STEM	Science, Technology, Engineering, & Math
SVP	Senior Vice President

Acronym	Expansion
Tn	Trillion
TQM	Total Quality Management
UI/UX	User Interface/User Experience
USA	Unites States of America
VC	Venture Capital
VP	Vice President
VR	Virtual Reality
WFH	Work from Home
XR	Extended Reality
XR/VRt	Extended Reality/Virtual Reality

Source: Zinnov Research and Analysis



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