Tech Mahindra

Cloud Adoption for Banks:
Creating Enterprise-Level Roadmap Based on Value and Complexity

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Point of View

Introduction

Banking organizations are gravitating towards cloud adoption at increasingly faster speed. As cloud technologies get matured in terms of costing model, security and innovation, banks see value in moving towards cloud. The cloud is considered as a foundation for platformization, agility, and elasticity – the attributes that are essential to thrive in the ever-changing business landscape.

Cloud adoption can be defined as program or initiative to migrate their workloads (processes and data) to private/public cloud from existing technology architecture which is predominantly legacy monolith. Essential characteristics of any cloud adoption program can be summarized as follows:

1. **Necessity, not an option:**
   Cloud adoption is a necessity and not an option. The speed and extent can vary; but banks must leverage cloud to fuel the overall digital transformation.
2. **Linked to business objectives and strategy:**
   Outwardly, cloud adoption may appear a technical exercise; but that's far from truth. The program operates at the intersection of business and technology. Cloud alters the way organizations handle customer interactions, organization structures, business processes and data. So, it should be linked strongly to business objectives and strategy.
3. **Inter-dependency on other transformation programs:**
   Cloud adoption is part of overall digital transformation. Firms all over the world are engaged in digital transformation to create more customer-centric products and services. Many programs are undertaken by organizations to transform the organization to survive and thrive in the digital world, influenced heavily with new technology. Cloud adoption sits amid such transformation.
4. **Balancing value and risk:**
   Cloud adoption has moderate to high risks, depending on the extent/speed of adoption. It needs careful planning to make the right business and technology choices as well as implementation approaches. Careful consideration must be given to cost-benefits, value realization and negating possibility disruption to existing business.
5. **Structured roadmap:**
   A clear roadmap for cloud adoption should be central planning document to carry out workload migrations to cloud. The roadmap should primarily reflect the prioritization of workloads to be migrated to cloud. The prioritization is based on well-considered guiderails and decision-making criteria (or decision metric). Of course, deviations to the guiderails and metrics is very much possible based on the specific context.

This point of view (POV) deals with the reference guiderails and decision metrics used for banking organizations. Based on these guiderails/metrics, the POV suggests a representative view for prioritization of typical IT assets/workloads of a bank. The POV is a crystallization of collective experiences and learnings from various cloud adoption journeys that we have been part of. Our involvement has given a well-rounded view of the thought process that has gone behind the decision making, planning and implementation. Each bank is unique; hence each cloud adoption journey is also unique. The POV should be used only as a reference point before cloud planning is done.

Cloud Adoption – Guiderails and Prioritization Criteria

Guiderails

Cloud First
Every new asset on cloud-ready architecture

XaaS Preference
Saas > FaaS >PaaS > CaaS > IaaS > on-premise *(for maximizing value from cloud)*

xR Approach
Retire > RePurchase > ReArchitect > RePlatform > Lift and Shift > ReHost (for maximizing value from cloud)

Cloud Foundation
Security, automation, DevOps/SRE, automation, observability, telemetry *(continuous improvement during adoption initiative)*

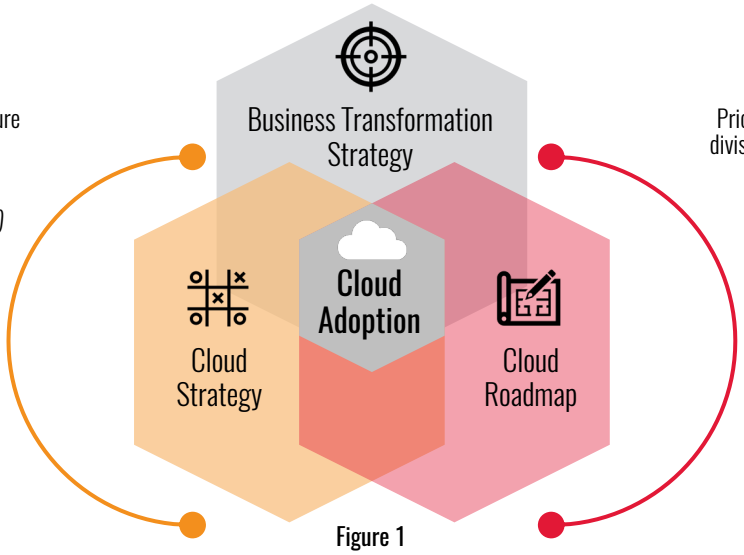

Figure 1

Prioritization Criteria

Business Division
Prioritize cloud adoption for critical business division (retail, commercial, wealth and more) Align with business strategy

Functional Domain
Prioritize domains (sales/servicing, core banking and more) based on differentiation to business/customer

Migration Treatment
XaaS preference, XR approach, data on cloud, APIfication

Value and Complexity
Cost-benefit assessment, tangible and intangible value., risks and dependencies, costs and timelines

Cloud guiderails consist of a set of key principles which codify organization's strategy for cloud adoption. These principles are the determinants for key techno-functional decisions while moving existing workloads from legacy to cloud or creating new assets. They work as critical pavement blocks in the path for cloud implementation. Deviations are possible but need to be justified based on the specific context. As Figure 1 suggests, the following are key guiderails that need to be defined/finalized by the organization:

Cloud-first: Any new asset should be created with cloud-ready architecture. Preferably, it should be hosted on public/private cloud platforms.

As a Service Preference: The sequence given in Figure 1 shows the innovation value of Cloud. Hence choice of service is very important for any cloud journey. Modern cloud platforms offer multiple options with varying degree of balance of control between bank, hyperscaler, and platform provider. Banks usually build strong partnerships and control only the functions that are differentiating factors. Hence software- as -a -service (SaaS) is preferred over function-as –a- service (FaaS) and so on. However, we have also seen banks deviating from this if they believe in custom-developed platforms over ready-to-use third party vertical platforms. Also, in many cases it may not be possible to directly adopt SaaS or PaaS model due to complexity of adoption. But it may be noted that SaaS/PaaS provide maximum value while IaaS provides limited value.

xR Approach: Technical approaches for cloud migrations vary a lot. 6R or 7R framework encompasses those approaches. The usual priority order is depicted in the diagram. Again, there may be deviations and decisions will need to be taken based on complexity of migration. We still see a lot of banks taking 'lift and shift' approach as phase-1. Later they re-architect some of the products for better value extraction.

Cloud Foundation: Cloud adoption is not only migrating the workloads; but also providing the right environment, tooling, and operational support through the journey and beyond.

The aspects such as cloud security, automation through DevSecOps tooling, operational tooling/processes for observability, telemetry etc. are critical for the success.

Beyond these guiderails, the roadmap depends on further key inputs. These inputs help in prioritization or sequencing the adoption journey. As depicted in the diagram, these decision metrics are:

Business Division: While the organizations give a thrust to cloud at enterprise level, they prefer certain businesses over others. For example, lending or payments businesses, which are critical for customer success, may be taken up at higher priority over others (such as deposits). The decision is completely driven by organization's business strategy. There is no specific pattern that can be highlighted.

Functional Domain: Reference architecture of a bank can be segregated into separate components from front office, middle office, and back office. Choosing the prioritization sequence correctly is important decision criteria. This point is explained in detail later during the POV. In fact, it is one of the key thrust area of the POV.

Migration Treatment: The guiderails, such as XaaS preference, XR approach, are important decision criteria as well.

Value and complexity: Finally, the prioritization depends on cost-benefit. The complexity (function of risks, costs, and time) and value (function of business value, and cost efficiency) need to be examined in detail for business case. This point is explained later in the POV.

Banking IT Landscape (representative) and Adoption Priority

Before creating adoption roadmap, it is important to understand the existing IT portfolio in terms of business and technology assets. Figure 2 provides a simplified reference view, which is applicable to any typical bank.

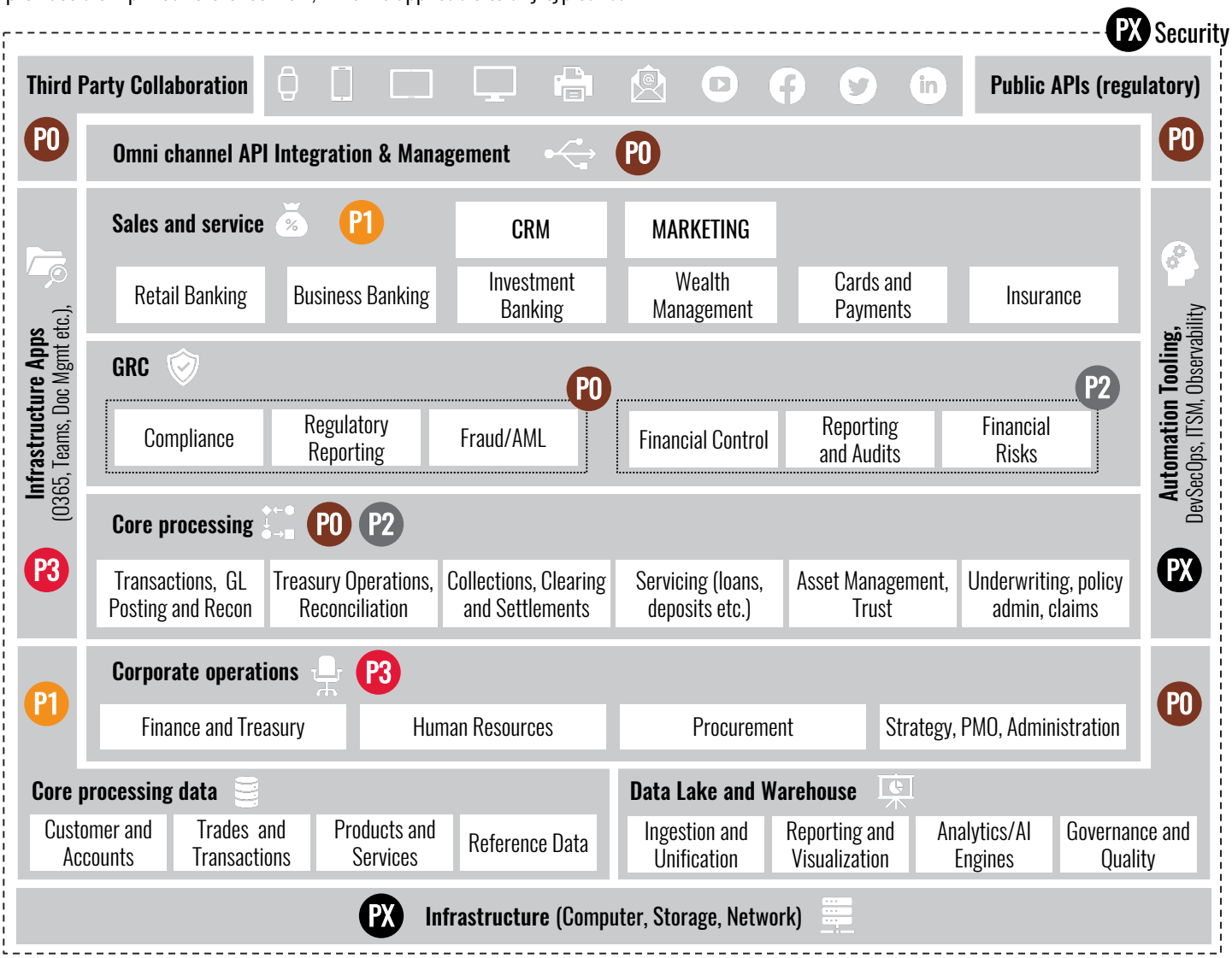

Figure 2

The prioritization is divided into various categories as explained below:

P0	Haven't started/ Really?	**Highest priority.** Most of the banks have started the cloud adoption for these components. If you haven't, you are late. So start immediately.
P1	Start quickly	**High priority.** If not started, banks will need to quickly plan for cloud adoption
P2	Think before you leap	**Medium priority.** The adoption is complex and due thoughts need to be applied before undertaking the journey.
P3	BE opportunistic	**Opportunistic.** The differentiation through cloud adoption is limited. But the complexity in certain cases may not be very high. Banks need to decide based upon own context.
PX	All through the journey	**All Through the journey**. These components will undergo cloud adoption and transformation throughout the journey, as the cloud maturity of the bank goes up.

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The POV examines each of the below components and suggests the possible priority for cloud adoption.

Portfolio/Component	Description
Channels	The customer touch-points through physical devices (e.g., web, mobile, ATM)
Third Party Collaboration	Interfaces/APIs that are exposed to partner organizations (e.g., brokers, agents, fintech, non-finance partners) for integration with third party services
Public APIs (Regulatory)	Interface/APIs available for any interested party based on customer consent. (e.g., open banking APIs, PSD2 APIs)
Omni-channel API Integration and Governance	The API/interface governance (e.g., ESB, API-gateway) to facilitate smoother internal/external integration
Sales and Service (Front Office)	Customer engagement business applications (e.g., CRM, marketing, offers, campaigns, servicing) across all the products and divisions
GRC – Governance, Risk and Compliance (Middle Office)	GRC has two components: 1. Regulatory – External facing applications responsible for ensuring compliance, reporting, and so on, to government and associated bodies 2. Internal – GRC applications that support bank's internal processes
Core Processing	Core banking functions, usually the biggest and most complex suite of applications/platforms
Corporate Operations (Enterprise Platforms)	The ancillary applications for common functions such as human capital management (HCM), procurement, finance/treasury, and more. These functions are supporting services in every organizations – not only banks
Core Processing Data	Transactional data captured through various processes and applications. This data is closely coupled with the applications. There is no separate data store. However, it is shown separately here as a logical entity. Reference/master data (customer information, product information) is also part of this store
Data Lake and Warehouse	Data storage and associated functions (data governance, processing, integration, ETL) to consolidate all the organization's structured and unstructured data. The analytics and AI/ML engines heavily rely on the data lakes
Infrastructure Platforms	Support platforms such as O365, collaboration (e.g., Teams), document management. They are commonly used by all the business platforms
Engineering Tooling	The technology platforms for automation, engineering activities, support services (e.g., DevSecOps tooling, ITSM, telemetry/observability)
Security	The security is all pervasive as banks are moving towards zero-trust model. In the diagram, it is depicted as encompassing boundary

Prioritization for each component

The roadmap for cloud adoption can be created by examining each component in detail in order to decide the priority. As mentioned already, each journey is unique; but the rationale and views given below can be a starting point. The final roadmap needs to be developed after intense discussions, deep current-state assessment and cost-benefit analysis.

Features	Priority	Preference	Pattern	Migration Risk	Business Value	Adoption Cost
API and Collaboration (Third Party APIs, Regulatory/Public API, API Integration and Governance)						
• Ecosystem approach, ease of collaboration • Customer choice for financial and non-financial needs • Regulatory compliance • Separation of channels and processing – headless architecture	P0 P0	PaaS	API-fication with cloud native and micro services-based architecture	Medium-low	Very High	Medium
Core Processing APIfication						
• Reduce integration complexity and coupling, improve interoperability • Streamline the processes and data processing through APIs • Improve speed and agility with cloud • A step towards modernization of core platforms	P0 P0	PaaS	API-fication with cloud native and micro services-based architecture	Medium	Very High	Medium
GRC (Regulatory Functions)						
• Regulations change dynamically • Varied regulations across markets, countries • Improve speed and agility with cloud	P0 P0	PaaS, Third party products	Re-architect, Re-purchase	Medium	Very High	Medium-High
Sales & Servicing						
• Customer Engagement Layer: Critical for differentiation and value • Re-imagine customer journeys: Strategic approach that goes beyond only cloud • Speed, agility and flexibility are important end goals • Multi-year journey expected. Prioritize critical journeys (e.g., payments, lending, buy-side processes)	P1 (for strategic customer journeys) P2 (for other journeys) P1 P2	SaaS (e.g., CRM), PaaS/Products, (e.g., Servicing, wealth management)	Re-purchase, Re-architect	Medium-high	Very High	High to Very-high
Data lake and Warehouse						
• Critical for customer-centricity instead of product-centricity • Unlocks the possibilities of state-of-the-art analytics/AI and customer success • Cloud migration should happen alongside the other CDO-led data programs (e.g., data ingestion, unification, quality and governance	P1 P1	Cloud Data Platforms	SaaS (e.g., Snowflake), PaaS (e.g., Cloudera) Re-platforming, (e.g., on-premise Hadoop), Re-architecture (e.g., Netezza/ Teradata to Hadoop)	High	Very High	High to Very High

Prioritization for each component

Features	Priority	Preference	Pattern	Migration Risk	Business Value	Adoption Cost
Core Processing (Transactional) Data						
• Transactional and reference data usually on high cost infra (e.g., mainframes) leading to high operating costs • Divert 'read' traffic to data on cloud • Cost saving and resilience improvement • High business value from customer master, products, reference data	P1 P1	Cloud data platforms, DBaaS	Data offload to cloud, mirroring of data on cloud	Medium	Medium-high	Medium
GRC (Internal functions)						
• Limited differentiation or strategic advantage of moving to cloud • Limited changes to business functions, stable processes • Cloud adoption is not on priority	P2 P2	PaaS, CaaS	Re-platform, Re-architecture	Medium	Medium-Low	Medium
Core Processing						
• Most complex functionality. Usually legacy/mainframe, very old technology • Legacy modernization approach: Tool-assisted reverse and forward engineering • Strangler pattern, hollow-out strategy • Quick-wins such as DevOps on mainframes, batch-job simplification, MIPS reduction • Careful strategy for co-existence	P2 P2	PaaS, IaaS	Re-purchase (where possible), Re-platform, Re-architecture	Very High	High	Very High
Corporate Operations						
• Standardized processes. Stable and unvarying. • Cloud adoption gives limited gains • Cloud adoption for tactical purpose (cost savings and operations ease) • Good candidates for learning and improving cloud maturity of the bank	P3 P3	SaaS, products where applicable (e.g., HR, Procurement	Re-purchase	Medium	Low-medium	Low-medium
Infrastructure Platforms						
• Standardized functions and applications. Stable and unvarying. • Cloud adoption for tactical purpose (cost savings and operations ease) • Good candidates to move to cloud quickly with some low hanging benefits	P3 P3	SaaS, products where applicable (e.g., O365, Teams	Re-purchase	Medium	Low-medium	Low-medium
Engineering Tooling, Security						
• Components are part of the adoption journey throughout • Maturity, robustness increases over a period of time • Cloud security is critical to ensure success – so upfront planning/design is required	PX PX	NA	NA	NA	NA	NA

The above-mentioned prioritization can be used as 'starting point' or 'reference point'. The bank must develop its own journey based on the context, which will always be unique.

Conclusion

While cloud adoption is necessary for digitalization, banks must be extremely cautious while creating a roadmap for workload migration. Multiple choices exist, and careful approach is required to choose the most appropriate in the given context. It needs deep brainstorming across stakeholders from business and technology. Key decisions should be codified in the form or guiderails. This POV provides a reference or representative view of the cloud adoption roadmap which can be useful for cloud adoption. In conclusion, key tenet for roadmap creation is business case along with cost-benefit and total cost of ownership (TCO) analysis.

The business case depends on the two parameters:

1. Differentiation for business (agility, elasticity, resilience, innovation).
2. Complexity of change/implementation (failure risks, costs, and timelines).

The details given in the POV can be summarized and depicted in Figure 3.

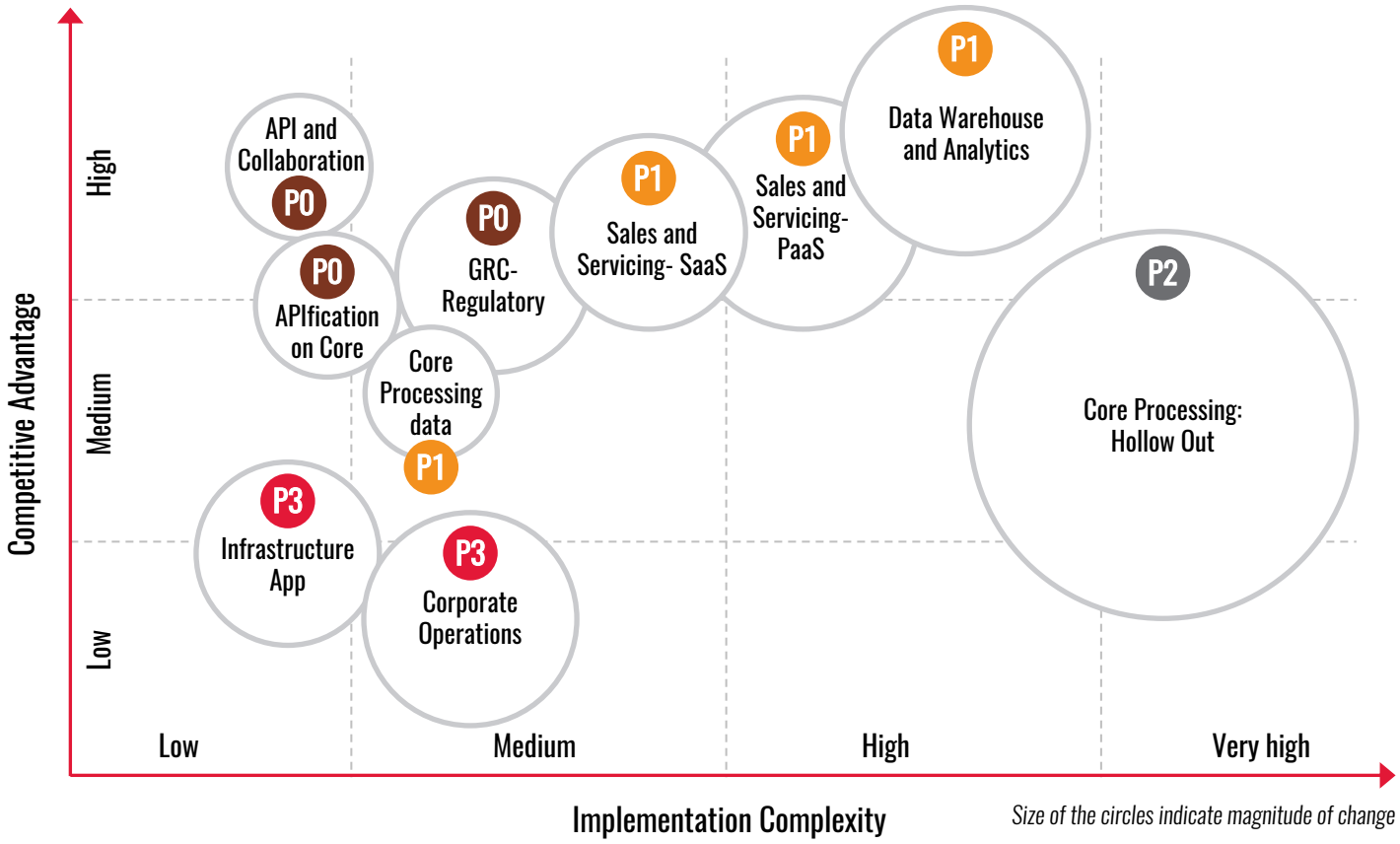

Figure 3

- P0 Haven't started? Really?
- P1 Start quickly
- P2 Think before you leap
- P3 BE opportunistic

Author

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With over 24 years of technology experience, Gopal has learnt and practiced his skills in many facets such as hands-on technology work, consulting & client interactions, project delivery, portfolio management and people management. The areas that he enjoys the most are delivering large, complex, multi-disciplinary programs that are aimed at transforming the organization and also shaping up large, complex deals to create strong relationships with clients.

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