Cloud Reshaping **Banking**

More than 75% of bank CEOs are focusing on the speed of technology change to reduce cost and improve efficiency, which is far more than any other industry. More than 50% of the customers prefer digital banking channels bringing convenience and ease of banking. The bank of the future will look very different from today. Fulfilling customer expectations, disruptive technologies, and emerging alternative banking models are pushing today's banks to pull up their sleeves and make a strategy for the future which is standing right at the door if they want to succeed.

Research from the Harvard Business Review Analytic Services uncovers that 74 percent of businesses accept cloud computing has given them a competitive advantage. Further examination reveals that 60 percent of technology decision-makers believe an integrated cloud approach will unlock the potential of disruptive technologies.

According to IDC, by 2022, though traditional software will also grow, but it will grow just at a rate of 11 percent. Though cloud foundation and cloud-based applications will develop at an astounding level of 150 or more, however they will have their own difficulties. According to an industry report, businesses worldwide are taking optimum advantage of the benefits that cloud technology brings to them. Truly, the global market for cloud computing is relied upon to increase from $272 billion in 2018 to $623 billion by 2023. NASSCOM reports that the cloud market in India is likewise expanding quickly and is expected to develop to $7.1 billion by 2022. The financial services industry is quickly adopting cloud technology. The disruptive wave of digital transformation is transforming the financial services segment, and it is drawing a ton of its power from the cloud. Cloud computing is the primary focus of every CXO now. Finance institutions have experienced the power of closed and its advantages w.r.t traditional legacy on-premise systems. Every financial institution's destination is to store data and host applications on cloud-based infrastructure and then access it through the internet from anywhere, anytime. Leading cloud providers are offering pioneering PaaS and SaaS services and helping financial institutions implement them quickly. This helps to maintain costs, increase efficiency, improve revenue, increase customer insights, quick go-to-market product implementations, and monetize data assets.

Why cloud?

Cloud technology is no longer a new player in the market, but it's a mature and integral part of the IT landscape and a key parameter in driving business growth. It is an indispensable topic among CXOs. A research by Fraedon has found that almost half of the banks find their legacy systems to be the biggest hindrance in their growth. Moving to the cloud will help banks overcome their hindrance and accelerate their growth, offering significant cost savings. Increased dexterity and innovations offered by cloud technology do provide a good return on investment over the period. A report from Accenture has found that "cloud adoption is integral to enabling banks to quickly add new online services, develop applications and improve customer experience".

The ability to quickly build new products and features as well as shorten go-to-market time enables banks to offer innovative methods of banking to their customers, increasing revenue. Banks need to provide solutions that are customer requirement and demand-driven. Cloud solutions not only enable banks to cater to these demands but also meet the requirement quickly. It keeps their customers happy and gives banks opportunities to get ahead of their competitors.

Business impact

Business growth ››	Customer analytics	Analytics-based request for questions	Cross-product analytics and onter-pricing models
Risk and regulatory ››	Initraday liquidity and risk calculation	Trade surveillance	Regulatory reporting: OCC, CCAR, Solvency II, etc.
Cost reduction ››	Anti-money laundering/ know your customer	Treasury and capital funding analytics	Archiving and storage of emails and voice
Improved operations ››	Smart settlements	Real-time trade payment flow tracking	Trade reconcillation

A case study by Deloitte

Technology impact

Storage

Email archiving and storage of voice and chat

Reporting and analytics

Leveraging cloud as an analytics platform for real-time customer insights and reporting

Containers, APIs, and microservices

Exposing data and services through APIs and microservices to enable faster and easier access to data

Master data management

Providing consident client views across channels and identifying cross-sell opportunities

Start thinking cloud

Businesses habituated to the on-premise data center may find the outlook to replacing the legacy systems with cloud infra/applications or migrating the systems to cloud-based infrastructure be very intimidating. Fortunately, the nature of cloud hosting provides an incremental approach to move gradually. Financial institutions can opt for a mix and match hybrid and multi-cloud approach as per orbitational needs, maturity and readiness. Whichever model is chosen, data can be as secure as with on-premise applications. There are primarily 3 models to choose from

Private

- Dedicated to a single organization
- High security as the resources are not shared
- Greater flexibility to control the cloud environment
- Purchase and maintenance to be borne by the organization
- Expensive than public cloud

Hybrid

- Often called as "Best of both worlds" as combines both public and private
- Greater flexibility & more deployment options
- Cloud bursting is also possible
- Network complexities and compliance issues
- Can be much expensive

Public

- Services are owned and operated by a third party
- Maintenance is provided by a third party
- Pay-as-you-go model. Thus setting and operating costs are low
- Lesser security as the platform is shared
- Lesser flexibility and control over the environment

An organization can choose the best-suited model as per the nature and maturity of the business by studying the pros and cons of the models above. When it comes to replacing the complete legacy infrastructure, it includes the applications and the entire infrastructure of the organization.

Approach towards Cloud

Cloud has been one of the key pillars towards Happiest Minds inception. The disruption caused by the cloud in every industry has brought remarkable benefits and changed the way businesses are conducted now. It has improved internal processes, which further have reduced costs and has helped organizations understand customer needs. Accessing the cloud can increase banks' ability to innovate by enhancing agility, efficiency, and productivity. Resources held in managing IT infrastructure can now be assigned towards innovation and quick delivery of products and services.

Banks have been unenthusiastic towards moving to cloud due to four key factors

Regulations

Data Security

Transformational changes

Third-Party Risk
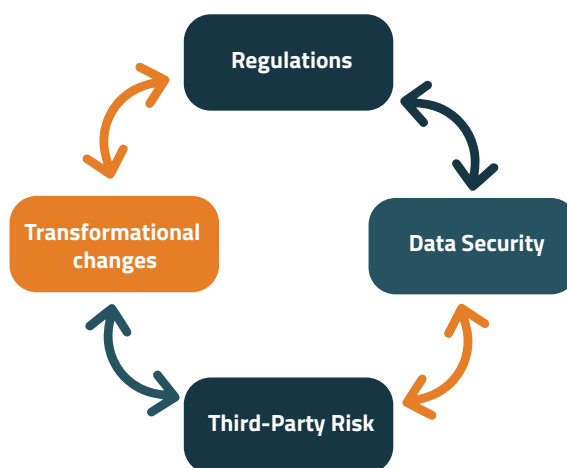
Quick-check of business readiness

Do we understand how cloud can help to achieve strategic objectives?		
Yes	No	Need consultation

Do we know which part of the business will need to move to cloud?		
Yes	No	Need consultation

Is the team apprehensive about changes?		
Yes	No	Need consultation

Are we familiar with competitors' technology advancement?		
Yes	No	Need consultation

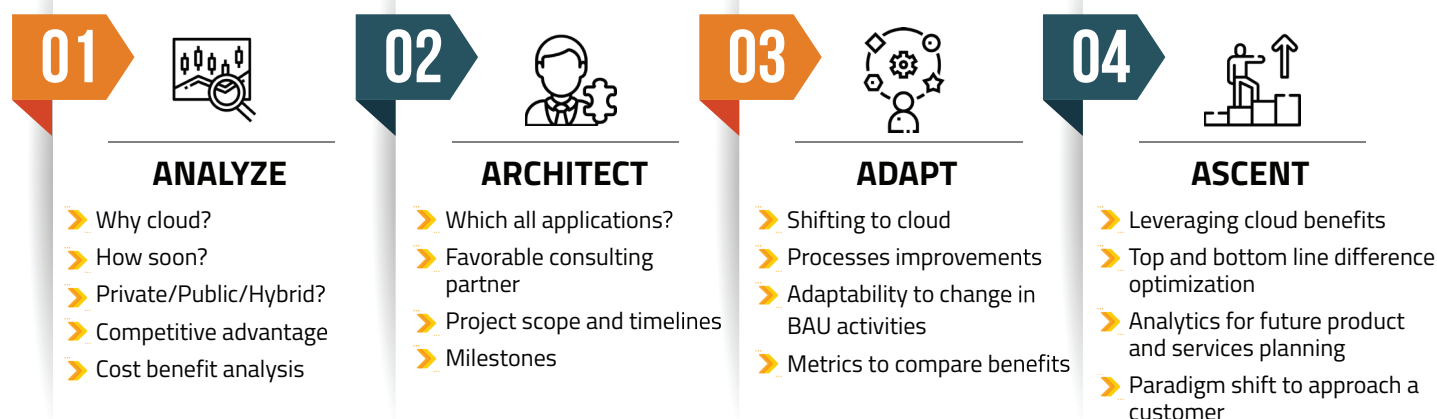| Will we be competitive ever without cloud migration?		
Yes	No	Need consultation

An organization often struggles to define a cloud migration strategy. They find it difficult to generate business value from this digital transformation. As the cloud is not the future but the present, our 4-A approach can help to strategize the cloud migration and reap the benefits.

01 ANALYZE

- Why cloud?
- How soon?
- Private/Public/Hybrid?
- Competitive advantage
- Cost benefit analysis

02 ARCHITECT

- Which all applications?
- Favorable consulting partner
- Project scope and timelines
- Milestones

03 ADAPT

- Shifting to cloud
- Processes improvements
- Adaptability to change in BAU activities
- Metrics to compare benefits

04 ASCENT

- Leveraging cloud benefits
- Top and bottom line difference optimization
- Analytics for future product and services planning
- Paradigm shift to approach a customer

To-Do or Not-To-Do?

An article titled Banks' slow progress to the cloud's promised land, from FT says: America's top banks talk a decent game about their efforts to put their systems onto the cloud where they will be more resilient, less expensive, and better ready to handle spikes in use. But the reality often lags behind their ambitions. 'Banks are still in the aspiration mode--even those that are loud in the press about it aren't so much as a small part of where we are as far as cloud adoption,' as per Steve Randich, chief information officer at US financial regulator Finra.

There are two primary challenges to be addressed before moving to the cloud.

Security

The confidentiality and security of personal data and critical applications are key parameters stopping banks from moving from their legacy system to cloud-based technologies. Banks cannot afford any kind of security breach

Regulatory

Many banking regulations restrict banks from keeping personal data in their home country to minimize the risk. Certain regulations do not even allow one kind of data to be intermixed with another kind of data which is a possibility in shared services and databases. It brings a key question for the banks as to where their data is going to reside in the cloud and whether it'll be a shared or private cloud service

But the key question is: "Are the security concerns valid?"

Often, the technology implementations team isn't aware that cloud vendors do not keep data in cloud. In an enterprise-class cloud environment, the computing resources are multi-tenant, but data isn't. additionally, other security concerns can be mitigated with proper controls like IDS/IPS, encryption, and proper socket layer configurations. Security concerns are legitimate but do not fit the hype created by various less knowledgeable experts.

Bill Glasby, Chief Technology Officer, Heritage Bank, offers his perspective, "The issue around security isn't about the technology—it's about operators' ability to configure the tools. The problem is that it's all home-brew today."

Cloud Implementation Security

The first step towards understanding security is to define the responsibilities of the organizations and Cloud Service Provider. Many organizations fail to delineate what a CSP needs to control and what the organization needs to. Once the line has been drawn, an organization can work towards securing the data they own and identify & mitigate the threats.

Here are the 11 protocols defined to cover all the angles of security

01 Start with defining security and compliance end goals in mind Cloud implementations are found to be successful when security and compliance experts are fully allocated to the implementation team and involved in every step until the final launch. They understand the requirement from day one and raise their concerns if any. By ensuring security and compliance teams are in the room from the earliest planning stage, bottlenecks are avoided

02 "What to Defend" rather than "Attack Surface."The traditional mentality is to put the same amount of security as well measures for each kind of data. A sensible approach is to categorize the importance of data and define security measures accordingly

03 "Zero Trust" – "Always Verified" In the cloud model, it is very important that each and every element of technology – s/w to data to be approached with a zero trust mentality. At every step of the verification

04 Security for hybrid cloud environment

05 It is rare that all of the financial institution data will be moved to the cloud all at once. Hybridization of workload introduces additional complexity as well extra measures are required to handle the security. By factoring in these measures, cloud workload security is ensured, and any additional security gaps are avoided in the hybrid connectivity process. Utilize the effectiveness of Global Cloud Network

Global Cloud Networks are highly experienced and bring in a lot of tools and measures to make sure the migration and servicing are of high quality. A few tools which are of great help are

> Centralization of administrative duties

> Native firewalls

> Preconfigured alerts

06 Infra Automation One of the key benefits of moving to the cloud is that it enables fully automated provisioning, maintenance, and security. Adaption of an automated cloud-based model not only streamlines high standards of security but also makes it more effective and efficient in maintaining and upgrading the systems

07 "Core" instead of "Extensions." Immense benefits can be reaped when various systems are considered the core of the business with an interactive architecture instead of considering each system unique and an extension to the business. Individual/Bespoke systems are brittle, vulnerable, and fragile because of their structure, whereas an undifferentiated approach yields interchangeable components which can be swapped easily as well replaced in case of any emergency. Also, downtime of these parts is reduced for any upgrade or maintenance

08

Cloud enhanced Data Management
All major cloud providers bring in a lot of tools to manage the data with admin privileges. Managed data stores facilitate automated backups and restore in security events. This enables cost-effective backup/recovery and resilience in response to any security threat

09

Identity Management as a Service
Autonomous authentication using a service account is the best option for more critical services rather than via human intervention. This brings in the need for services management for identification. Auto releases using such a service ensures a frictionless environment

10

Proactive and Reactive security enforcements
Proactive enforcement through static Infrastructure as a Code is not anymore enough to protect an organization's data because it fails to keep malicious insiders away, posing a big security threat. To ensure end to end data security, reactive mechanisms are also required to keep the threats mitigated

11

**Risk Exposure, Isolation, and Remediation**
The cloud environment generates an enormous amount of information which does require effective monitoring. Accumulation, sieving, and cataloguing of monitored data into eloquent representation is the need of the hour to keep one's mind alert and helps to make decisions accordingly

CLOUD IMPLEMENTATION SECURITY PROTOCOLS

Utilize the Effectiveness of a Global Network

Security and Compliance End Goals in Mind

"What to Defend" Rather than "attack Surface"

Utilize Identity Management as a Service

Embrace Infra Automation

Security for Hybrid Cloud Environment

Develop a "Zero Trust & Always Verify" Cloud

Cloud Enhanced Data Management

Treat systems as "Core" not as "Extensions"

PRACTICE PROACTIVE AND REACTIVE SECURITY ENFORCEMENT

PRACTICE RISK EXPOSURE, ISOLATION AND REMEDIATION

Imbedded Benefits of Cloud

Fraud detection using AI & IoT: One of the biggest challenges banks are going through is fraud detection, which brings monetary losses and hampers the image of the bank, which is made over a period and very hard to retain. Banks are spending huge amount of effort and money to detect fraud and stop it at level 0, but many have become victims of the same. Cloud computing brings power to AI and IoT to track customer transactions and behavior across various channels like physical cash withdrawal from an ATM, card payments, payments through wearable devices, online transactions on eCommerce sites, etc. The system develops an algorithm and learns customer behavior, then labels any fraudulent transactions if found suspicious. The beauty of AI is the self-learning algorithm that keeps on updating itself based on user behavior as well as new ways of fraud. Due to cloud data, whole processing becomes seamless and quick in no time.

Operation efficiency through cross sell using AI & ML: Understanding a need before even having a customer interaction and then proposing the best possible solution is key to keep customers happy, which further helps to strengthen revenue line as well make a remarkable standing in the market. With AI and ML, customer behavior is predicted based on customer interaction on other channels, including social media as well the eCommerce sites. eCommerce websites use a similar algorithm to find what a customer is looking for, present the nearest matching product, and personalize the experience Similarly, banks can understand the customer's needs and propose other products. Though many financial institutions have started leveraging AI & ML, customers are yet to get a personalized experience when they login to their bank account online. Cloud migration brings out of box AI & ML features that are ready to use and, based on the complexity, can be customized. Quick and easy access to real-time view of data represents current state and offers a better version of today in terms of a bright future.

33%
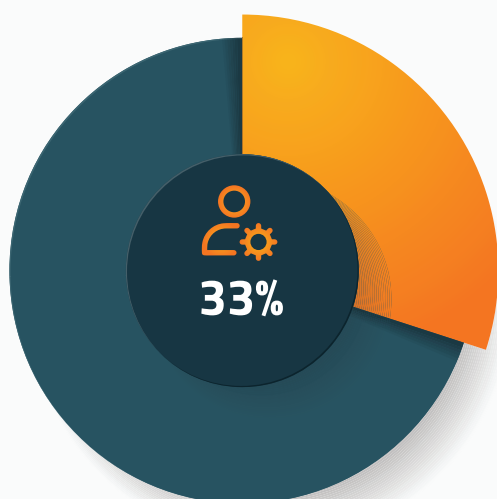
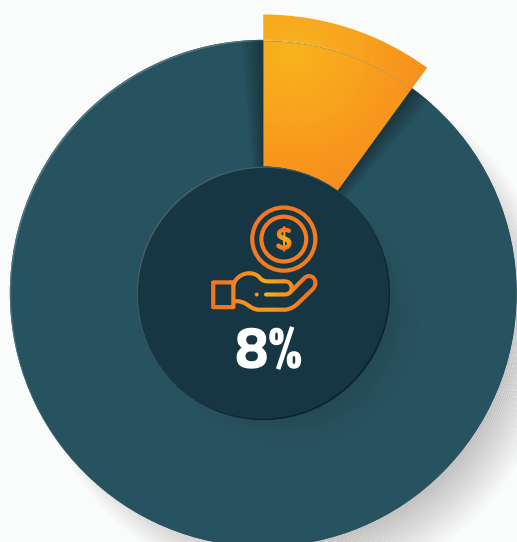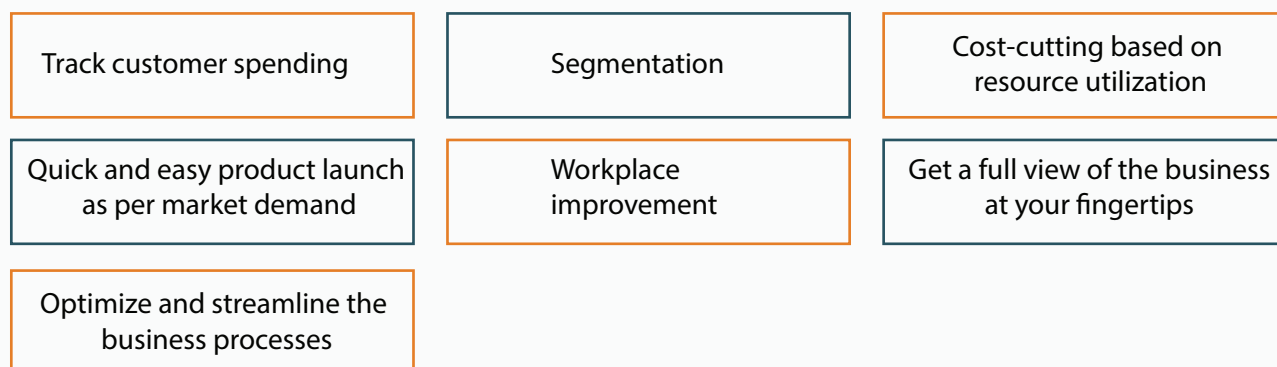The percentage of customers who abandoned a business relationship duw to lack of personalization

Source: Accenture

60-70%
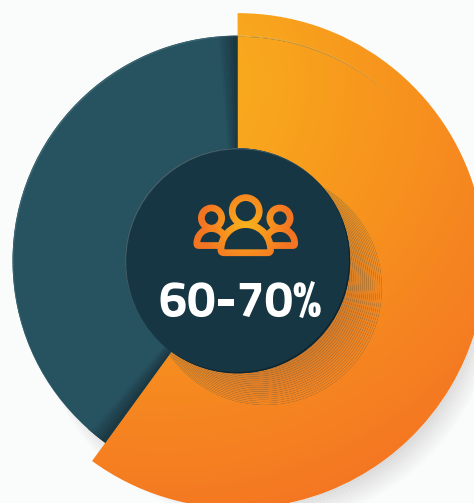
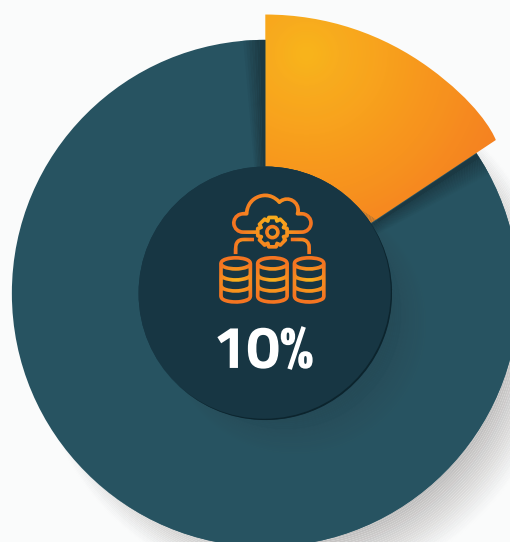How much more likely businesses are to sell to existing customers than to prospects.

Source: HubSpot

Big data & Analytics: The banking industry is a prime example for others to see the impact of Big Data & Analytics on customer experience. There are quite a few legacy banks still using in-house technologies instead of the cloud and are not able to take full benefits of analytics. New generation banks have been fully on the cloud from day one and are benefiting from analytics to create a persona for their customers. As the banks are already well versed with a huge set of customer data, Big Data & Analytics can be leveraged to transform the way banking is performed as to:

Track customer spending	Segmentation	Cost-cutting based on resource utilization
Quick and easy product launch as per market demand	Workplace improvement	Get a full view of the business at your fingertips
Optimize and streamline the business processes		

8%

The average increase in revenue that businesses report from analyzing big data
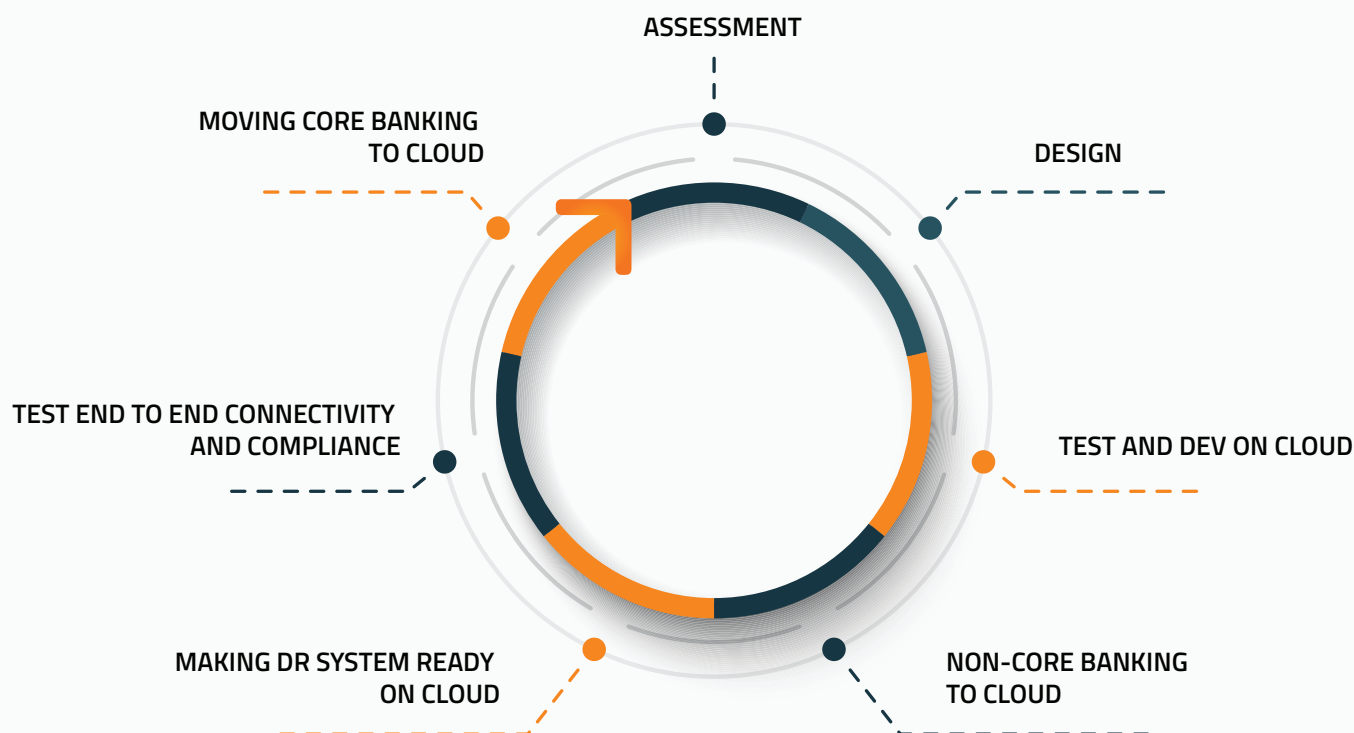
Source: BARC

10%

The average reduction in overall costs from analyzing big data

Source: BARC

▷▷ Cloud Transformation Journey

Fortunately, banks don't need to see moving to the cloud as an all or none approach. The overall architecture and advanced technologies have made stage-wise migration a reality. Cloud migration should be the plodding approach picking the most pressing workload and servicing and migrating to the cloud in a meticulous manner. It shouldn't be a pick-n-drop service as services might not be cloud-ready, or the selected cloud model might not be scalable as per the existing workload which may cause issues in existing services impacting customer relations. A gradual approach will ensure services are migrated securely and in a controlled manner, nothing is lost in the overall process, and customers aren't impacted in the whole journey. This may bring a hybrid technology solution in the middle but ensures minimum impact on customers.

Financial institutions relying on legacy systems may still see an impact on their services while migrating to the cloud, which can be minimized if handled by seeking assistance from third-party cloud solution experts and fintech companies with enriched technologyskills.

ASSESSMENT

MOVING CORE BANKING
TO CLOUD

DESIGN

TEST END TO END CONNECTIVITY
AND COMPLIANCE

TEST AND DEV ON CLOUD

MAKING DR SYSTEM READY
ON CLOUD

NON-CORE BANKING
TO CLOUD

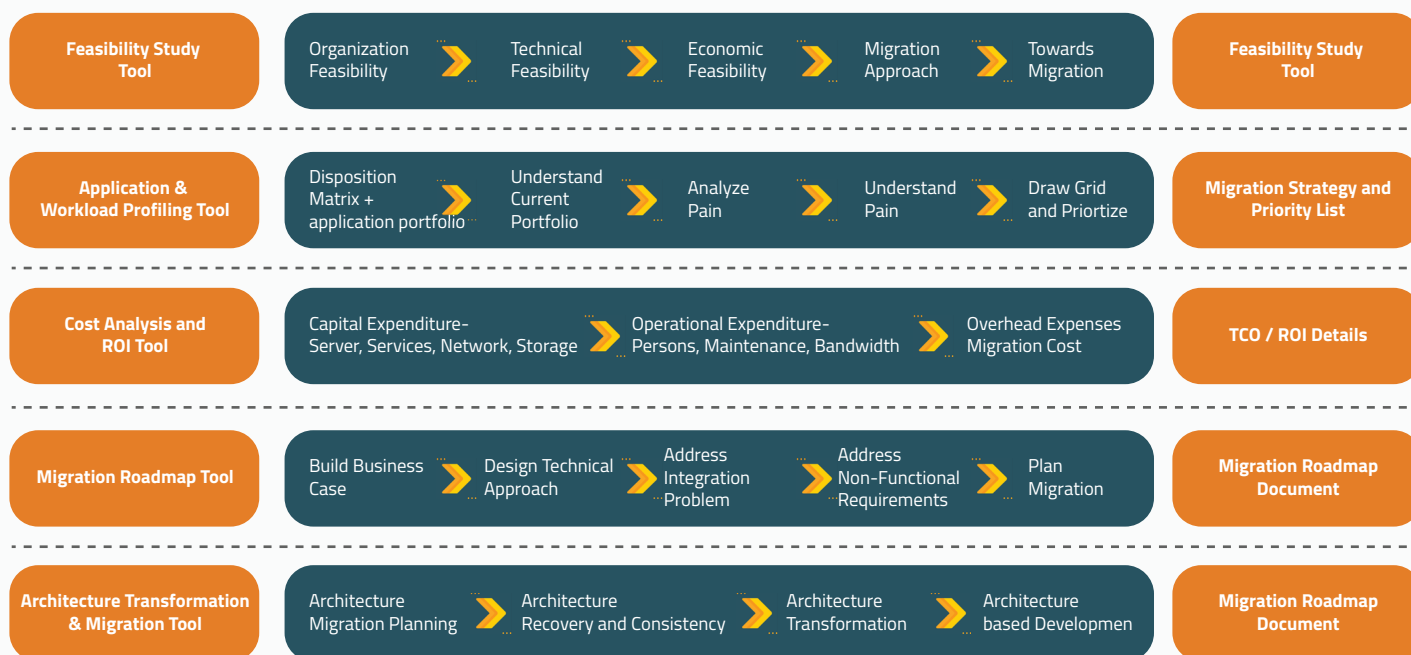# How Happiest Minds is taking organizations to cloud efficiently

Cloud being one of the core pillars of the Happiest Minds, we're proud to be an integral part of the success journey of multiple organizations' cloud adoption. Happiest Minds has helped organizations increase their top line and enhancede efficiency while reducing the cost through cloud migration.

Cloud Integration Framework is a unique solution from Happiest Minds to integrate all Cloud and non-Cloud Applications without re-wiring (coding). cIF is a server run time that can be hosted on any JEE runtime. Any enterprise can keep their existing server/architectural landscape and route the traffic through cIF. The traffic is then re-routed by cIF to the right destination (Cloud/on-Premise) based on dynamic content

Cloud migration framework

Cloud migration framework assesses the end-to-end migration approach in terms of technical as well as RoI. The assessment phase helps organizations to understand the process Happiest Minds will be taking them through for migrating their infrastructure to a cloud environment.

Feasibility Study Tool	Organization Feasibility	Technical Feasibility	Economic Feasibility	Migration Approach	Towards Migration	Feasibility Study Tool
Application & Workload Profiling Tool	Disposition Matrix + application portfolio	Understand Current Portfolio	Analyze Pain	Understand Pain	Draw Grid and Priortize	Migration Strategy and Priority List
Cost Analysis and ROI Tool	Capital Expenditure- Server, Services, Network, Storage		Operational Expenditure- Persons, Maintenance, Bandwidth		Overhead Expenses Migration Cost	TCO / ROI Details
Migration Roadmap Tool	Build Business Case	Design Technical Approach	Address Integration Problem	Address Non-Functional Requirements	Plan Migration	Migration Roadmap Document
Architecture Transformation & Migration Tool	Architecture Migration Planning	Architecture Recovery and Consistency	Architecture Transformation	Architecture based Developmen		Migration Roadmap Document

cTKTM or The Cloud Adoption Toolkit is a set of tools for delta Analysis & Automatic Remediation, helping our partners accelerate their adoption journey. The toolkit can work as a standalone engine or as a plugin to IDE like Eclipse. The key features of cTK include:

- An engine that incorporates all Standard Platform Standard Migration Rules
- Support for Custom Rule Engines
- Satellite Portal for program management and dashboard reporting

Being a proven and time-tested solution, it provides an additional lever that can be the key to success for a lot of Cloud Business Cases by saving money, time, and effort

CaaP is a Cloud Consulting Platform built indigenously by Happiest Minds Cloud Solution Lab. It provides an integrated and automated experience for Cloud Advisory activities and helps reduce decision-making time for Cloud Adoption by providing key recommendations very specific to your IT Estate. The recommendations can be tailored to a significant extent to unearth the business value of your business and IT, as-is and on-Cloud.

Happiest Minds' unique productizes solution stack, CaaP, Cloud Assessment, and Advisory Platform, provides an integrated approach for analyzing the application, infrastructure, and security portfolios. CaaP is a platform-agnostic, repeatable and intelligent platform, Business   Benefits of using CaaP

- Enables an efficient delivery of consulting services like Portfolio Assessment, Cloud Readiness, Cloud Quotient, and Cloud Business Case.
- Leverages the knowledge-base of best practices (an ever-growing Question bank) to help automate Data Collection, Analysis, and Reporting
- Runs on a Cloud Platform
- Powered by industry-proven algorithms

Happiest Minds is a proud partner of Microsoft (Azure Cloud), AWS (AWS Cloud), Salesforce, Google Clouds. Collaboration is a win-win for everyone. Our carefully nurtured and often exclusive partnerships with leading cloud service providers help us change the game for our clients and drive growth for all stakeholders. Partnership with all service providers makes us a unique choice to analyze the right platform for our clients, focusing on their requirement while keeping the cost in-line with the budgets.

Conclusion

Cloud computing is there in this world since 1960, but innovations started after AWS started its operations in 2002 and introduced the work to a new level of an innovation platform. There are several other platforms available from Salesforce, Microsoft, Google, etc. where all provide almost similar services, but it's up to the board to decide which one to choose for their bank's further growth.

While experts claim that cloud computing can transform across the banking and financial sector, however, it is very important to understand that this technology needs to be implemented, keeping security and regulations at the center of the implementation strategy. Leading and trusted cloud technology experts have the capabilities and skills to shift banking from legacy systems to cloud in a controlled manner.

Author Bio

Sumit Kamra has 12+ years of IT experience as a technology evangelist in BFSI industry. Currently working as a Solutions Consultant in Digital Business Services. His special interests are in the use of latest technology to enhance customer experience and transfiguring pioneering ideas into products. He has helped multiple customers across the globe to digitally transform their business with the help of cloud platforms. Analytics has always been his key focus in any project due to its benefits towards customer success and revenue diversification.

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