The Cornerstone of the Connected Finance Ecosystem: Modern Data Platforms for Southeast Asian Banks

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Executive summary

Connected finance has emerged as a financial services priority. Financial services providers want to embrace connected finance while also ensuring that it meets the requirements of resilience, scalability, reducing total cost of innovation, and agile innovation.

Financial services providers need to venture out of the box and architect a new data strategy that requires a move toward distributed databases.

Distributed databases gear the institution for resilience, scalability, reducing total cost of innovation, and agile innovation. In addition, they also help financial institutions orchestrate modern technological architecture.

Multiple case studies validate the benefits of distributed databases in fulfilling the requirements of financial institutions in Southeast Asia.

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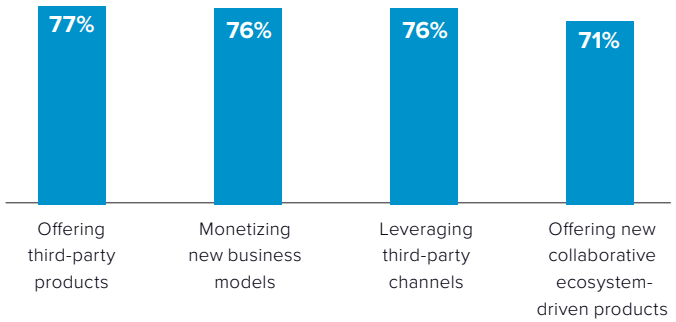
Connected finance is gaining traction in Asia

Customer centricity is driving banking toward an ecosystem approach through application programming interfaces (APIs) and third-party providers that incorporate data and AI capabilities. In order to develop a connected finance infrastructure, banks need to bridge silos, and transform into a larger ecosystem of unified and networked processes that create synergistic business models.

Connected finance is a priority globally

Banks' willingness toward connected banking



- Worldwide, connected finance offers a banking growth opportunity with **current estimated revenues at US$57 billion, involving 102 billion API transactions**.
- To achieve this growth, banks must overcome data management challenges (52% of IDC survey respondents)
- Security remains a concern for 48% of respondents

Source: IDC Financial Insights Survey (2023), IDC Spending Guide (October 2023), and Statista

Connected finance is a top priority for Asian financial institutions

Asian financial institutions' top priority areas

1. Increase revenues by deploying fully digital business models
2. Build operational resiliency and scalability
3. Operational efficiency and cost savings
4. Ecosystem integration — which is connected finance — for better customer service and new products

IDC expects increased technology spend in these priority areas, which require data and AI

Southeast Asia markets are getting ready for connected banking

Some examples

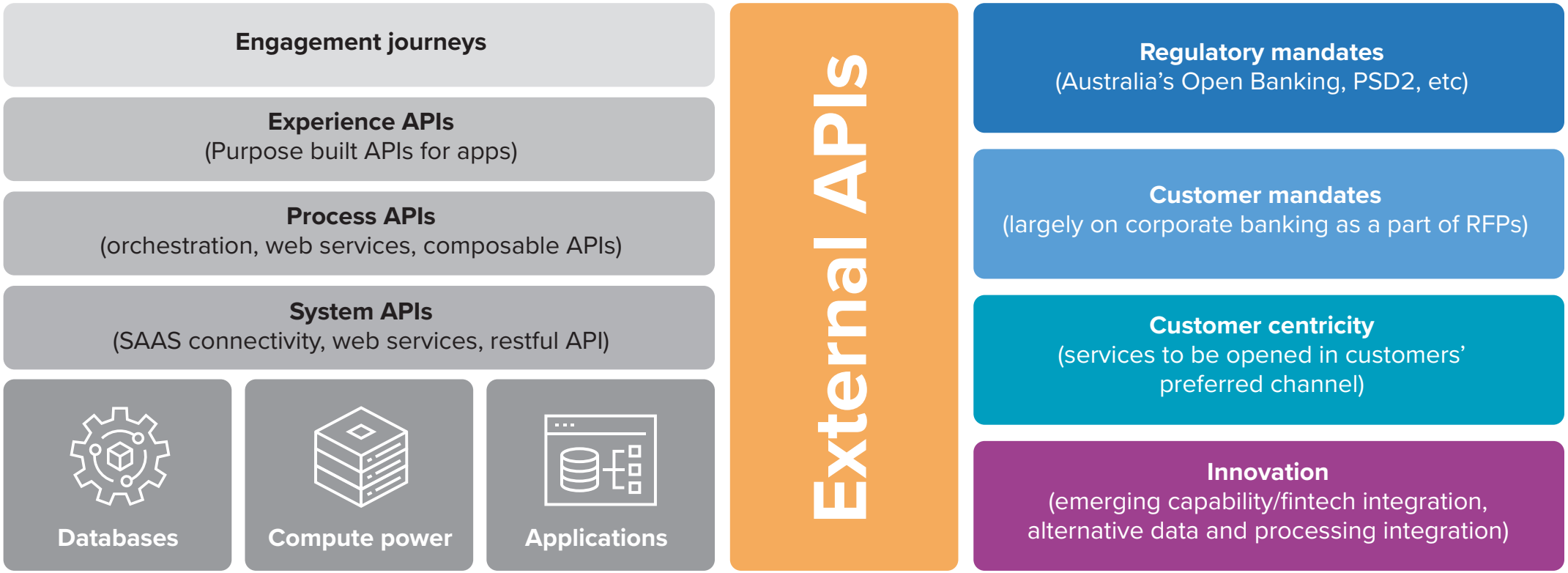
1. Thailand's PromptPay and Singapore's PayNow are linked
2. A bank in Singapore is consolidating its wealth management portfolio across different platforms
3. A blockchain company is integrating trade documents, trade finance, and insurance flows

These examples require financial institutions to venture outside the box and rearchitect their technology stacks

The building blocks of connected finance

Connected finance requires an ecosystem and technologies that help integrate the ecosystem. Traditional banking architecture is monolithic, whereas connected finance is distributed.

There are many players and building blocks in connected finance.



The impact of connected finance on resilience, scalability, cost, and innovation preparedness

Traditional banking architectures are monolithic. In comparison, modern architectures are integrated services and products. Coupled with ecosystem changes, the modern architecture is adding to banks' revenues, while also increasing the technology management challenges.

Resilience

Introduces best in class security and resiliency products in the core.

Interface and architecture complexity increase vulnerability.

Scalability

Scalability must be planned in a connected finance network. The volumes could suddenly peak and challenge response times, leading to suboptimal customer service.

Cost

Reduces the build cost as bank integrates with a third-party solution.

Infrastructure costs need to be carefully considered. Most interfaces involve data and AI that are resource-hungry.

Innovation preparedness

Innovation gets the single largest boost from connected finance. A fintech can connect its solutions through a sandbox, and the bank can safely test the integration and benefits.

There is a mix of positives, especially regarding innovation. Although innovation assistance is a positive, a bank cannot expose its system and compromise resiliency, cost, and scalability. Storage is critical for connected banking.

Connected finance requires a robust data strategy, and databases

Data is usually stored in databases in a bank. A database is a logical grouping of data in a related set of tables and indexes. A database management system is a software used by banks to store, retrieve, and run queries on data.

Connected data management requires a fresh perspective on data management strategies, and there are common problems in legacy systems that need rearchitecting.

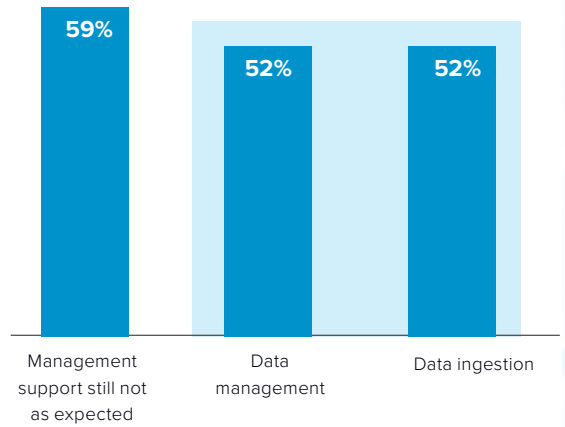
Scalability and performance limitations
Legacy systems are hard to scale and can't be scaled horizontally.

Hard to maintain
These systems require mainframes and traditional infrastructure.

Batch oriented
Traditional data strategy and databases are batch oriented and not real-time.

Structured data only
Traditional strategies are for prediction capabilities on structured data only.

Top data and connected finance challenges



The database structure for connect finance should support both transactional and analytical capabi

Preparing for connected finance — the right database management systems

According to IDC research, in legacy databases, there is a danger of inappropriate combinations and misclassification of data across databases, resulting in misleading and even false data being propagated across the enterprise. Moreover, the rise of generative AI (GenAI) and connected finance further underscores the need for appropriate data management systems.

Distributed databases are a way forward to support connected finance.

A few important decision criteria:

- Transactional versus analytics
- Interactive versus batch versus real-time
- Flexible versus formal
- Scalable (horizontal) versus vertical
- Response time with data in nodes or centrally stored

Distributed databases meet these criteria

	Preferred approach	
	Centralized databases	**Distributed databases**
Lower cost of management	**Preferred**	
Scalable		**Preferred**
Quicker access to data		**Preferred**
Minimal data redundancy	**Preferred**	
Resiliency		**Preferred**
Easy to maintain data integrity	**Preferred**	
Real-time analytics		**Preferred**

Distributed databases will meet the requirements of connected finance with scalability, faster analytical response, and resiliency which can help reduce the impact of a distributed architecture vulnerability

Case studies: Benefits of distributed databases in banking

Case study 1

Implementation of a cloud-deployed, distributed, and full stack localized core banking system for a large Asian bank.

The project:

- Was completed in 18 months from launch to go-live
- Handled a transaction volume of 1,000+ million a day at an average of less than 100 milliseconds This was over 50% faster compared to the previous infrastructure
- Batch run was improved, running 2.1 times faster than before

This case highlights the versatility of distributed databases. In addition to peripherals and connected banking, they can also drive core processing.

Case study 2

Reducing reconciliation batch time significantly through distributed databases for a large digital bank with 250 million+ customers.

Digital equals data, and that implies compute power. The project:

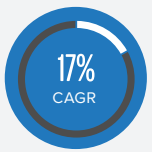
- Reduced the batch run timing by 58%
- Segregated online transaction processing from batch jobs
- Reduced the cost of ownership by reducing databases by 25%
- Provided scalability for rapid expansion

Traditionally, large databases have been designed as relational database management systems (RDBMS) only. In this example, distributed databases could significantly improve a process at scale.

Distributed databases need to support modern connected finance architecture and assist businesses in low-risk data migration

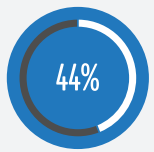
AI and modern business decision-making require agility and compute power. Technology supports these through modern architecture, and this support is a must for critical components of connected finance such as distributed databases.

Modern apps



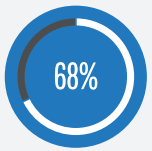
Compute power is vital, and in a connected finance system could be on-premises or in the cloud. A quarter of the financial institutions surveyed prefer hybrid cloud today, and that requires modern apps, which are supported by distributed databases.

MySQL migration



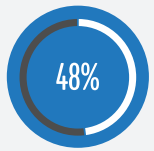
of CIOs surveyed cited migration risk as a barrier to digital transformation. The migration from MySQL to distributed databases is safe and rapid.

Real-time analytics



In Asia, 68% of CIOs mentioned big data and analytics as a business priority. Traditional RDBMS are largely online transaction processing (OLTP). Distributed databases incorporate transactions and analytics facilitating real-time analytics.

Operational data management



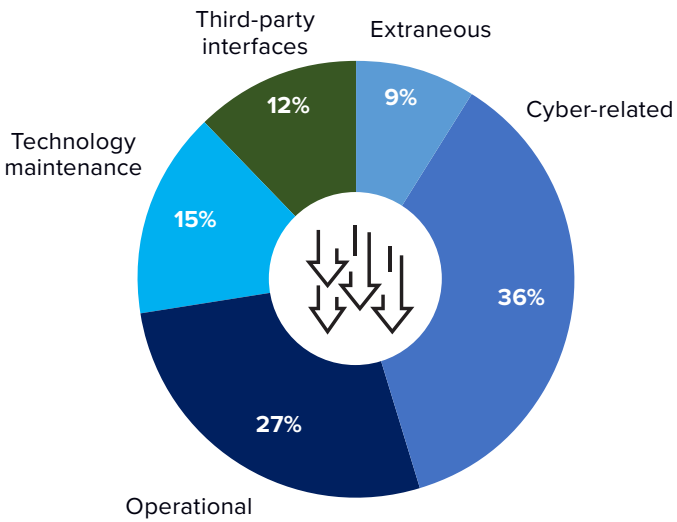
of CIOs said maintaining stable operations is a top priority. Distributed databases reduce this risk with their nodes architecture.

Distributed databases fit the modern architecture well, and businesses adopting them can benefit from easier real-time analytics and data management. A key difference is that while traditional RDBMS have been designed for batch processing, modern databases also have the capability to support online processing.

Considering FSIs' critical business needs, can distributed databases help improve resilience?

Not all downtime is due to cybersecurity breaches. Most disruptions occur because of technology or operations process gaps. IDC research found that operational downtime accounts for 27% of all studied disruptions. This is where the distributed database structure can help, while also driving data recovery and protecting software investments.

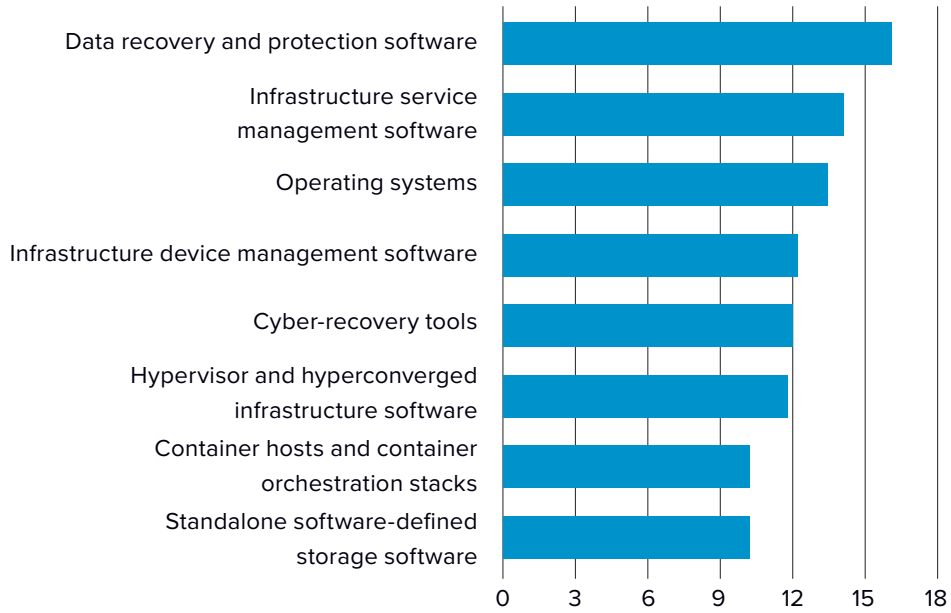
Reasons for downtime



Distributed databases are highly available and resilient by design. They have built-in failover mechanisms

The data is replicated across multiple nodes. Replication ensures that even if one node fails due to hardware corruption, network issues, or any other type of outage, the data is still available through other nodes.

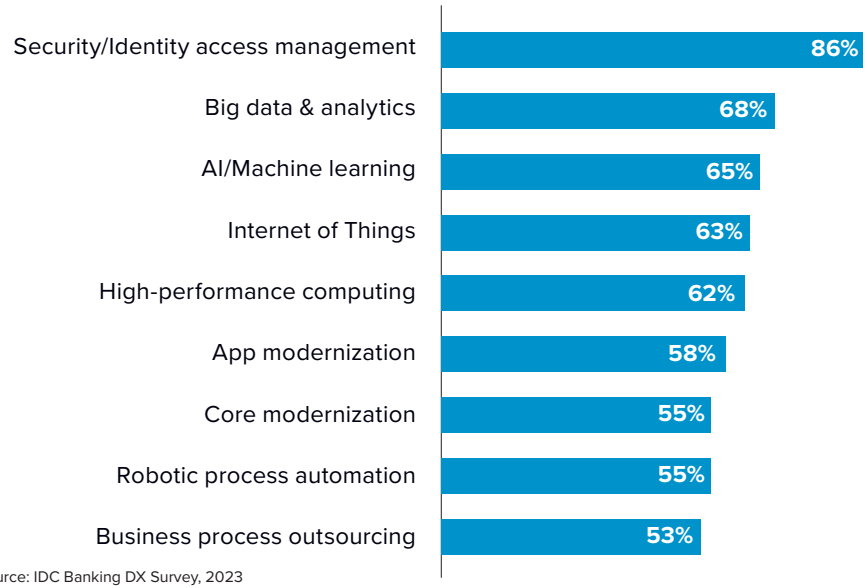
Top infrastructure software investment areas for 2024–2025



Databases must be scalable and deployable in hybrid cloud environments to keep up with rising storage demands

Data storage is growing exponentially, and connected finance and technologies such as GenAI will only increase the need for storage. By 2025, data will grow by 0.495 zettabytes daily. This rapid growth requires significant scalability planning. In a recent IDC survey, over 80% of financial institutions showed preference for cloud to own-premises infrastructure. Highly scalable databases meet the needs of today's modern banks' choice of cloud for greater agility and resiliency.

AI and security are the top growth initiatives for financial institutions

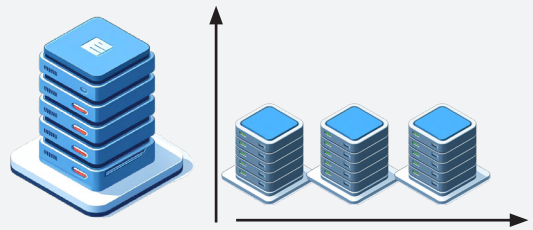


Source: IDC Banking DX Survey, 2023

Highly scalable databases essential for supporting banks' top growth initiatives such as AI and security

- Ability to handle large volumes of data
- Distributed architectures support requirements for high-performance data processing
- Support for large and varied data sets are critical to support customer experience initiatives

Databases must allow for horizontal scaling



Vertical scaling (scaling up)

Horiztonal scaling (scaling out)

Horizontal scaling is easier from a hardware perspective and does not require downtime. Moreover, each node has its own replication mechanism, while even the new hardware is built with resilience.

Addressing the need for lower total cost of operations

According to IDC research, 51% of CIOs across Asia/Pacific cited cost as an important factor when considering a strategy for platforms and applications modernization.

Percentage of CIOs noting cost as an important factor to consider for modernization

Asia/Pacific – 51%
Indonesia – 64%
Thailand – 61%
Singapore 36%

Distributed database

- Supporting both OLTP and OLAP — reducing the spend on buying a separate OLAP solution
- Retaining both the capabilities as different workloads — easier to maintain

OLTP ⟷ **OLAP**

Online transaction processing

- A system of records required for high volume of small banking transactions
- Basic analytics capability: simple queries and updates touching small amounts of data
- Business processes for running basic business tasks

Online analytical processing

- Handling long transactions and complex queries touching large amounts of data
- Queries can require a significant amount of resources
- Business activities for business decisions and problem solving

IDC's advice

- Hybrid transactional and analytical processing (HTAP) will become important and help reduce cost of operations
- In a typical OLTP, memory optimized data is maintained to increase processing speed, whereas in an OLAP, a cube is created to save analytical data
- HTAP ensures that query results are updated the moment transactions are completed — providing faster real-time analytics in a more cost-effective way

Meeting FSIs' critical business need for innovation

According to IDC research, 50% of CIOs cited the need to reduce the time to market for the introduction of new products and services.

Indonesia – 48%
Thailand – 54%
Singapore – 44%

Structured for online but not batch processing
Banks can focus on real-time updates of use cases.

Rapidly scalable
Most innovations start as proofs of concept, but successful ones need to be rapidly scaled.

Built-in analytics
Real-time insights on innovation acceptance or pain points.

Ability to handle unstructured data
More than 50% of the bank's data is unstructured, which is important from the large language model (LLM) and GenAI perspectives. The relational database management system (RDBMS) can largely handle structured data only.

Case study

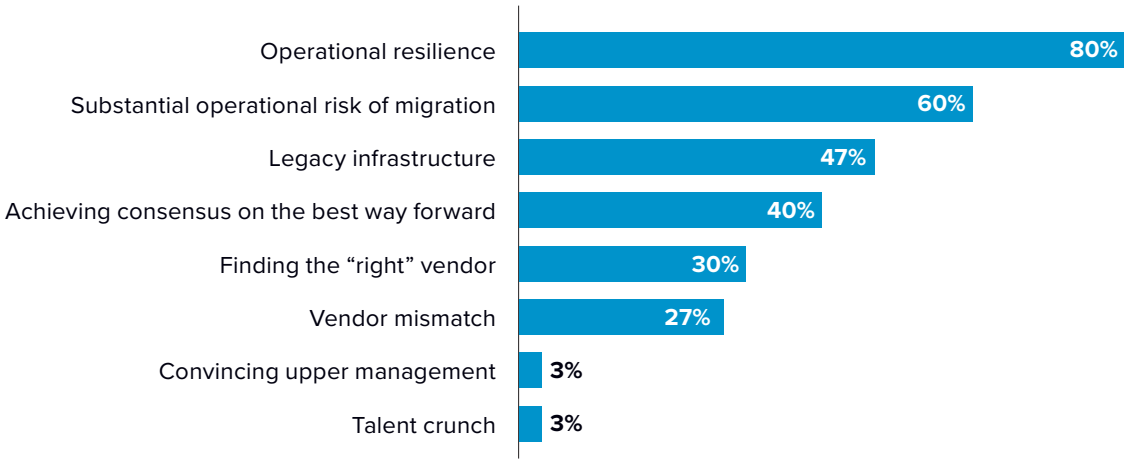
Accelerating business growth by a modern distributed database

- **Improved operational efficiency**: Reducing batch processing time by 58% and resolving performance and capacity bottlenecks
- **Cost savings:** Significantly reducing the total cost of ownership by more than 30% by streamlining back-end architecture and lowering operational expenses
- **Enhanced focus on core operations:** Allowing the bank to concentrate on core operations, promoting rapid development cycles and maximizing business value

Singapore: Distributed databases can help achieve the twin goals of operational resilience and transformation, efficiently and effectively

The Singapore market is gearing for the next level of transformation with banks investing in GenAI, connected banking, and hyper-personalization. Data and database strategy are becoming increasingly important for banks to perfect.

Digital transformation challenges faced by banks in Singapore

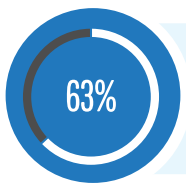


Source: IDC Banking DX Survey, 2023

1. Singapore banks have witnessed recent disruptions and need resilience enhancement strategies. Distributed databases have an in-built resilience that is augmented by them being hybrid cloud ready.

2. Digital transformation is being enabled by building around the core. This strategy requires real-time analytics and data federation, both of which are best enabled by a distributed database.

3. While selecting an innovation partner, it is essential to choose one that is constantly investing in its own platform. Currently, distributed databases are leading in storage innovation.

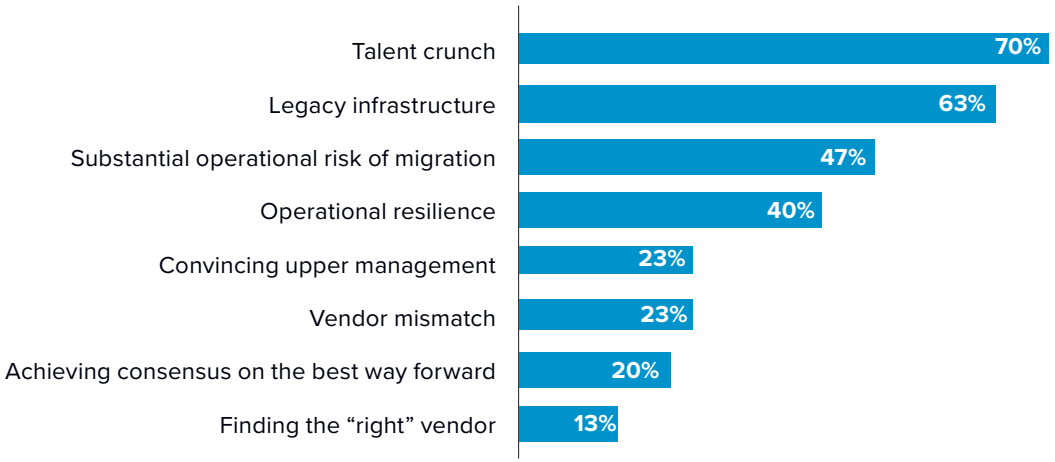


of banks in Singapore cited legacy data infrastructure as a challenge in their AI and digital transformation journey

Indonesia: Distributed databases increase efficiency and data democratization, enabling banks to enhance their digital capabilities

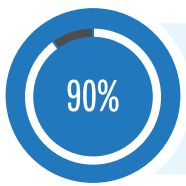
Digital banks are entering the market, necessitating incumbent players to increase focus on transformation efforts. The current database infrastructure faces challenges to efficiently and effectively supporting AI-driven hyper-personalization.

Digital transformation challenges for banks in Indonesia



Source: IDC Banking DX Survey, 2023

1. Indonesian banks need partners in the transformation journey.
2. Existing database structures limit access to data. A distributed database will increase the access to historical data permitting hyper-personalization.
3. Enabling data to a distributed database may require some migration efforts, and it is best to choose a low-risk migration option.
4. Distributed databases have an in-built resilience that is augmented by them being hybrid cloud ready.
5. A distributed database license structure facilitates a low cost to serve.

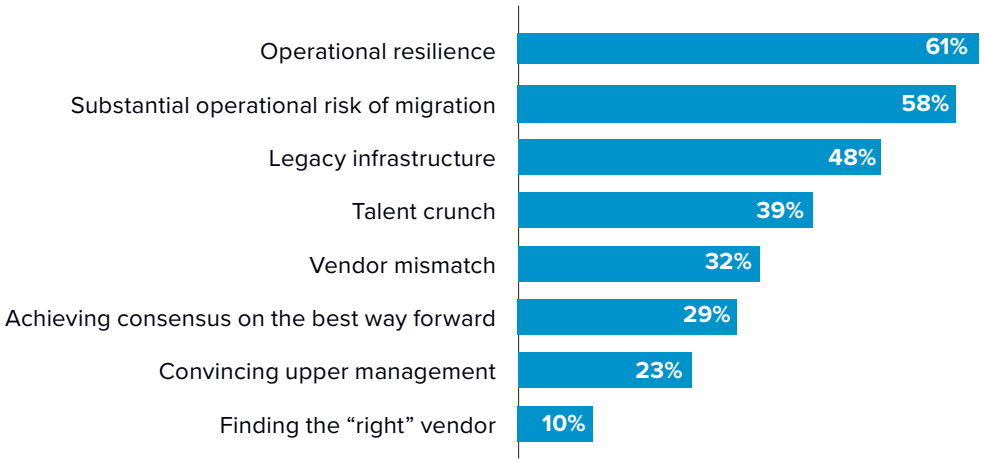


of banks in Indonesia cite data computing resources as a challenge in their AI and digital transformation journey

Thailand: Distributed databases can form the basis for AI use cases adoption and help propel digital transformation

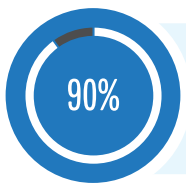
As Thailand gears for the emergence of digital banks, incumbent banks must focus on building operational resiliency, scalability for the new AI models, and core system migrations while ensuring a low cost to serve.

Digital transformation challenges faced by banks in Thailand



Source: IDC Banking DX Survey, 2023

1. Bank of Thailand has an increased focus on operational resilience. Distributed databases have in-built resilience and are hybrid cloud ready.
2. Enabling data to a distributed database may require some migration efforts, and it is best to choose a low-risk migration option.
3. Many Thailand banks are evaluating core system migration. Distributed databases are cloud ready, and help reduce cost to serve.
4. Thailand banks need partners in the transformation journey.
5. Distributed databases can be essentially effective if implemented in collaboration with a core banking system partner.



of banks in Thailand cite legacy data infrastructure as a challenge in their AI and digital transformation journey

Essential guidance: Asian banks need to accelerate adoption of distributed databases

To deliver digital business acceleration, Asian banks must understand their current level of digital maturity and the limitations of their data and database strategy. The strategy must be built on the pillars of resilience, scalability, reducing the cost to serve, and innovation preparedness.

Hybrid cloud environment is emerging as a dominant preference among Asian banks with 36% still preferring private cloud and 33% a mix of private and public cloud. Distributed databases are hybrid cloud ready.

About 48% of Asian banks cited resilience as their single highest infrastructure priority. Distributed databases are highly resilient, and with negligible recovery time objective (RTO) due to built-in redundancy, this resilience aligns with the stringent demands of banks for continuous availability, scalability, and compliance.

With net interest margins expected to decrease, operational efficiency will be impacted. Distributed databases can help reduce cost to serve through open stacks and reduced licensing costs.

About 68% of banks are focusing on data analytics as a key priority. Current database structures with separate OLAP and OLTP restrict real-time analytics, thus distributed databases fit the need best.

Go-to database structures must enable all the banking use cases. Distributed databases are currently trusted by core banking system providers as future-proof architecture.

With an increased focus on data-driven decision-making, the database structure needs to be rapidly scalable to account for the increased volumes of data. Horizontal scalability of a distributed database ensures scalability without disruption.

About the analysts

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Dr. Ashish Kakar is research director for IDC Financial Insights in Asia/Pacific. Based in Singapore, he is the lead Financial Insights analyst responsible for all aspects of banking and insurance research. Dr. Ashish's own interest is in fraud and risk, resilience, customer centricity, AI/ML, retail banking, insurance, alternative investment management, cloud and infrastructure, and credit risk management. Prior to joining IDC, Dr. Ashish had over 16 years' experience in Citibank, five years' experience with insurance companies, and has run his own asset management start-up for two years.

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Xiao Liu is a research manager for IDC Financial Insights focusing on Asia/Pacific data and analytics strategies. Xiao's core research coverage includes the practice and implications of data and analytics, ML, financial technology (fintech), and innovation competencies in the banking, financial services, and insurance sector. Her research includes how data applications in banking and insurance firms create a next-generation customer experience and operational excellence, especially through big data and analytics and ML techniques.

More about Xiao Liu

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