

From Legacy to Leading-edge

# Navigating the Path to Data Modernization in BFSI Industry

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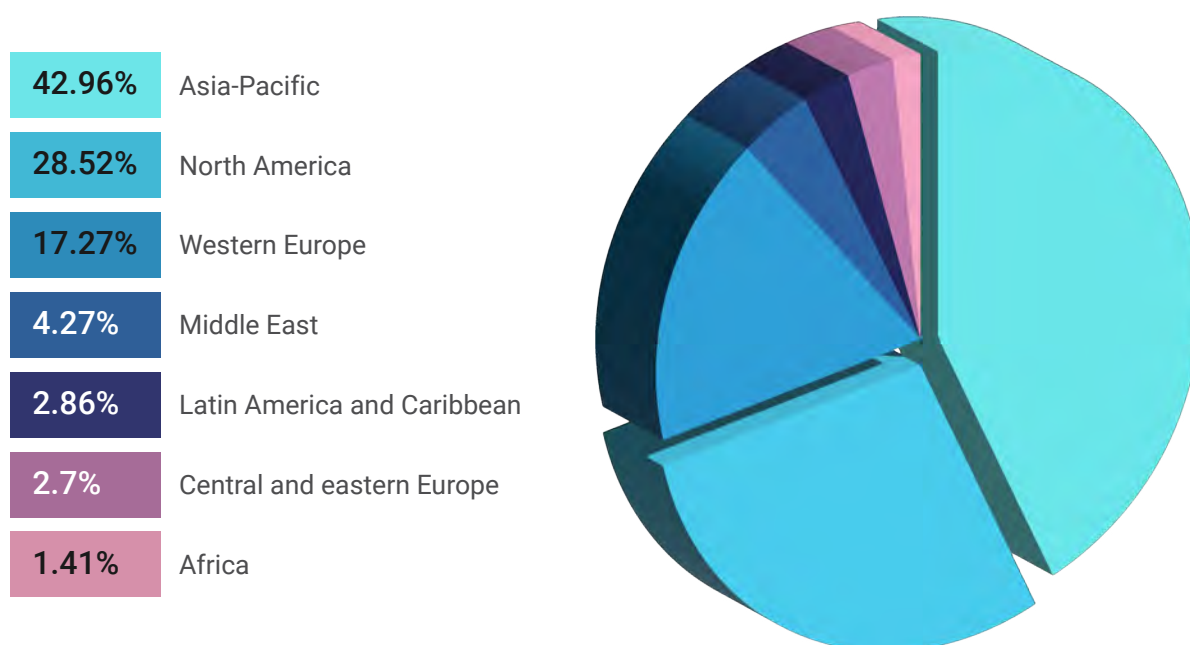
E-BOOK





The banking sector has made significant strides toward recovery since the 2008 financial crisis, demonstrating a considerable improvement in its overall health and stability. The financial services sector has shown its remarkable ability to navigate unprecedented levels over the past few years. From real estate to insurance, investment management to banking and capital markets, financial institutions worldwide have exhibited resilience and adaptability in the pandemic, aiding individuals, organizations, and governments in their recovery efforts.

According to The Banker's Top 1000 World Banks for 2022, the minimum Tier 1 capital for a bank in the Top 1000 now stands at \$556 million, up from \$547 million last year. Additionally, aggregate Tier 1 assets have reached their highest-ever level, growing 3.8% to \$154.21 trillion.



\* Based on net income data Note: central and eastern Europe includes central Asia. Latin America includes Central America. Source: [www.thebankerdatabase.com](http://www.thebankerdatabase.com)

Chinese banks now make up 65% of aggregate Tier 1 capital in the Asia-Pacific region, up from 62% last year. On the other hand, North American banks' share of net income has risen from 23.9% to 28.5%, while Western Europe's share has increased from 10.3% to 17.3%. Furthermore, other countries have taken the initiative to introduce novel features aimed at enticing fresh clientele while retaining their existing customer base.

Disruptive banking technologies offered by startups and neo-banks are making significant inroads, forcing traditional financial organizations to compete with or merge with these innovators to enhance their customers' overall banking experience.



## Dictionary

Neo-bank: Referred to as “challenger banks,” fintech firms are leading the way by providing applications, software, and other cutting-edge technologies that streamline the processes of mobile and online banking. These innovative solutions aim to enhance the overall efficiency and convenience of banking services for customers.

# 2023 is Half Over!

Summarized from the leading analyst groups like Gartner, Forrester, and ISG have provided insightful forecasts for the banking industry in 2023 and beyond!



Nevertheless, the path ahead remains an uphill battle. We have witnessed a significant transformation with the emergence of neo-banks, consolidated and added our perceptive - “Neo Banking: Exploring Achievements, Failures, and the Role of Technology.”

2023 is poised to introduce new regulations and transparency requirements to shape the marketplace.

1. How can leaders in the financial services industry navigate this evolving path?
2. Why Data Modernization in banking takes on new urgency and crucial for next-generation digital banks?

This guide explores practical steps business leaders can take to accomplish this objective, from identifying suitable technological solutions to effectively implementing them to maximize their influence. By following these recommendations, you can embark on a successful journey of modernization that not only fosters growth but also enhances the profitability of your business.



# Key Highlights

Data Modernization Challenges

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Numbers Don't Lie!

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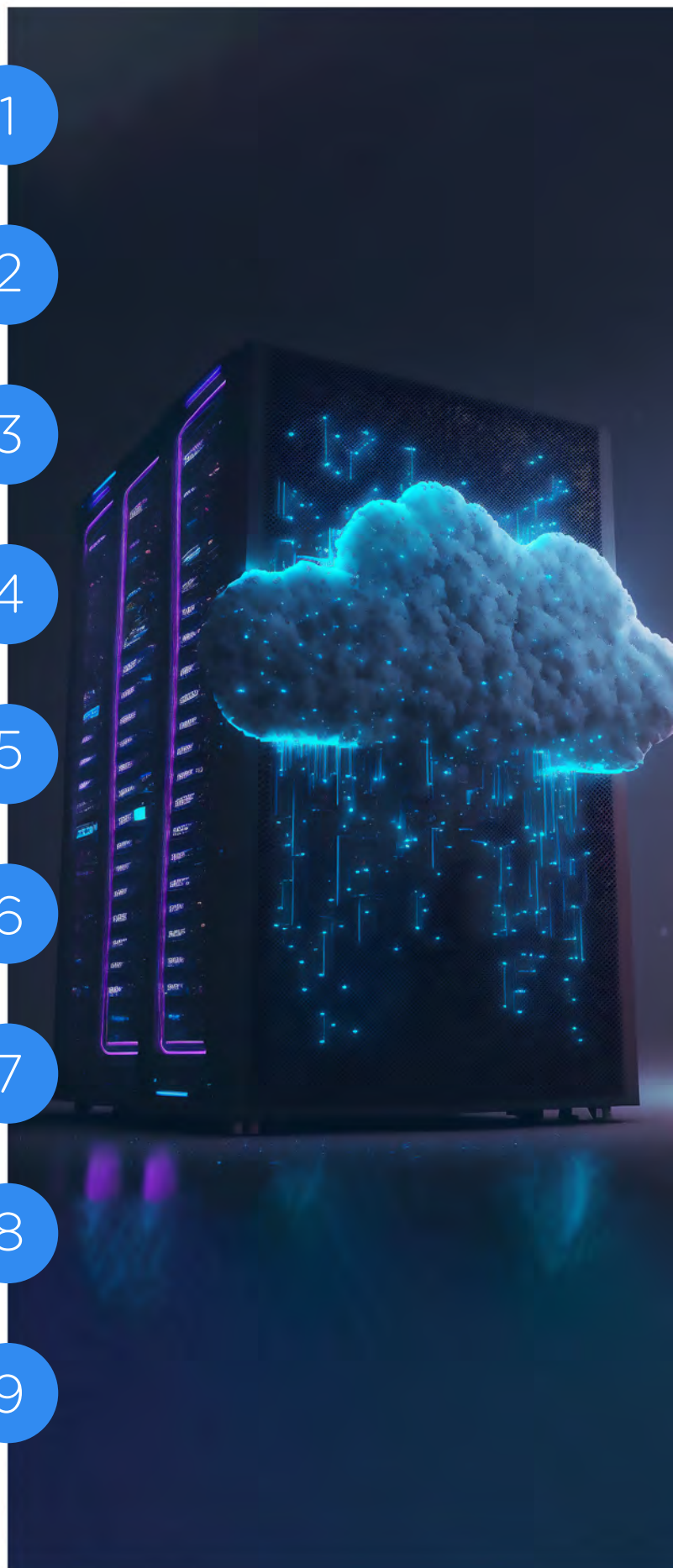
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# Data Modernization Challenges

Revolutionary digital disruptions have propelled the BFSI industry into digitalization, demanding a swift response from financial institutions. However, in pursuing rapid digital transformation, many organizations have overlooked a crucial aspect – DATA.

Unforeseen hurdles and concerns have emerged, stemming from inadequate preparation to extract value from existing data and safeguard its security.

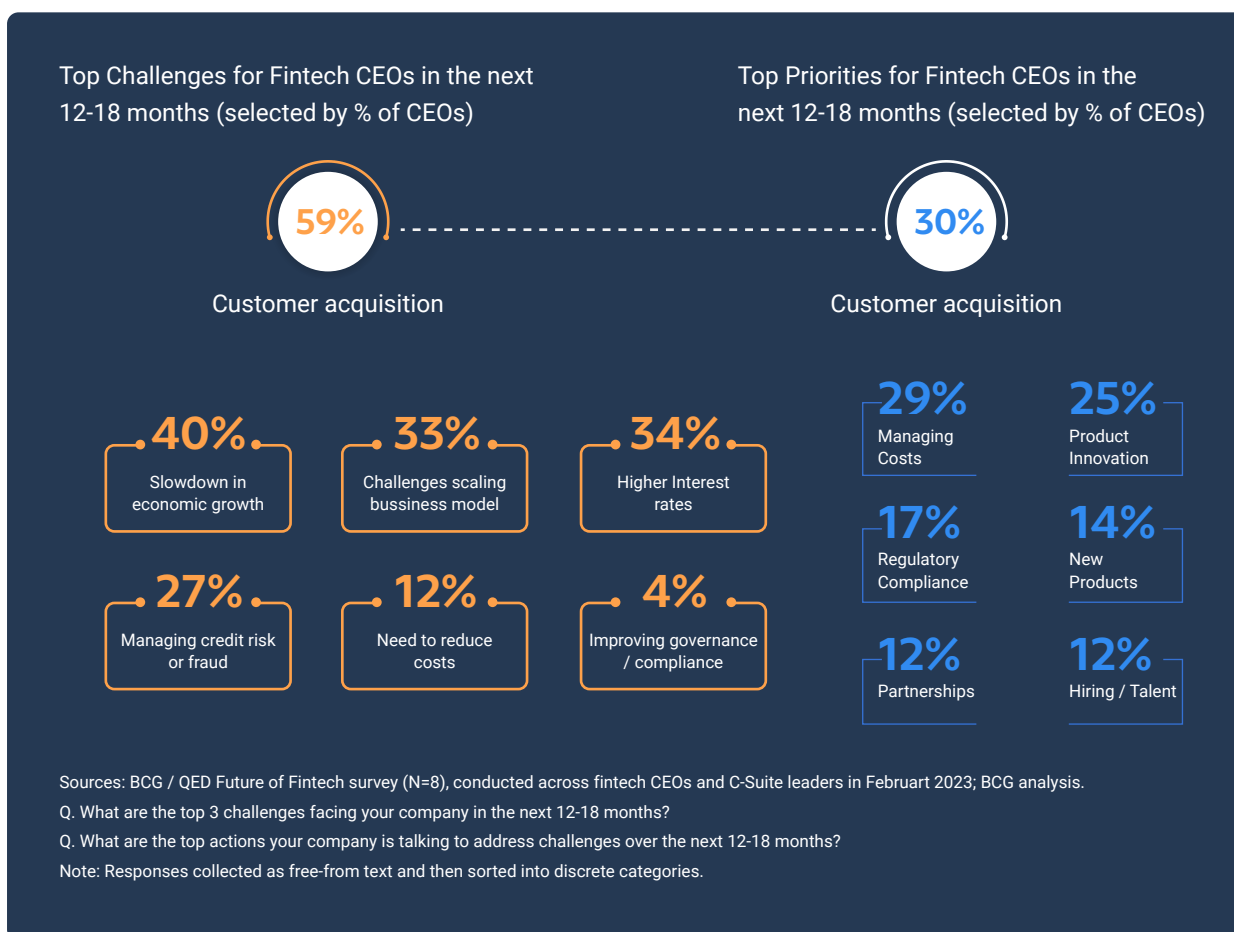
Let us explore these hidden barriers and their impact on the digital transformation journey.

Data is one of the critical challenges for BFSI organizations as they undergo digital transformation. It is essential for making informed decisions, developing new products and services, and improving customer service. However, BFSI organizations often have a lot of data siloed in different systems. This makes accessing and analyzing data difficult, leading to poor decision-making.





# Numbers Don't Lie!



In addition, BFSI organizations are often concerned about data security and privacy. Yes, as more data gets collected, stored, and analyzed, it creates opportunities and challenges. One major challenge lies in protecting such large repositories of valuable information; there is a greater risk of data breaches. All stakeholders, including policymakers, technologists, law enforcement agencies, cybersecurity experts, and individuals, must work collaboratively to address existing vulnerabilities while establishing new solutions to mitigate future risks. BFSI organizations need to protect their data from unauthorized access and use. Several data-related hidden barriers can impede digital transformation in the BFSI industry. These barriers include:

1. Mobile banking
2. Online banking
3. End-to-end personalization
4. The modern banking platform
5. Pressured by evolving customer needs and fierce competition
6. Competition is driven by Open Banking, FinTech & Neo Banks
7. Prevalence of account-centric banking (Lack of "Single View of Customer")



It is worth noting that data security has become a significant concern in digital transformation, mainly when using mobile and online banking services. Protecting against potential data breaches and ensuring data privacy are essential considerations for the industry.

If you are facing any of the following challenges, then it might be time to consider data modernization for your financial institution:

Legacy systems that are slow, inefficient, and difficult to maintain

Siloed data that is difficult to access and analyze

Lack of visibility into customer data

Security concerns

Compliance issues

If you are ready to take your financial institution to the next level, then data modernization is the key. Companies can optimize performance, trim expenses, and boost decision-making capacity amidst increasing regulations by upgrading and streamlining their data-handling processes and systems.





# Data Modernization isn't a Brand-New Concept

## Breaking Out of Legacy Data Systems

Banks & Financial Services companies continuing with legacy data or file-based systems may encounter various challenges and limitations due to the decentralized data approach. The decentralized approach of these legacy systems gives rise to numerous hurdles that hinder progress and growth.

BFSI organizations must embark on a journey of data modernization to unlock the full potential of their data, enabling faster access to relevant information, real-time data analysis, seamless integration, and scalability. By embracing data modernization, institutions can address the following challenges posed by legacy data systems:

01

**Separated, Isolated, and Siloed Data:** Legacy systems often result in fragmented data scattered across various departments and systems. This separation hinders collaboration, gaining a holistic view of data and inhibiting comprehensive analysis and decision-making.

02

**Limited Data Accessibility:** Obsolete systems lack efficient data retrieval mechanisms, leading to delays in accessing crucial information. This limited accessibility impedes timely decision-making and agility, slowing down the pace of operations and hindering customer-centric initiatives.

03

**Data Duplication** is expected due to decentralized data storage and management practices. Duplicated data occupies valuable storage space and introduces the risk of inconsistencies and errors, impacting data quality and reliability.





04

**Data Inconsistency:** Legacy data systems may suffer from inconsistencies in data formats, structures, and definitions. This lack of standardization creates challenges in data integration, analysis, and reporting, leading to inefficiencies and inaccuracies in decision-making processes.

05

**Data Security:** Traditional systems lack robust security measures to safeguard sensitive customer information and financial data. This vulnerability exposes institutions to data breaches, cyberattacks, and non-compliance with stringent data protection regulations, undermining customer trust and reputation.

06

**Incompatible File Formats and Varied Extensions:** Antiquated systems may rely on incompatible file formats and extensions that limit interoperability and hinder seamless data exchange with external systems, partners, or stakeholders. This constraint creates complexities and delays in data sharing and collaboration.

07

**Size Limitations:** Legacy systems may have inherent size limitations, restricting the amount of data that can be stored and processed. This limitation inhibits scalability and prevents institutions from effectively managing and leveraging the ever-increasing volume of data generated in the digital age.

Modern data systems offer centralized, integrated, and scalable solutions that enable comprehensive data management, enhanced data accessibility, improved data quality, robust security measures, seamless data integration, and compatibility with diverse file formats. With data modernization as a strategic imperative, banks and financial services companies can unlock new opportunities, drive innovation, and deliver exceptional customer experiences in the digital era.



# Data Modernization – The Need of the Hour

Data modernization integrates legacy data assets, transforms historical data into modern architectures, and leverages cutting-edge technologies like artificial intelligence (AI) and machine learning (ML). This process can help organizations improve their data quality, increase their data agility, and gain new insights. With data at its core, data modernization is paving the way for the evolution of digital businesses in the industry.

**To put things into perspective, 463 exabytes of data are projected to be generated by people each day by 2025, according to a report by Raconteur.**

This exponential growth in data volume necessitates a strategic approach to storage, processing, and analysis to derive actionable insights that drive business growth. Enter data modernization.

Without a well-defined data modernization strategy, organizations face the daunting challenge of managing and harnessing the immense potential of big data. The velocity at which data is generated, its diverse variety, value, and the veracity of the insights can provide significant concerns. The ultimate goal is to unlock more efficient and accurate data analysis, enabling the extraction of meaningful insights while ensuring seamless business operations.

**To conquer these challenges, a comprehensive data modernization strategy becomes imperative. According to Gartner’s “IT Score Benchmarks for Data & Analytics in Banking, Finance, and Insurance,” a well-crafted strategy is essential. Without a clear plan of action, investing in data analytics tools and technologies wastes time and resources.**



It involves adopting advanced data management techniques, leveraging cloud computing capabilities, implementing robust data governance frameworks, and harnessing AI and ML algorithms to uncover hidden patterns and trends within the vast data landscape. By embracing data modernization, banks, and financial institutions can optimize their operations, streamline decision-making processes, enhance risk management, and create personalized customer experiences.

Moreover, data modernization fuels innovation and empowers organizations to explore new business models, identify untapped market opportunities, and drive revenue growth. It enables the extraction of real-time insights, facilitates agile responses to changing market dynamics, and fosters a culture of data-driven decision-making.

In this era of digital disruption, data modernization stands as the linchpin for banking and financial services institutions to thrive and stay competitive. Embracing this transformative approach allows organizations to unleash the full potential of their data assets, propelling them toward a prosperous future. These institutions can confidently navigate the dynamic challenges and seize new opportunities by redefining how they cater to customers and create value in the ever-evolving financial landscape.





# The Journey of Data Modernization Begins Here...

Once a decision has been made to pursue the path of modernization through implementing a modern data platform, the subsequent consideration is whether to build this platform on the cloud or on-premise. This crucial choice necessitates a comprehensive evaluation of the advantages and disadvantages associated with each option.

## Why Cloud?

### Traditional Data Platform Vs. Cloud Data Platform

Traditional Data Platform	Cloud Data Platform
Obsolete with limitations	Fast, modern, and technology-driven / technology-compatible
Overhead costs of additional installations	Cost-saving – easy to manage and run
Slow, cumbersome, and less productive	Efficient and productive
Constrained and limited	Scalable and flexible – open and adaptable
Scattered data leading to data loss	Single, centralized data access – No lost data
Siloed data – restricted internal sharing	Easy internal sharing of data
Restricted access to data	Simultaneous, multiple access to data
Limits product/service innovation	Supports product/service innovation
Confines customer experience	Enables enhanced customer experience



# First Step to Data Modernization

The data modernization process revolves around building a modern data framework comprising a series of steps and techniques, with modern technologies at the core. A robust data modernization strategy includes 8 essential elements that enable financial enterprises to experience a higher ROI by building an accessible, scalable, and compliant data ecosystem:

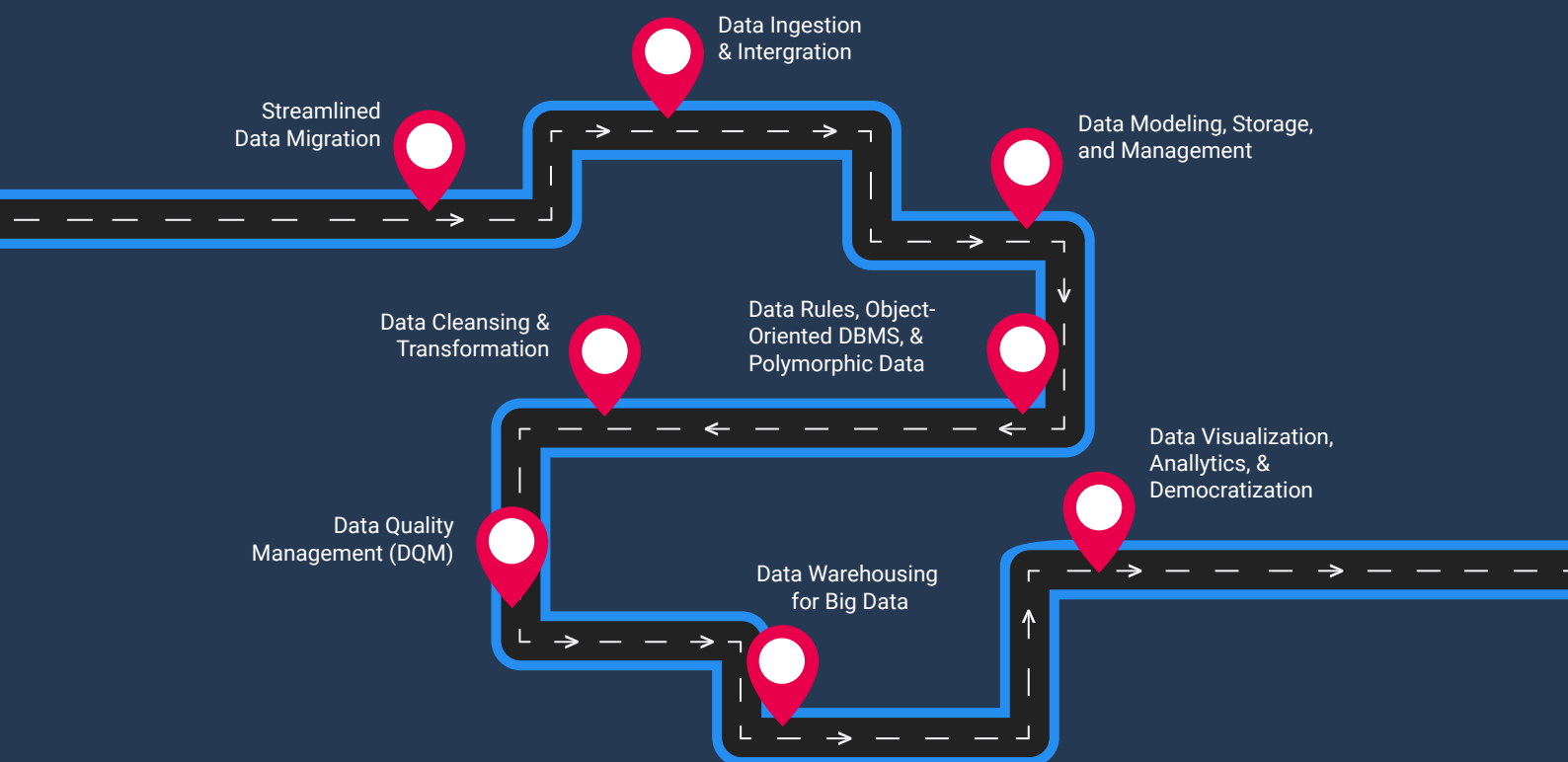


Note: In practice, each aspect requires detailed planning, implementation, and ongoing management to achieve the desired outcomes.



# Data Modernization Roadmap: The 8 Pillars of a Winning Strategy

## 8 Essential Elements of a Successful Data Modernization Strategy Roadmap



### 1. Streamlined Data Migration

Data migration involves transferring all your data from outdated databases to a modern and efficient data infrastructure. The objective is to achieve a smooth transition, ensuring clean data is seamlessly transferred from the old system to the new one with minimal disruption to business operations. A robust data storage and management system is essential for delivering the expected customer experience in today's financial service sector. This is where cloud technology plays a pivotal role.

According to the Mordor Intelligence report, the market for cloud migration services is projected to reach USD 448.34 billion by 2026, with a compound annual growth rate (CAGR) of 28.89% during the forecast period from 2021 to 2026. Cloud data platforms provide various sophisticated, tech-enabled benefits tailored to the industry's demands, making them the obvious go-to for transitioning to a modern data infrastructure.



Data migration is often considered one of the most challenging stages in the data modernization journey. However, the benefits it brings make it well worth the effort. Once successfully completed, it can be seen as a significant milestone toward achieving overall success.

## 2. Data Ingestion & Data Integration

Data ingestion plays a crucial role in overall data integration by collecting raw data and incorporating it into a targeted data repository. It is the initial step in achieving a unified data view by combining information from diverse sources and disparate datasets onto a single data platform. This unified view allows for more meaningful insights and analysis.

Legacy methods of data integration present challenges due to the sheer volume of data, its diversity, and the time-consuming nature of resource-intensive processes. However, with a well-structured data modernization strategy and the implementation of appropriate Extract, Transform, and Load (ETL) tools for loading data onto the cloud, the data integration process can be significantly expedited and made scalable. This gives organizations a competitive edge in the market.

Advanced data integration solutions that facilitate automated and real-time data integration empower financial services organizations to offer innovative and responsive services, satisfying the evolving needs of their customers. By leveraging such solutions, businesses can stay ahead of the competition and enhance customer satisfaction.

## 3. Data Cleansing & Transformation

Data is undoubtedly a valuable asset for businesses today. However, not all data holds the same value. As a financial services organization, you should focus on acquiring accurate, complete, consistent, and well-defined data. To achieve this, a powerful data cleansing and transformation process is crucial. By embracing an AI/ML strategy to enhance your business performance, data cleansing becomes the cornerstone of your digital transformation journey.

Data cleansing entails thoroughly examining and resolving inconsistencies within the vast amount of ingested and integrated data. It involves filtering out irrelevant data and creating a refined, meaningful, and compatible dataset with your data analysis platform. This process lays the foundation for extracting valuable insights and making informed decisions.



## 4. Data Rules, Object-Oriented DBMS, & Polymorphic Data Store

As previously mentioned, data quality holds more significance than its sheer volume. To ensure data quality, data management practices must employ a rules-based approach for data validation. By defining logical rules to be applied during data processing tasks, a systematic and structured approach is achieved, resulting in improved data quality compared to an unorganized process.

In some cases, data may be represented and stored as objects utilizing an object database management system (ODBMS). Within an object-oriented database, polymorphism plays a crucial role.

### Dictionary

Polymorphism refers to the ability of an object or data to assume multiple forms. This characteristic allows the same code to be utilized with different datasets for effective data analysis.

By leveraging a rules-based approach for data validation and utilizing the advantages of polymorphism within an object-oriented database, organizations can enhance data quality and optimize their data analysis capabilities. This systematic approach paves the way for more reliable and accurate insights from diverse datasets

## 5. Data Modelling, Data Storage, & Data Management

In the banking and financial services industry, a vast amount of data is collected from various sources, such as online and offline transactions, customer interactions, feedback, surveys, and more. Data modeling plays a crucial role in representing this data by creating an illustrative model that defines its attributes, establishes relationships between data elements, identifies constraints, and explains the business logic or context for data management.

Numerous commercial and open-source software solutions are available in the data market today to facilitate data modeling. The process involves the creation of three types of data models: conceptual, logical, and physical data models. Various data modeling techniques are employed to ensure an effective data representation.





Moving on, let's discuss data storage and data storage management. As organizations experience growth, the volume of data they accumulate also increases. An efficient data storage management plan, driven by advanced technologies like AI, becomes crucial in overcoming challenges associated with handling big data spread across multiple systems, with users creating multiple copies, which is not ideal.

This enables banks and financial services institutions to store data efficiently and securely, complying with regulations while ensuring easy accessibility, sharing, processing, and recovery in case of data loss. Organizations can choose from various tools, technologies, and virtual environments when selecting data storage solutions. These options include on-premises storage, where data is stored in local hardware and computer memory; cloud storage, which utilizes online storage using SSDs and flash drive arrays; and hybrid storage, which combines on-premises and cloud storage systems.

By implementing a robust data storage management strategy aligned with their objectives, banks, and financial services institutions can effectively handle their expanding data requirements, ensuring data availability, security, and efficient utilization of storage resources.

## **6. Data Quality Management (DQM)**

Data Quality Management (DQM) is the strategic combination of people, processes, and technologies to improve data quality to achieve business objectives. It involves setting criteria for high-quality information, analyzing collected data, and implementing strategies to eliminate low-quality data.

The importance of DQM lies in ensuring that only valid data is collected through a unified data framework. Poor data quality can lead to bad business decisions, resulting in lost time, money, productivity, and damage to reputation.

According to Gartner, the average financial impact of poor data quality on organizations is estimated at \$12.9 million annually. Additionally, IBM's research reveals that businesses in the United States suffer annual losses of \$3.1 trillion due to poor data quality. Hence, establishing a robust DQM framework becomes imperative.

A comprehensive DQM framework requires several key components, including a strategic team responsible for defining DQM objectives, a team to address challenges and select appropriate data analytics tools, a technical team to organize and manage operations, and a cross-functional team consisting of data architects, solution architects, engineers, and testers.



It is also essential to have a team of experienced experts who can identify data quality issues and validate data based on accuracy, consistency, relevancy, totality, and timelines. Additionally, leveraging AI-powered analytics tools and solutions is crucial for achieving DQM goals, setting key performance indicators (KPIs), and monitoring progress.

The steps involved in DQM can be summarized as follows:



Driving DQM processes is technology, particularly AI/ML-driven data analytics solutions. These tools transform large volumes of data into trustworthy business information. By continually learning the expected behavior of data metrics, these solutions can identify anomalies and alert users to potential issues caused by insufficient data.

Implementing a robust DQM framework empowered by advanced technology is essential for organizations to mitigate the negative impacts of poor data quality, derive meaningful insights, and make informed business decisions



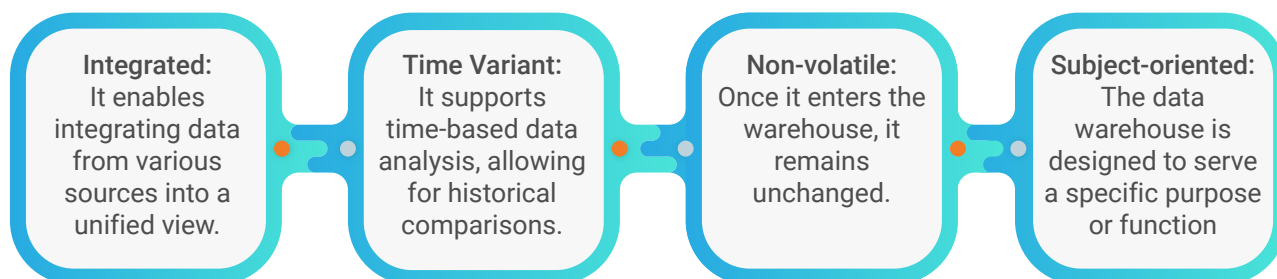


## 7. Data Warehousing for Big Data

A Data Warehouse is a centralized repository where data from disparate sources is collected, stored, and analyzed for further insights. In an organization, data is collected from various systems such as HR and Sales, and it may come in different formats like Flat Files. The Data Warehouse acts as a single location to efficiently analyze this information.

Utilizing a Data Warehouse involves four stages: Collecting the data from different sources, storing it in the repository, analyzing the data, and finally, consuming the insights gained. For instance, a credit card company may want to determine its best-selling product over the past six months and identify which regions in the US have the highest product usage.

Different enterprise systems generate datasets related to this information, which can be consolidated in a data warehouse to create a performance dataset. This dataset can then be used to generate summary data that drives business decisions for the credit card company..



With the emergence of new technologies and the influx of big data (both structured and unstructured) in real-time, there are different data warehouse designs and technologies available, such as Data Lake, Data Vault, and Data Mart, that cater to the specific needs of the financial services sector.

When designing a data warehouse, BFS organizations must clearly understand the intended use of the data before proceeding with the implementation.





## 8. Data Visualization, Data Analytics & Democratization

Data Visualization involves presenting data in graphical or pictorial form to derive meaningful insights for business decision-making or problem-solving. Technology-driven tools like Superset, Tableau, Power BI, and others are utilized in Data Visualization to assist BFS organizations in the following ways:

<b>Simplifying Big Data</b>	Data Visualization helps to reduce complex and voluminous data into a more comprehensible format.
<b>Enabling Data-driven Decisions</b>	It facilitates accurate decision-making by providing visual representations that are easy to understand and analyze.
<b>Problem-Solving</b>	Data Visualization aids in identifying long-term solutions to business challenges by visually representing patterns, trends, and anomalies in the data.
<b>Discovering Data Relationships</b>	It establishes connections and correlations between different datasets, revealing interdependencies that can inform decision-making processes.
<b>Comparative Analysis</b>	Data Visualization enables the comparison of different datasets, empowering organizations to make smarter and more informed decisions.

Data Analytics is crucial in all aspects of the banks and financial services sector. It is utilized for enhancing customer experience, upselling/cross-selling products, exploring market opportunities, identifying target audiences for specific campaigns, managing operations (operational analytics), mitigating risks (risk analytics), budgeting and forecasting (business analytics), analyzing costs (cost-benefit analytics), and more.

Data Democratization is making accurate data accessible throughout the organization for actionable insights. It ensures that relevant data is available to the right stakeholders within the organization. Data Governance, a vital aspect of Data Democratization, establishes protocols and frameworks, often technology-driven, to ensure data security and privacy protocols are adhered to when accessing and utilizing data.

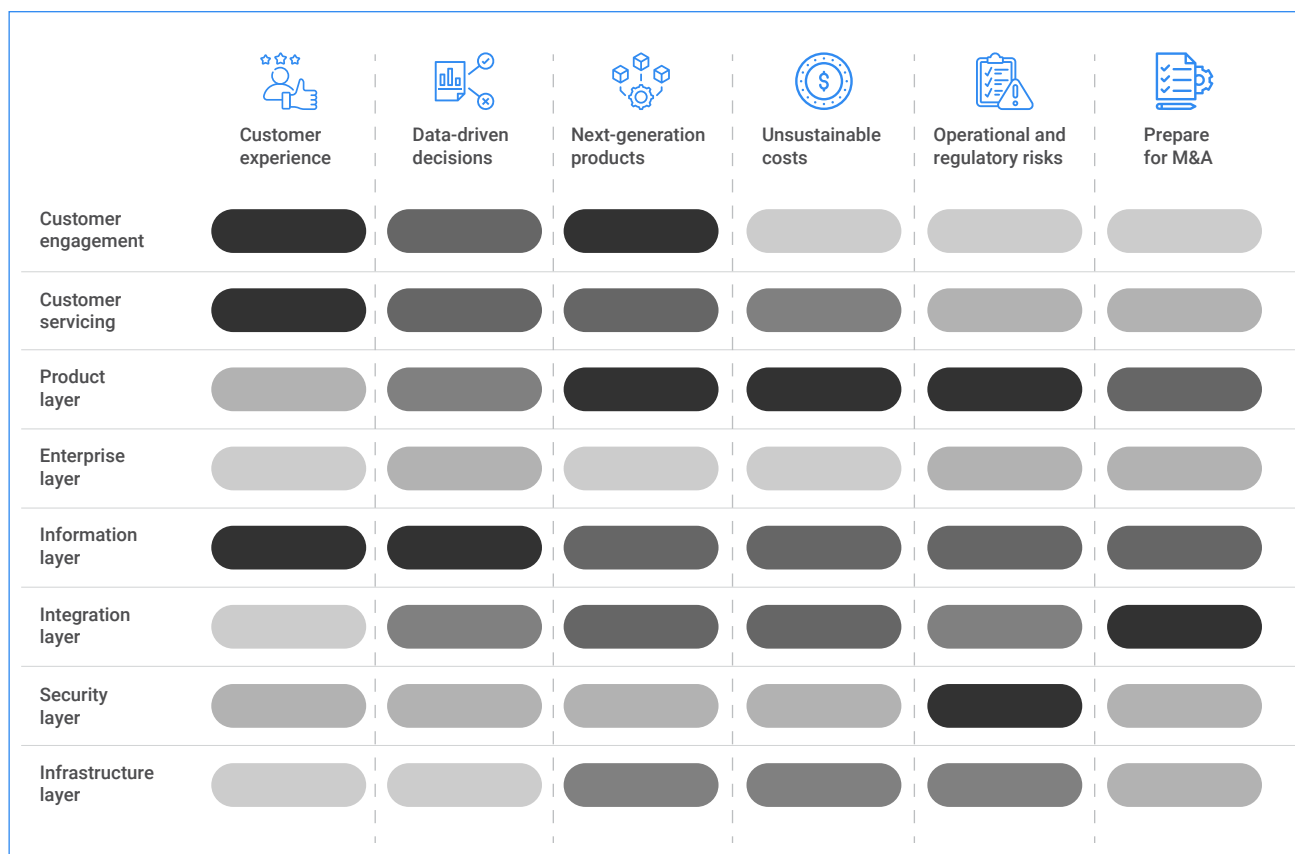


# The End Objectives of Data Modernization

## Common Objectives

For the banks and financial institutions we have worked with, the most common goals of a Real-Time Data Layer fronting core transactional systems are:

1. Increase innovation and development speed by making more data sources readily available to developers who are building microservices for applications.
2. Decrease time to market and costs by taking advantage of cloud platforms for development speed and agility.
3. Deliver engaging and customized digital experiences by combining data from product silos and outside sources to give a richer, 360-degree view of customers.
4. Give customers real-time decisions by powering interactions with real-time data stores driven by data and algorithms.
5. Improve response times by serving data near applications and users.
6. Reduce the costs of running core legacy systems by off-loading new workloads to modern cloud-native services.



Source: Bain & Company

Typically lower impact        Typically higher impact

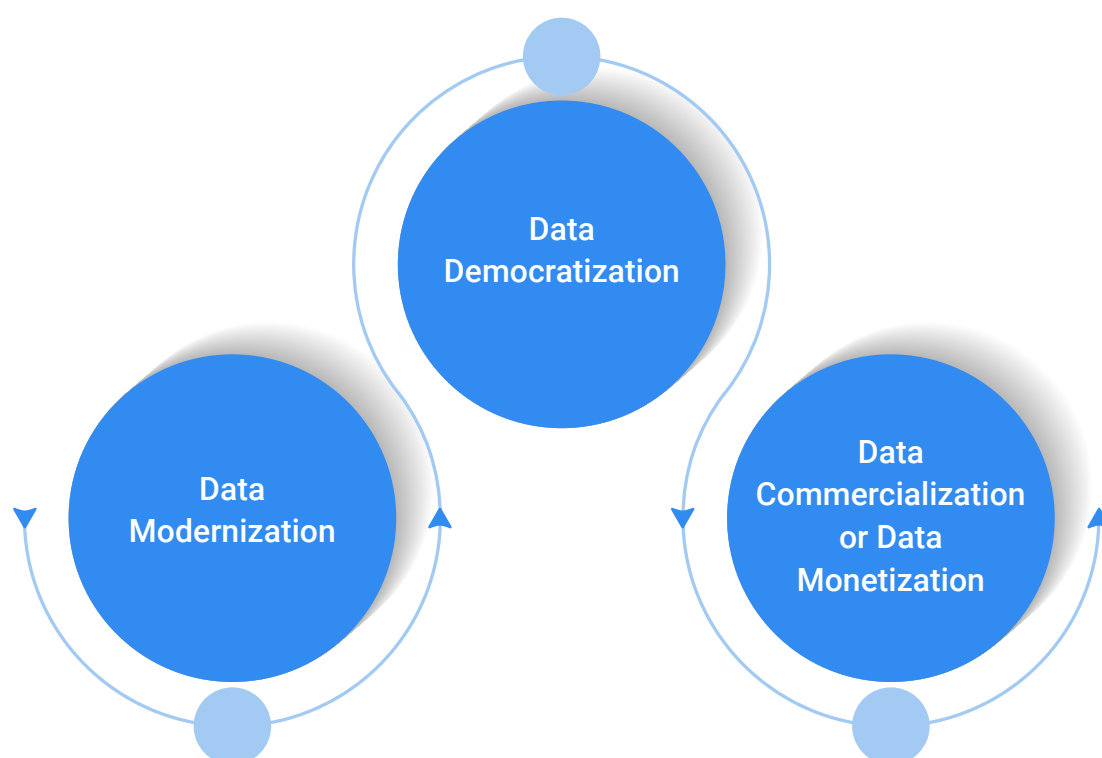


Choosing the right approach hinges on a bank’s starting point, the main impetus for change—from unsustainable costs to operational and regulatory risks—and the desired future state (above infographic). The bank’s ability to fund the modernization also comes into play. Banks can no longer afford to kick the can down the road.

Any enterprise (Banks & Financial Services companies in this case) should be able to achieve the following 3 key objectives through their Data Modernization effort:  
Build a modern data platform that addresses “Correctness, Completeness, and Consistency of data” through “Eyes on Glass” data quality monitoring.

Devise a “Scalable, Reliable, Maintainable” enterprise data strategy.

Focus on the “Democratization” of data and the “Commercialization or Monetization” of data.





# No Disruption On The Road To Digitization

## Cheat sheet: Key Tips for Next-Gen BFSI Orgs & How Can Indium Help

### Building a Robust Data Infrastructure

#### Tips

1. Prioritize scalability and security when designing your data infrastructure.
2. Develop strategies to effectively collect, store, and manage data.
3. Leverage cloud technologies for efficient data storage and processing.

In the fast-paced world of neo-banking, scalability and flexibility are key. With cloud computing and adaptable infrastructure, neo-banks can effortlessly meet the ever-growing demands of their customers. Indium understands the importance of a stable and scalable cloud infrastructure. Our cloud services, including migration, modernization, optimization, and support, can assist you at every step of your cloud journey, ensuring a solid foundation for your growth.

### Harnessing the Power of Data Analytics

#### Tips

1. Utilize data analytics to gain valuable insights into customer behavior and trends.
2. Implement predictive analytics and data-driven decision-making processes.
3. Use data visualization tools to effectively communicate insights to stakeholders.

Unlocking the potential of automation and AI is paramount for neo-banks. By embracing these technologies, they can streamline operations, reduce manual errors, and provide personalized experiences to their customers. Indium's data and analytics services offer tailored solutions for your business needs. Our expertise in commercial and open-source tools, combined with our proficiency in AI/ML and data sciences, ensures you can harness the power of automation and AI to drive your neo-banking revolution.



## Personalization and Customer Experience

### Tips

1. Recognize the significance of personalized banking experiences for customer satisfaction.
2. Leverage customer data to offer tailored products and services.
3. Implement omnichannel experiences to provide seamless interactions across various touchpoints.

## Embracing Open Banking and Collaboration

The era of open banking presents neo-banks with exciting opportunities for collaboration and integration. Partnering with a trusted ally like Indium Software can empower neo-banks to unlock their full potential. Our comprehensive API integration and testing services enable seamless business process automation, efficient data sharing, and robust validation to ensure your APIs are fully functional and secure.

## Simplifying Client Onboarding

One of the greatest challenges for neo-banks is seamless client onboarding. Indium recognizes this pain point and offers low-code services to address it. Our low-code platforms, such as Mendix, Microsoft PowerApps, and OutSystems, empower you to rapidly create intelligent applications. We help you enhance customer experience and reduce turnaround time by simplifying the onboarding process and eliminating complexities.





## Ensuring Data Security and Privacy

### Tips

1. Address data security and privacy concerns by adopting robust measures.
2. Ensure compliance with regulatory requirements and best practices.
3. Implement strong cybersecurity measures to protect customer data from breaches.

Security is a top concern for neo-banks, and Indium takes it seriously. Remember, these tips will guide you toward becoming a next-gen digital bank. Customize and adapt them to align with your business needs and industry regulations. We understand the importance of building trust and safeguarding customer data. Our expertise in implementing advanced security measures, including robust encryption protocols, biometric authentication, and transaction monitoring systems, ensures that your neo-bank operates with the utmost security and provides your customers with peace of mind.

## Notes

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Abishek Balakumar, a marketing professional, holds a master's degree in Marketing and Data & Analytics. With a keen eye for consumer behavior and psychology, he crafts captivating content. Experienced in product-market fit, strategy, and business development, Abishek excels in product-centric and service-oriented segments. At Indium, Abishek is a crucial contributor to marketing and analyst relations. His efforts have enhanced stakeholder connections and deepened the team's understanding of the domain, all while providing invaluable guidance for high-achieving teams.

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