HFS Top 10 Enterprise Blockchain Services 2018

HFS Research author:
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Mayank Madhur, Knowledge Analyst
“Enterprise blockchain is no longer just a beautiful waterfall that people admire from a distance. Enterprises are starting to get wet (or are at least feeling the mist).”

—Saurabh Gupta, Chief Strategy Officer
## What you’ll read

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Introduction

- Blockchain is emerging as a powerful architectural technology with the potential to impact enterprise and B2B ecosystems as much as the internet and cloud.

- The 2018 Enterprise Blockchain Services Top 10 investigates the blockchain space to provide a comprehensive and foundational analysis of the blockchain services market for enterprises.

- From an enterprise or B2B adoption perspective, HFS assessed 17 leading blockchain service providers based on detailed discussions with their leadership teams, inputs from their enterprise clients, and analysis of nearly 2,800 blockchain engagements across industries and across the globe.
Blockchain provider ecosystem

This report focuses on providers of enterprise blockchain services

Blockchain solutions providers
- Accenture
- IBM
- LT1
- NTT Data
- Wipro

Consulting firms
- Deloitte
- EY

Consortiums
- B3i
- Bitfury
- BTL
- Coinbase
- Coinme
- ConsenSys

Startups
- Bitfury
- BTL
- Coinbase
- Coinme

Academia, regulators, and not-for profits

Blockchain tools and software providers
- BIGCHAINDB
- Blockstream
- bluzelle
- ConsenSys
- Context.IO
- Digital Asset Holdings
- Guardtime
- IBM Bluemix
- Microsoft Azure
- Symbiont

Blockchain platforms and frameworks
- Permissionless (public)
  - Bitcoin
  - Ethereum
  - Factom
  - Stellar

- Permissioned (private/hybrid)
  - Chain
  - Corda
  - Hyperledger
  - MultiChain
  - Monax
  - Ripple

Illustrative lists, not comprehensive

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Research methodology

HFS assessed 17 leading blockchain service providers based on detailed discussions with their leadership teams, inputs from their enterprise clients, and analysis of nearly 2,800 blockchain engagements across industries and across the globe. The research is also augmented with information from publicly available information sources.

Blockchain service providers were assessed on the following three main dimensions:

- **Voice of the customer**
  - Clients in live production environment
  - Client feedback (number of referencible clients, client satisfaction)

- **Ability to execute**
  - Scale and growth (number of dedicated resources, YOY growth)
  - Experience (number of engagements, practice start date)
  - Solution breadth and depth (industries covered, average solution depth)
  - Value chain coverage (advisory, prototype, pilot, production and system integration)

- **Innovation**
  - Intellectual property (patents, tools, solutions accelerators)
  - Ecosystem (experience with blockchain platforms, partnerships, consortium memberships)
  - Investments (practice building, market development)
Blockchain service providers covered in this report:

- IBM
- accenture
- Capgemini
- Cognizant
- CONDUENT
- Deloitte
- TATA Consultancy Services
- DXC
- epam
- EY
- HEXAWARE
- NTT DATA
- Infosys
- KPMG
- LTI
- wipro
- Mphasis

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Executive summary
Executive summary (page 1 of 2)

- **We are hurtling toward a hyperconnected economy, and blockchain will provide the way to make it happen.** Ecosystems across organizations that service the specific needs of a customer are emerging. No single organization owns the entire customer experience and competitors and peers need to figure out how to collaborate. Blockchain in combination with other emerging technologies like IoT and artificial intelligence will provide the way to make it happen.

- **The blockchain “six-pack” is driving unprecedented interest from enterprises.** There are six built-in blockchain features with long-term potential for disruption when enterprises leverage them intelligently in relevant business use cases. The blockchain six-pack includes: 1. Distributed shared data over peer-to-peer (P2P) networks reduces single points of failure; 2. Consensus-driven trust cuts out the middle-man; 3. Immutable transactions ensure trust; 4. Hashing-based data ensures integrity and security; 5. Automated smart contracts promote touchless interactions across process chains; and 6. Permissioned and permissionless flavors give enterprise users flexibility. These six blockchain features are changing the way we think about business transactions, data storage, and even industry value chains and associated revenue models.

- **Blockchain runs the risk of becoming representative of the massive hype bubble we live in today: yet another technology hammer trying to find business problems to nail.** Despite the cryptocurrency bubble-burst in 2018, blockchain continues to be the one of the most hyped emerging technologies. HFS estimates blockchain’s price-to-sales ratio (a useful ratio to understand the hype) to be 125+ compared to 2.3 for the S&P 500. It’s becoming harder to see through the blockchain hype these days to examine the problems we’re trying to solve with, create solutions, and contextualize them in real-world scenarios. Among the hype and mad use cases there is some gold, but it’s getting lost in the noise. Blockchain is not the panacea for everything and we need to choose the use cases carefully. HFS created the “Blockchain Bullshit Buster”—a set of 10 questions to help you dig out the gold from the piles of…well, you know what!

- **Despite the hype, enterprise blockchain is coming out of the closet.** The market is witnessing an explosion in blockchain proofs-of-concept (PoC) and pilots, but in-production solutions represent less than 5% of overall blockchain engagements. However, we are starting to get a critical mass of “live blockchain” solutions. HFS’ database of 2,800 enterprise blockchain engagements suggests nearly 135 in-production blockchain solutions. This is a 10X+ jump from last year! This is encouraging even though almost all “live engagements” represent “shadow” or “parallel” environments where the legacy solutions has not yet been replaced.
Executive summary (page 2 of 2)

- **Real blockchain clients want real business impact.** Blockchain promises “creative destruction” through disintermediation, but that is a long-term vision. Enterprise blockchain clients are investing in blockchain solutions to get real business impact in the near term. Without a tangible ROI, blockchain engagements get stuck at the PoC/pilot stage. No-nonsense, real business cases are a must-have to drive blockchain beyond the PoC-fatigue that we are witnessing today.

- **Enterprise blockchain has broader implications than just financial services.** While financial services was the first mover from an enterprise blockchain adoption perspective, other industries have had good success with blockchain. Supply chain (provenance tracking) is emerging as one of the hottest use cases for blockchain besides financial services use cases such as trade finance, payments, and KYC (identity management).

- **Blockchain technology is not the biggest adoption issue but collaborating across organizations is.** Enterprise blockchain adoption is going through a “90-9-1” adoption challenge. Ninety percent of enterprises are still trying to internalize the concept of blockchain and its relevant impact on their business. Nine percent of enterprises that identified relevant use cases are struggling to determine the starting point for their PoCs and pilots. And the 1% of enterprises that have successful pilots are challenged with scalability to a production-grade environment. Some enterprises that identified relevant use cases are struggling to determine the starting point for their PoCs and pilots. The few enterprises that do have successful pilots are challenged with scalability to a production-grade environment. There is a multitude of challenges that the market needs to overcome (lack of awareness, solution immaturity, and lack of standards and regulations, among others), but one the biggest hurdles is to get organizations (that often directly compete with each other) to come together. Until organizations are convinced of the value proposition of the hyperconnected world and a sharing economy, blockchain will struggle to realize the value potential it promises.

- **Several service providers are doing commendable work to educate, experiment, and develop enterprise blockchain solutions.** HFS assessed 17 leading blockchain service providers based on detailed discussions with their leadership teams, inputs from their enterprise clients, and analysis of nearly 2,800 blockchain engagements across industries and across the globe. The HFS Top 10 enterprise blockchain service providers for 2018 are (in rank order): 1. IBM, 2. Accenture, 3. Deloitte, 4. EY, 5. Infosys, 6. Wipro, 7. NTT DATA, 8. Cognizant, 9. TCS, and 10. KPMG.
We are hurtling toward a hyperconnected economy, and blockchain will provide the way to make it happen.
The Blockchain “six-pack” is driving unprecedented interest from enterprises

<table>
<thead>
<tr>
<th>Distributed</th>
<th>Consensus</th>
<th>Immutable</th>
</tr>
</thead>
<tbody>
<tr>
<td>shared data over peer-to-peer (P2P) network reduces single points of failure</td>
<td>driven by hashing-based data</td>
<td>transactions ensure trust</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Security</th>
<th>Smart contracts</th>
<th>Permissioned and permissionless</th>
</tr>
</thead>
<tbody>
<tr>
<td>driven by hashing-based data</td>
<td>promote touchless interactions across process chains</td>
<td>flavors give enterprise users flexibility</td>
</tr>
</tbody>
</table>

Refer to “The Blockchain Reality Check: Where Are We and What Can We Expect in 2018?” for more details on the blockchain “six-pack”
Blockchain continues to be one of the most hyped emerging technologies

Price-to-sales (PSR) ratios as we enter 2019
(PSR = Market capitalization / revenues)

- S&P 500 (record all-time high historically!)
- Global service providers (IBM, Accenture, Capgemini)
- India-heritage service providers (TCS, Cognizant, Wipro, Infosys)
- RPA providers
- Enterprise blockchain

2.27
1.99
3.53
25-50
125+

Reality

Fantasy?

Sources of information
- S&P 500 PSR: multipl.com
- Global and India Heritage Service Providers: Y Charts and financial reports
- RPA providers: HFS estimates
- Enterprise blockchain: Coinmarketcap.com and HFS estimates

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Blockchain promises “creative destruction” through disintermediation, but that is a long-term vision.

Near term: business impact
- Process excellence
- Efficiency gains
- Digitization
- Tracking and traceability
- Identity

Medium term: competitive differentiation
- Re-imagined IT infrastructure
- Re-defined transaction management
- Trust in multi-party collaboration

Long term: creative destruction
- Creation of new business models
- Removing intermediaries
- Disruption of traditional businesses
Despite all the promises, real clients need real impact in the near term

**What benefits do you hope to achieve from the above woven blockchain solution?**
(Weighted average of responses)

- **Process excellence and efficiency gains in existing business models**
- **Re-imagined IT infrastructure that is shared and decentralized**
- **Digitization of contracts leading to faster settlements**
- **Additional trust in multi-party collaboration**
- **Disruption of traditional businesses**
- **Re-defined transaction management that is transparent and immutable**
- **Traceability through provenance and asset tracking**
- **Management of private data and digital identity**
- **Creation of new business models**

Based on ~20 interviews with real blockchain enterprise clients

**Based on ~20 interviews with real blockchain enterprise clients**

- **Near term: business impact**
- **Medium term: Competitive differentiation**
- **Long term: Competitive differentiation**
Enterprise blockchain is coming out of the closet

1. Advisory
   Opportunity identification, business case development, platform selection, roadmap definition

2. Prototype
   Proof of concept or proof of value

3. Pilot
   Limited solution roll-out

4. Production
   Solution implementation and management in live client environment (includes parallel runs to legacy solution)

Sample: ~2,800 blockchain engagements across 17 service providers

Blockchain engagements in production:
- 63% in production in 2018
- 22% in production in 2017
- 9% in production in 2017
- 5% in production in 2017
Enterprise blockchain has broader implications than just financial services

Sample: 550 blockchain engagements across 15 service providers

Relative adoption
(measured by number of engagements)

Value realization
(measured by the percentage of engagements in production or near production)

- Travel and hospitality
- High-tech
- Energy and utilities
- Manufacturing
- Retail and CPG
- Logistics
- Government
- Insurance
- Media and telecom
- Healthcare and life sciences
- Banking and financial services

Industries rapidly adopting blockchain and moving beyond pilots to drive real value.

Highest number of engagements, but a significant number of engagements are stuck at the PoC or pilot stage.

Industries lagging blockchain adoption to date, despite significant promise.
Prominent blockchain use cases across industries

- **Banking and financial services**
  - Trade, Finance, Payment, Cryptocurrency, Compliance
  - KYC, Lending, Asset Management, Valuation, Bill accounting

- **Manufacturing**
  - Sourcing/Procurement, Provenance tracking, Records management
  - Identity, Title ownership, Auditing

- **Government and public sector**
  - Finance, Security, Compliance
  - KYC, Identity management, Provenance tracking

- **Energy and utilities**
  - Trading, Customer Service, Smart Grids
  - Contract management, Title Records, Compliance

*Sample: 550 blockchain engagements across 15 service providers*
The “90-9-1” enterprise blockchain challenge

- Overall nascence of blockchain solutions
- Lack of understanding in distributed ledger technologies and use cases
- Lack of maturity of blockchain platforms
- Lack of success stories in the market
- Internal stakeholder buy-in around business model changes and threat of disruption
- Consortia-related challenges (set-up, management, and governance)
- Difficulty in quantifying the benefits (ROI)
- Lack of clarity on technical architecture
- Permissioned versus permissionless decision
- Security and privacy concerns
- Uncertainty and lack of formal regulations
- Lack of talent availability
- Lack of market standards, inter-operability issues
- Integration issues with legacy
- Cultural change management (internal and external)
- Latency or throughput issues in production
- Service support for blockchain largely undefined

Refer to “The Blockchain Reality Check: Where Are We and What Can We Expect in 2018?” for more details
The blockchain market needs a lot more investment in education

<table>
<thead>
<tr>
<th>Key Challenge</th>
<th>Weighted Average of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall nascence of blockchain solutions</td>
<td></td>
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<tr>
<td>Consortia-related challenges (set-up, management, and governance)</td>
<td></td>
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<tr>
<td>Lack of maturity of blockchain platforms</td>
<td></td>
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<tr>
<td>Internal stakeholder buy-in around business model changes and threat of disruption</td>
<td></td>
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<tr>
<td>Lack of understanding of distributed ledger technologies and use cases</td>
<td></td>
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<tr>
<td>Difficulty in quantifying the benefits (ROI) and developing a total cost of ownership (TCO) model</td>
<td></td>
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<tr>
<td>Private (permissioned) versus public (permissionless) decision</td>
<td></td>
</tr>
<tr>
<td>Lack of success stories in the market</td>
<td></td>
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<tr>
<td>Latency or throughput issues in production environment</td>
<td></td>
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<tr>
<td>Lack of talent availability</td>
<td></td>
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<tr>
<td>Cultural change management (internal and external)</td>
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</tbody>
</table>

Based on ~20 interviews with real blockchain enterprise clients

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<table>
<thead>
<tr>
<th>Blockchain BS busters</th>
<th>Your response?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle 1: Replacing ledgers is pointless</td>
<td>Not really</td>
</tr>
<tr>
<td>Principle 2: The realpolitik chestnut</td>
<td>Probably</td>
</tr>
<tr>
<td>Principle 3: Change for the sake of change</td>
<td>Yes</td>
</tr>
<tr>
<td>Principle 4: Blindly quoting the network effect</td>
<td>Go! You've hit blockchain gold</td>
</tr>
<tr>
<td>Principle 5: Garbage in, garbage out</td>
<td>Stop! Blockchain is not for you.</td>
</tr>
<tr>
<td>Principle 6: Stone carvings</td>
<td>Wait! Do you really need blockchain?</td>
</tr>
<tr>
<td>Principle 7: Speed of light</td>
<td>Caution! Get some professional help</td>
</tr>
<tr>
<td>Principle 8: The privacy conundrum</td>
<td></td>
</tr>
<tr>
<td>Principle 9: Law ambiguity</td>
<td></td>
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<tr>
<td>Principle 10: The good old cost-benefit equation</td>
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</table>

Refer to “Is blockchain a giant digital joke?” for more details
HFS Top 10 enterprise blockchain service providers, 2018
HFS Top 10 enterprise blockchain service providers, 2018

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company</th>
<th>Execution Success</th>
<th>Innovation Capability</th>
<th>Voice of the Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IBM</td>
<td>☐</td>
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<td>2</td>
<td>Accenture</td>
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<td>3</td>
<td>Deloitte</td>
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<td>4</td>
<td>EY</td>
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<td>5</td>
<td>Infosys</td>
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<td>6</td>
<td>Wipro</td>
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<td>NTT DATA</td>
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<td>8</td>
<td>Cognizant</td>
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<td>13</td>
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<td>15</td>
<td>Hexaware</td>
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<td>16</td>
<td>Conduent</td>
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<td>17</td>
<td>Mphasis</td>
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</table>

Sample: Based on detailed discussions with their leadership teams, inputs from their enterprise clients, and analysis of nearly 2,800 blockchain engagements across industries and across the globe. Source: HFS Research 2018
## HFS top five enterprise blockchain service providers by individual assessment dimensions

<table>
<thead>
<tr>
<th>Rank</th>
<th>Ability to execute</th>
<th>Innovation capability</th>
<th>Voice of the customer</th>
<th>Overall ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scale and growth</td>
<td>Experience</td>
<td>Solution breadth and depth</td>
<td>Value chain coverage</td>
</tr>
<tr>
<td>#1</td>
<td>IBM</td>
<td>IBM</td>
<td>NTT DATA</td>
<td>IBM</td>
</tr>
<tr>
<td>#2</td>
<td>Deloitte.</td>
<td>Deloitte.</td>
<td>IBM</td>
<td>NTT DATA</td>
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<tr>
<td>#3</td>
<td>EY</td>
<td>Infosys</td>
<td>wipro</td>
<td>wipro</td>
</tr>
<tr>
<td>#4</td>
<td>Infosys</td>
<td>accenture</td>
<td>EY</td>
<td>EY</td>
</tr>
<tr>
<td>#5</td>
<td>wipro</td>
<td>TATA Consultancy Services</td>
<td>DXC technology</td>
<td>NTT DATA</td>
</tr>
</tbody>
</table>

Sample: Based on detailed discussions with their leadership teams, inputs from their enterprise clients, as well as analysis of nearly 2,800 blockchain engagements across industries and across the globe

Source: HFS Research 2018

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Enterprise blockchain service provider profiles
NTT DATA: Full-stack blockchain technical capabilities with strong client relationships across industries

Strengths

- **Robust investments.** Blockchain represents the biggest tech initiative within NTT DATA TIG with the blockchain COE spread across 20 countries globally.
- **Strong foothold in Japan and Europe across public and private sector.** Multiple large blockchain initiatives in Japan (e.g., Trade Finance with a consortia of 13 large banks, insurers, and traders), Spain (e.g., government backed Alastria consortium on digital identity), Italy (e.g., ABI Lab for interbank reconciliations) and the UK (global payments on Ripple).
- **Investments in BCOSE (Blockchain One Stop Environment) platform** that enables sharing of blockchain POCs across 20 countries, provides a use case catalog and other basic and advanced level educational assets that enable clients to cross the hurdle from POCs to commercial and in-production environments.
- **Deep experience across multiple private and public blockchain platforms** (e.g., Hyperledger Fabric, Ethereum, Corda) to choose based on client and use case requirements backed by multiple in-house solution accelerators.

Development opportunities

- **Consortium driven solutions.** NTT DATA has an opportunity to define consortium-based approach in developing solutions across industries and geographies with a focused GTM strategy and investments.
- **Strategic business advisory.** NTT DATA represents a one-stop-shop for all blockchain-related technical requirements but there is an opportunity to further expand its scale and presence for strategic consulting.

Blockchain practice overview

- Cross-company blockchain initiative established in 2017. Blockchain initiative started in 2015 in Italy and Japan HQ Financial Sector.
- Dedicated blockchain team of 75+ people. 150+ blockchain proficient resources across 20 countries. 140+ engagements with clients such as ABI Lab, Cosenza Municipality, Hakuhodo, Repsol, Densai.net, Valencia Port, MUFG, and LIFULL.

Blockchain platform and technology capability

- Blockchain platform expertise includes Ethereum, Hyperledger Fabric, R3 Corda, Ripple, Quorum, Multichain, BigChain DB, Hyperledger Indy, Parity, Hyperledger Sawtooth.
- Blockchain platforms such as 4Trace (traceability platform) and blockchain-as-a-service (under development).
- Solution accelerators such as digital identity and asset digitization frameworks, Khipus and evers ID, template and accelerator for rapid application development, ready development environments templates, utilities to accelerate smart contract development.

Main use cases

- Trade finance and payments
- Claims processing
- Asset management
- Provenance tracking
- Procurement and sourcing
- Carbon accounting
- Smart grids
- Health records
- Contract management
- KYC

Market share (HFS estimates based on ~2800 blockchain engagements incl. 135+ in-production solutions)

- 93% NTT Data engagements
- 7% Others engagements

Clients in production (not exhaustive)

- UK bank
- Real estate company
- Utility company

Clients in production (not exhaustive)

- UK bank
- Real estate company
- Utility company

Dimension

<table>
<thead>
<tr>
<th>HFS Top 10 position</th>
<th># 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to execute</td>
<td></td>
</tr>
<tr>
<td>Scale</td>
<td># 11</td>
</tr>
<tr>
<td>Experience</td>
<td># 6</td>
</tr>
<tr>
<td>Solution maturity</td>
<td># 1</td>
</tr>
<tr>
<td>Value chain coverage</td>
<td># 2</td>
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<tr>
<td>Innovation capability</td>
<td></td>
</tr>
<tr>
<td>Intellectual property</td>
<td># 8</td>
</tr>
<tr>
<td>Ecosystem</td>
<td># 5</td>
</tr>
<tr>
<td>Investments</td>
<td># 6</td>
</tr>
<tr>
<td>Voice of the customer</td>
<td></td>
</tr>
<tr>
<td>Clients in production</td>
<td># 5</td>
</tr>
<tr>
<td>Client feedback</td>
<td># 13</td>
</tr>
</tbody>
</table>

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About HFS
HFS Research author

Saurabh Gupta
Chief Strategy Officer | HFS Research

Saurabh oversees HFS’ global research function managing the global team of analysts across US, Europe, and Asia-Pac. He works closely with the CEO to set the strategic research focus and agenda for HFS Research, understanding and predicting the needs of the industry and ensuring that HFS maintains its position as the strongest impact thought leader for business operations and services research.

As an analyst, Saurabh leads our coverage for horizon 3 change agents such as blockchain, business services (such as finance & accounting and supply chain) as well as overarching and cross-cutting themes under the OneOffice concept like digital change management.

He is a recognized thought leader and passionate problem solver in the global services industry. With 15+ years of experience across client, provider, advisory, and analyst roles, he brings a uniquely realistic and wide-ranging perspective to our industry’s challenges and opportunities. Before joining HFS, Saurabh led strategy for Genpact’s CFO and transformation services, helped shape the Business Process Services (BPS) strategy for AbbVie, managed Everest Group’s global BPS practice, and worked as a techno-functional consultant at Infosys.

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Mayank Madhur is a Knowledge Analyst at HFS Research, supporting different practice leads in area of Industry Research, IoT and Blockchain by working on secondary research, data analysis, PoV’s and research writing.

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