Modernize Your Database Management System To Improve Application Performance And Reduce TCO

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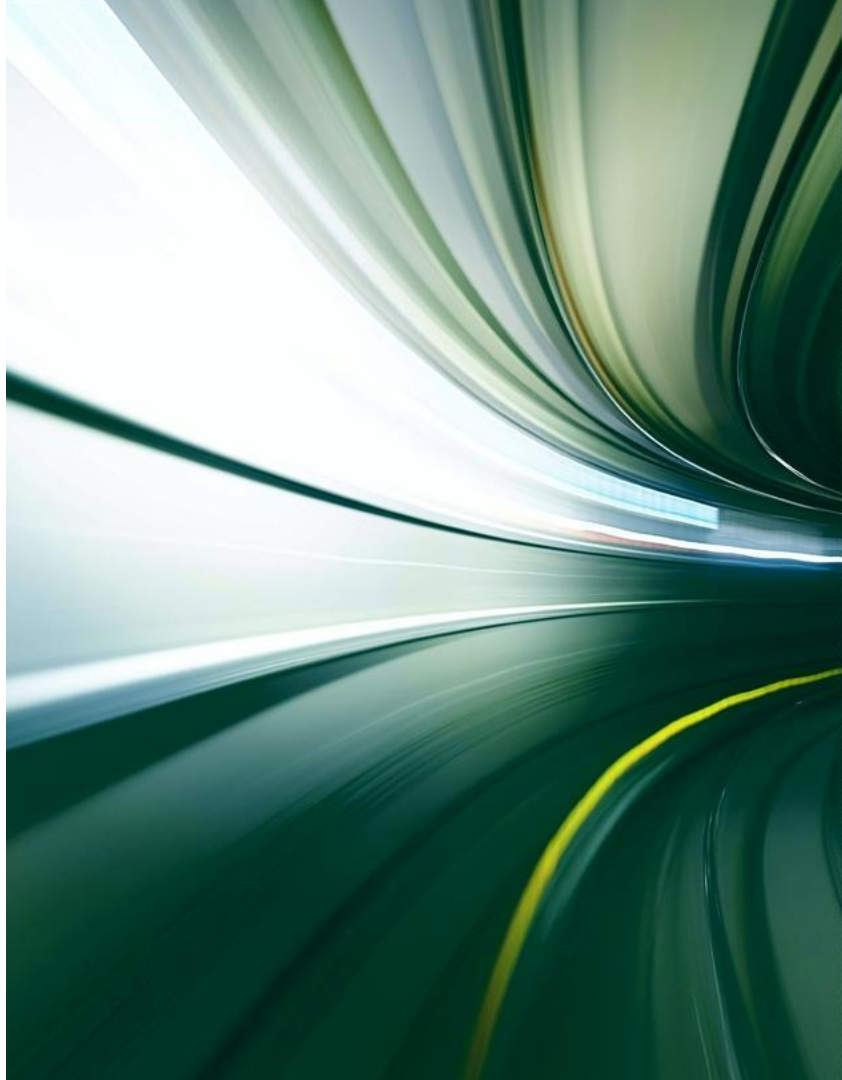
IT Leaders Must Improve Growth While Overcoming Database Challenges

In a recent global survey of over 200 managers of IT operations and application development, we found IT leadership is scrambling to update their operational databases and related infrastructure. They face challenges in security, productivity loss from app downtime, poor database performance, and too much maintenance. But they expect benefits if they modernize their firms' databases, including improved information access for employees and customers, data security, better UX, and reduced management time. To enable employees and drive more revenue, organizations must improve their data consistency and consolidate data architecture for applications. These adjustments to their strategy are expected to reduce total cost of ownership (TCO) by eliminating redundancy, boosting app performance, and shrinking infrastructure, labor, and maintenance costs — therefore improving the bottom line.

Key Findings

IT decision-makers are tasked with optimizing and modernizing their firms' current database management system (DBMS) to help business stakeholders achieve desired outcomes.

Respondents' existing architectures reduce developer productivity, allow security vulnerabilities to go unchecked, and increase the total cost of infrastructure.
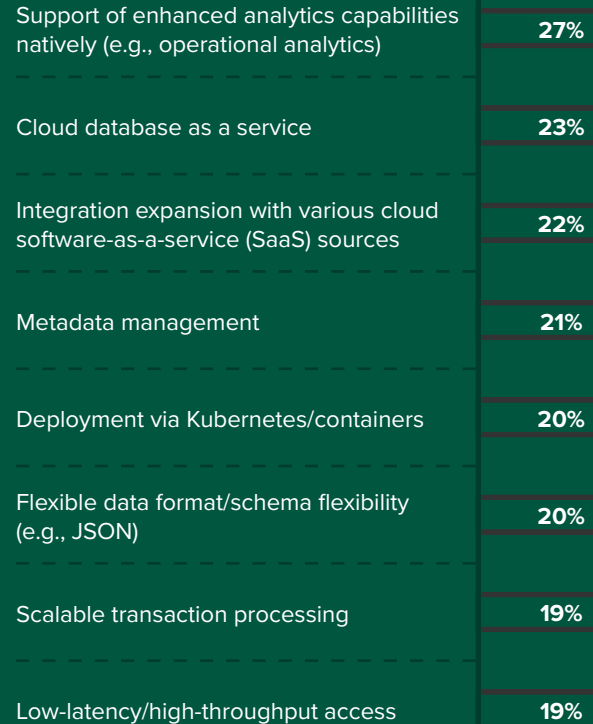
A modernized DBMS improves developer productivity by lowering maintenance burdens, improves application performance, and reduces overall TCO.

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IT Decision-Makers Seek A Variety Of Capabilities When Selecting A New DBMS

As database management becomes more critical to modernization, decision-makers are looking for key capabilities in their next database solution. These should ease the burden of integration, management, and, ultimately, user experience. Along with the flexibility to use JavaScript Object Notation (JSON) data structures, they're looking for the ability to deploy in the cloud via self-managed containers or as a fully managed database as a service (DBaaS).

The most highly desired capabilities include native operational analytics, DBaaS, integration with SaaS services, Kubernetes support, flexible schema, scalability, and performance. These were ranked far above access via APIs or integration with data lakes.

"Which of the following database management system (DBMS) capabilities do your company require when selecting a DBMS for purchase?"

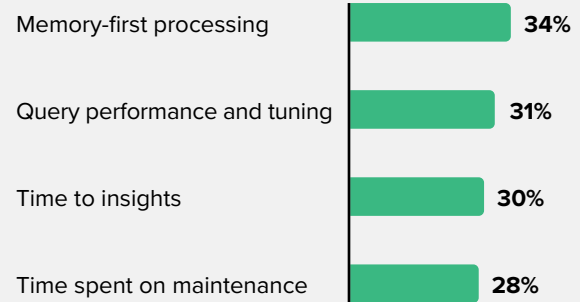| Capability	Percentage
Support of enhanced analytics capabilities natively (e.g., operational analytics)	27%
Cloud database as a service	23%
Integration expansion with various cloud software-as-a-service (SaaS) sources	22%
Metadata management	21%
Deployment via Kubernetes/containers	20%
Flexible data format/schema flexibility (e.g., JSON)	20%
Scalable transaction processing	19%
Low-latency/high-throughput access	19%

Base: 215 global decision-makers in global data management
Note: Showing top 8 responses
Source: A commissioned study conducted by Forrester Consulting on behalf of Couchbase, June 2023

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IT Decision-Makers Turn Their Sights To Improving Key Business Metrics, Reducing Total Cost Of Operations
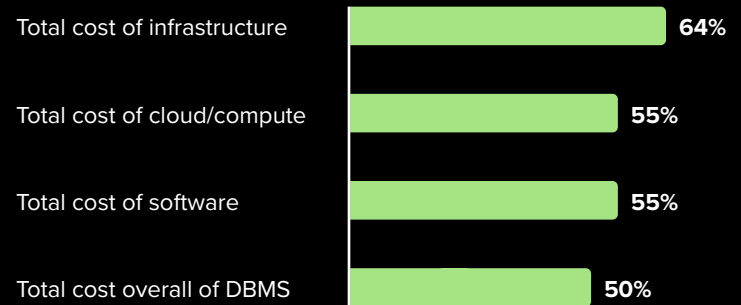
When it comes to factors that influence the performance of their DBMS, respondents are prioritizing time and speed. That includes memory-first processing, query performance and tuning, lowering time to insights, and reducing repair time and code errors. These factors will ensure future database systems can enable employees to produce better quality applications with less time spent on maintenance and addressing errors.

Return on investment is also imperative. Respondents are closely monitoring the metrics related to their DBMS; they are most interested in driving down the total cost of infrastructure (64%), reducing the cloud and compute costs (55%), lowering the total cost of software (55%), and reducing their database costs (50%).

Top Performance-Related Drivers That Influence DBMS Purchases

Memory-first processing **34%**

Query performance and tuning **31%**

Time to insights **30%**

Time spent on maintenance **28%**

Top Monetary Metrics Tracked In Relation To Current DBMS

Total cost of infrastructure **64%**

Total cost of cloud/compute **55%**

Total cost of software **55%**
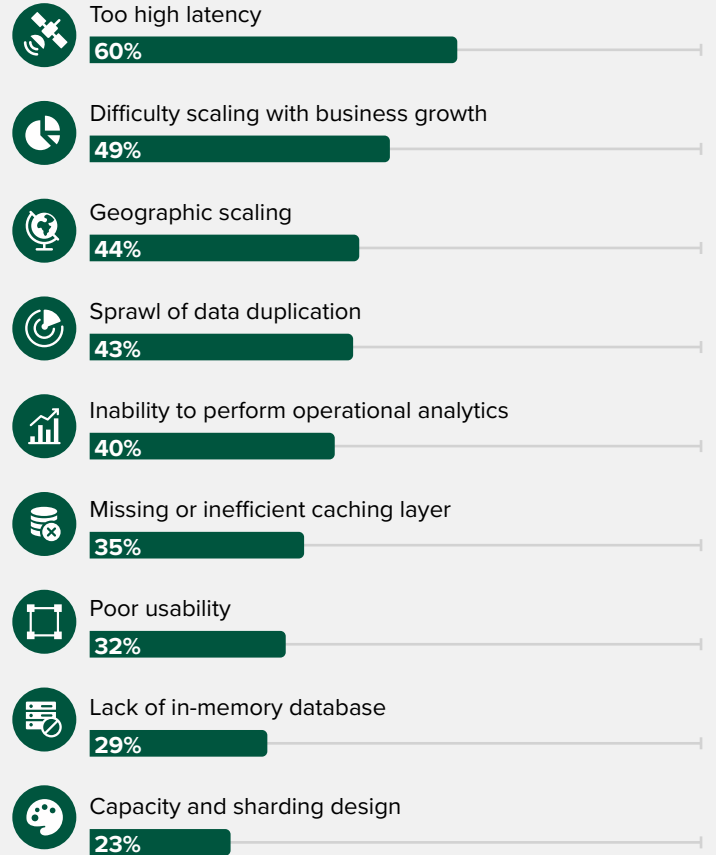
Total cost overall of DBMS **50%**

Base: 215 global decision-makers in global data management
Note: Showing ranks 1 to 3 as a total percentage
Source: A commissioned study conducted by Forrester Consulting on behalf of Couchbase, June 2023

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Data Practitioners Face Performance Challenges

IT decision-makers know that application performance and scale lie at the heart of their challenges, and their existing data architecture is the culprit. Its lack of responsiveness and its inability scale and be versatile are also suspect. Top issues include high data delivery latency (60%), difficulty scaling as systems grow (49%), scaling across different geographies (44%), data sprawl and duplication (43%), and the inability to perform operational analytics (40%) leads the list of functional deficiencies they see in their data architecture.

These issues are glaring. Latency is too high, the architecture doesn't scale, it consumes too many resources, and does not offer the needed capabilities demanded by the application like caching and sharding. Clearly, there is an opportunity for change.

Current DBMS Performance Challenges

Too high latency
60%

Difficulty scaling with business growth
49%

Geographic scaling
44%

Sprawl of data duplication
43%

Inability to perform operational analytics
40%

Missing or inefficient caching layer
35%

Poor usability
32%

Lack of in-memory database
29%

Capacity and sharding design
23%

Base: 215 global decision-makers in global data management
Source: A commissioned study conducted by Forrester Consulting on behalf of Couchbase, June 2023

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MODERNIZE YOUR DATABASE MANAGEMENT SYSTEM TO IMPROVE
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Development Teams Struggle With Security, User Enablement, And Poor Application Quality

DBMS management teams are struggling to keep their user-facing applications secure from vulnerabilities (48%), while also attempting to keep operations running efficiently. As they work to improve security, they must address application quality issues that decrease productivity due to downtime (44%), increase time spent on maintenance (42%), and produce the need to manage products across a variety of workloads (40%).

These challenges extend to engineers and developers as well, as they struggle to bring together data from multiple sources without great effort. They risk high rates of error in their code due to data complexity, and overall architectural complexity is a major challenge associated with too many interfaces to manage.

Management Challenges IT Staff Face With Current DBMS

Poor user-facing security/too much vulnerability

48%

Downtime decreases user productivity

44%
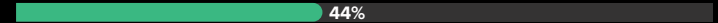
Too much time spent on maintenance

42%

Development Challenges Engineers And Developers Face With Current DBMS

Inability to aggregate data from multiple sources

49%

High rate of errors in code

47%

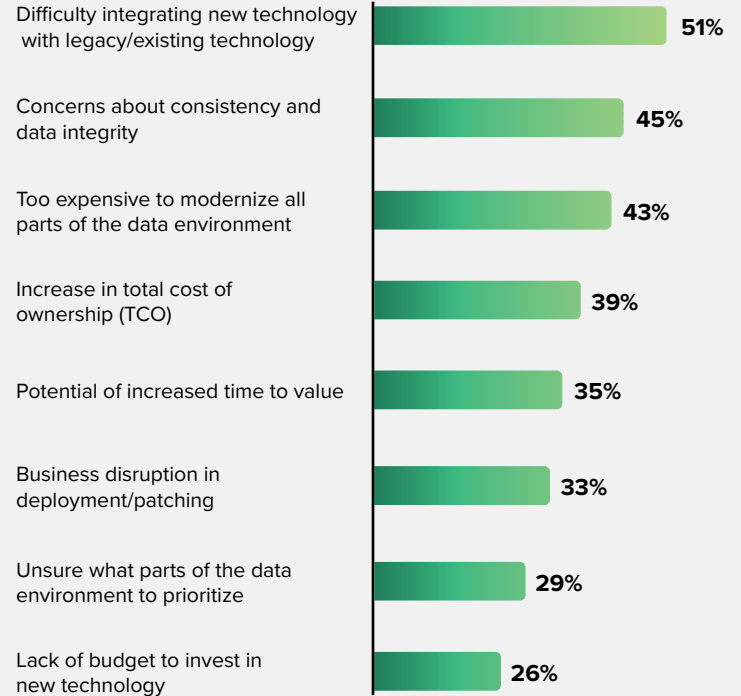Architectural complexity/too many interfaces and APIs

38%

Base: 215 global decision-makers in global data management
Note: Showing top 3 responses
Source: A commissioned study conducted by Forrester Consulting on behalf of Couchbase, June 2023

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Fear Of Increasing Time To Value And TCO Hinders DBMS Modernization

One in two leaders are hesitant to make changes due to concerns about integration efforts, data consistency, and budget. Respondents' biggest fear is the difficulty of integrating new technologies with their existing technologies (51%), followed by concerns about consistency and data integrity (45%). Respondents also felt that modernizing all parts of the data environment would be too costly (43%). Over one-third of respondents believe that the risk of making these massive strides forward may increase the overall time it would take to derive value (35%) and increase their TCO (39%). But with their current technology weighing them down with performance, security, and maintenance issues, perhaps they should follow the half cohort who have nothing to lose.

"What business impacts/drivers are stopping your organization's leadership from investing in modernizing its data-base management platform?"

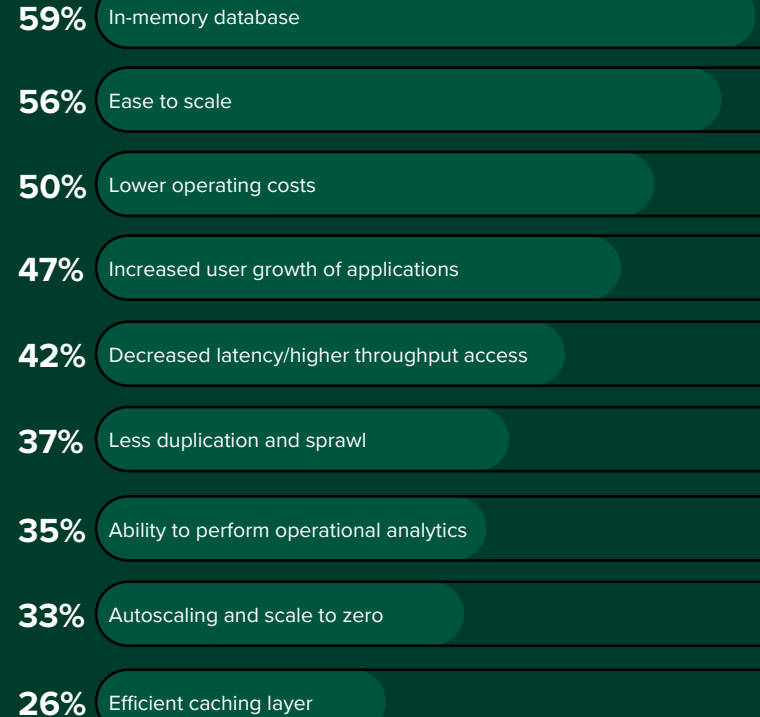|	
Difficulty integrating new technology with legacy/existing technology	51%
Concerns about consistency and data integrity	45%
Too expensive to modernize all parts of the data environment	43%
Increase in total cost of ownership (TCO)	39%
Potential of increased time to value	35%
Business disruption in deployment/patching	33%
Unsure what parts of the data environment to prioritize	29%
Lack of budget to invest in new technology	26%

Base: 215 global decision-makers in global data management
Note: Note: Showing ranks 1 to 3 as a total percentage
Source: A commissioned study conducted by Forrester Consulting on behalf of Couchbase, June 2023

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Jumpstart Revenue Performance With The Right DBMS

Technical teams feel the need for speed and scalability. At the same time, they want to reduce complexity, lower operational costs, and enjoy real-time analytics within their application. Regarding features and benefits of a modern database platform, respondents indicated they are hoping for in-memory capabilities (59%) as the most critical feature, followed by ease of scaling (56%) and reduced operating costs (50%). They also have hopes to improve user adoption by increasing the user growth of applications (47%) and decreasing latency while improving throughput (42%). Performance benefits are clearly driving the desire for modernizing the database running applications. Clearly, no user wants to use a slow application, so investing in modern scale-up and scale-down techniques can drive down TCO.

"What performance benefits would you want your organization to experience after investing in modernizing its database platform?"

59%	In-memory database
56%	Ease to scale
50%	Lower operating costs
47%	Increased user growth of applications
42%	Decreased latency/higher throughput access
37%	Less duplication and sprawl
35%	Ability to perform operational analytics
33%	Autoscaling and scale to zero
26%	Efficient caching layer

Base: 215 global decision-makers in global data management
Source: A commissioned study conducted by Forrester Consulting on behalf of Couchbase, June 2023

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Respondents Expect Dramatic Improvements In Quality, Productivity, Agility, And Application Functionality

Managers are looking to improve operational access (57%), reduce time spent on maintenance (53%), and increase uptime and availability for users — even during patches and upgrades (47%). This increased access will allow employees to increase productivity and reduce their time to value. IT decision-makers are making changes to make development teams more productive by modernizing their DBMS; benefits from these efforts include speeding up release cycles (65%), more easily evolving data models (55%), adding better application features (48%), and helping them reduce errors in code (46%). They are also prioritizing the ability to access data via structured query/text search (44%) and the ability to aggregate data from multiple sources (40%) to overcome workload issues.

Expected Management Benefits Of Modernized DBMS

Improved operational access

57%

Reduced time spent on maintenance

53%

Increased uptime, even during patches and upgrades

47%

Expected Development Benefits Of Modernized DBMS

Faster release cycles

65%

Ability to evolve data models over time

55%

Ability to add better features into applications
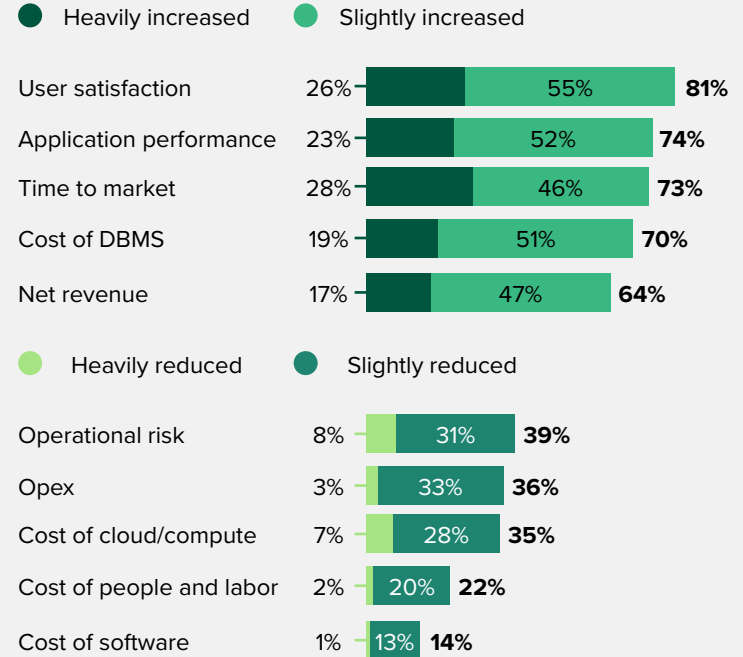
48%

Base: 215 global decision-makers in global data management
Note: Showing top 3 responses
Source: A commissioned study conducted by Forrester Consulting on behalf of Couchbase, June 2023

Both Developers And Decision-Makers Expect Big Gains From Modernized DBMS

IT decision-makers think modernizing their database platform could provide massive benefits; they expect increased user satisfaction (81%), overall app performance enhancements (74%), and improvements in net revenue (64%). Respondents expect these improvements to not only enhance the user experience but produce further positive impacts on several key cost metrics. This starts with 39% of respondents expecting a reduction in operational risk. They also expect a reduction in opex spending (36%), lower cloud costs (35%), and lower expenses for people and labor (22%). Most respondents listed an increase in TCO as their main reason to avoid modernization, yet they expect revenue to increase, risk to lessen, and opex, the cost of cloud, the cost of labor, and the cost of software to be heavily or slightly reduced. The TCO savings is there for them if they see it.

"How would each of the following business metrics be impacted by your company modernizing its database platform?"

● Heavily increased   ● Slightly increased

Metric	Heavily increased	Slightly increased	Total
User satisfaction	26%	55%	**81%**
Application performance	23%	52%	**74%**
Time to market	28%	46%	**73%**
Cost of DBMS	19%	51%	**70%**
Net revenue	17%	47%	**64%**

● Heavily reduced   ● Slightly reduced

Metric	Heavily reduced	Slightly reduced	Total
Operational risk	8%	31%	**39%**
Opex	3%	33%	**36%**
Cost of cloud/compute	7%	28%	**35%**
Cost of people and labor	2%	20%	**22%**
Cost of software	1%	13%	**14%**

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IT decision-makers are hesitant to modernize their database management systems, but the benefits could outweigh the challenges. History shows that companies that don't evolve get left behind.

Respondents are not satisfied with the functionality, quality, or performance of their database-powered apps. Modernized DBMSs provide capabilities that boost developer productivity, add capabilities like operational analytics to their apps, and improve user experience.

Their existing data architectures lack flexibility, speed, and security, and are too complex. These shortcomings slow their teams' ability to deliver quality apps — but half worry that modernization is too costly to even try.

Modernizing DBMS architecture reduces complexity, improves quality, accelerates time to market, and lowers TCO along every dimension (e.g., infrastructure, software, operations, and labor) all at once.

Resources

Related Forrester Research:

"The Translytical Data Platforms Landscape, Q3 2022," Forrester Research, Inc., July 13, 2022.

"The Top 10 Emerging Technologies In 2023," Forrester Research, Inc., July 10, 2023.

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Methodology

This Opportunity Snapshot was commissioned by Couchbase. To create this profile, Forrester Consulting supplemented this research with custom survey questions asked of 215 global decision-makers in data management to test this hypothesis. The custom survey began in May 2023 and was completed in June 2023.

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Demographics

GEOGRAPHY	
United States	**33%**
United Kingdom	**14%**
Canada	**14%**
Germany	**10%**
France	**10%**

RESPONDENT POSITION	
C-level executive	**9%**
Vice president	**25%**
Director	**41%**
Manager	**16%**
Architect	**9%**

INDUSTRY	
Financial services and/or insurance	**12%**
Retail	**11%**
IT/technology and/or technology services	**10%**
Telecommunications services	**9%**
Transportation and logistics	**8%**

ANNUAL REVENUE	
>$5B	**5%**
$1B to $5B	**35%**
$500 to $999M	**60%**

Note: Percentages may not total 100 due to rounding.

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