SCIENTISTS SHAPING GLOBAL HEALTH

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DR MADHURESH KUMAR SETHI

A scientific legacy in service of global health

HEAD OF CHEMICAL RESEARCH AND SCIENTIFIC AFFAIRS

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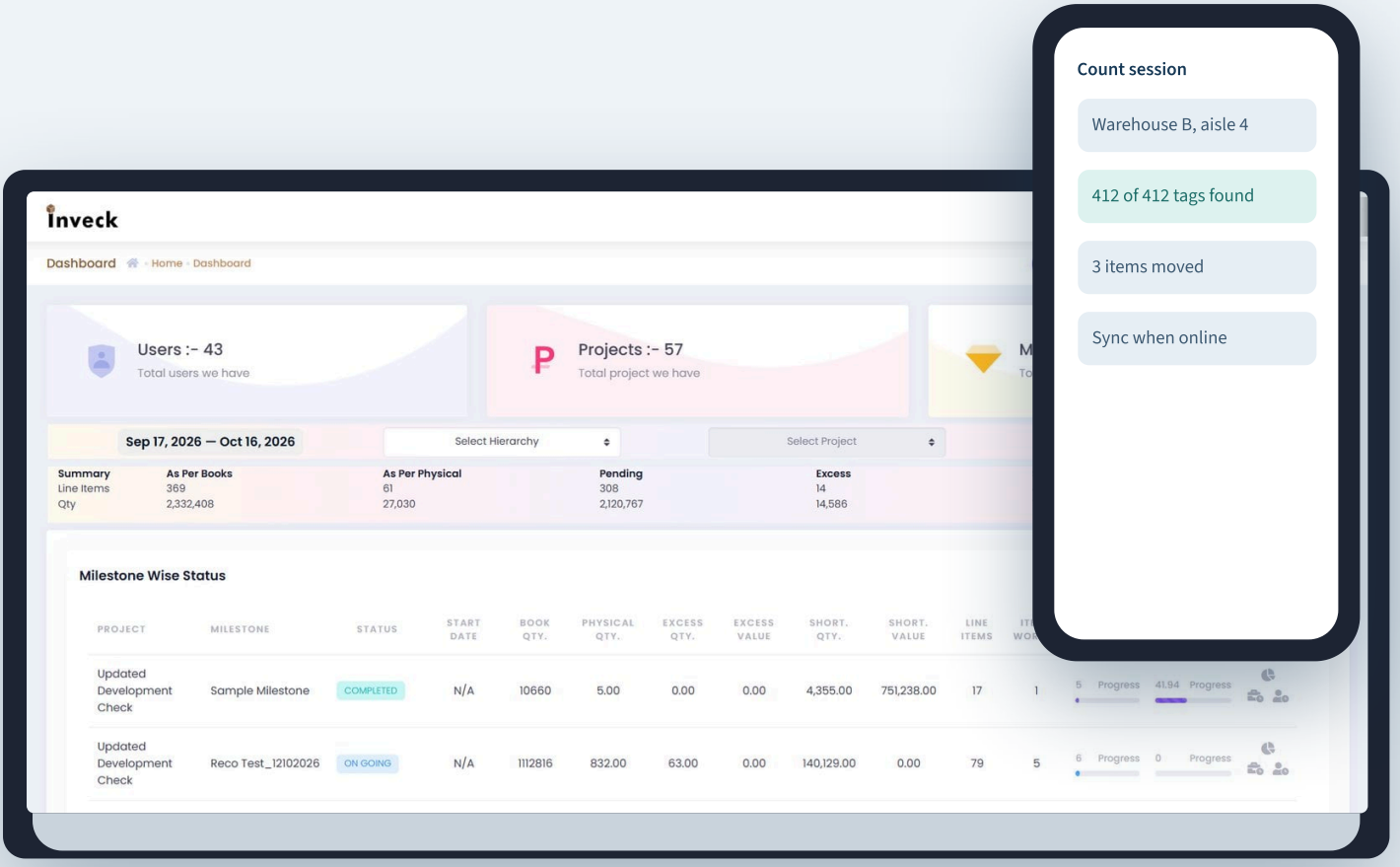
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FROM THE EDITORS

Editor's note

Scientists Shaping Global Health

Behind most decisions that matter there is a person willing to explain the trade-offs. In this edition that person is Dr Madhuresh Kumar Sethi, Head of Chemical Research and Scientific Affairs.

From process chemistry at JK Industries to drug discovery at Wockhardt, Dr Madhuresh Kumar Sethi on the discipline that takes a molecule through US and European regulatory approval.

Our cover story follows Dr Madhuresh through the choices that shaped the work, from the early years to the decisions being made now, and asks what other leaders can take from them.

Also in this edition: The board that cannot read a breach report. Most boards now receive a cyber briefing every quarter. Far fewer could say what would make them stop a product launch. An essay on the gap between being informed and being able to decide.

Plus: Jamie Dimon and the fortress a bank runs on. Two decades at the top of JPMorgan Chase, through a financial crisis and a costly trading loss. What a fortress balance sheet and a standing technology budget say about running a firm for the bad year.

If something here changes a decision you were about to make, we would like to hear about it. ■

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About us

THE
CIO TABLE

Where leaders sit down to talk.

The CIO Table is an international magazine for the people who run large organisations: chief information officers, chief technology officers, chief executives, finance chiefs and security leaders. We publish interviews, essays and analysis about the decisions they make, online and in this magazine.

Most coverage of senior leaders is either promotional or adversarial. We aim for something more useful: a serious conversation about how a decision was made, what it cost, what it changed and what the person would do differently. ■

Interviews

Long conversations about decisions, costs and trade-offs.

Analysis

What changes for the people who run technology and finance.

The CIO Table 50

Leaders whose decisions changed how their organisations work.

The Council

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Dr Madhuresh Kumar Sethi

A scientific legacy in service of global health

HEAD OF CHEMICAL RESEARCH AND SCIENTIFIC AFFAIRS

From process chemistry at JK Industries to drug discovery at Wockhardt, Dr Madhuresh Kumar Sethi on the discipline that takes a molecule through US and European regulatory approval.

Every tablet, every injection, every life-saving vial carries within it a story. A story of rigorous science, sleepless nights, countless trials, and a singular mission to transform raw molecules into medicines that heal. The pharmaceutical field is not simply about chemistry. It is a high-stakes pursuit where precision meets purpose, where one decision in a lab can ripple across continents and touch millions of lives.

Yet, behind these quiet revolutions are minds that do more than discover. They refine. They rethink. They reimagine what is possible. Among them stands a scientist whose career has been shaped not only by technical mastery but by a deep sense of responsibility toward making healthcare more accessible, sustainable, and intelligent. With each chapter of his journey, Dr. Madhuresh Kumar Sethi has helped shape the invisible scaffolding that holds modern pharmaceutical progress together.

Composition of Chemistry, Care, and Compliance

"Discovery consists of seeing what everybody has seen and thinking what nobody has thought." This quote by Nobel Laureate Albert Szent-Györgyi captures the spirit of Dr. Madhuresh Kumar Sethi's decades-long contribution to pharmaceutical research and development. With a career built on scientific precision, regulatory acumen, and a commitment to accessibility in healthcare, Dr. Sethi has been instrumental in transforming pharmaceutical R&D into a force for global health impact.

Dr. Sethi has dedicated his professional life to shaping the journey of pharmaceutical molecules from discovery to market. With expertise spanning synthetic chemistry, process development, regulatory affairs, intellectual property, nanomedicine, and green chemistry, he has helped pharmaceutical companies create and deliver affordable medicines that meet stringent global standards. His approach has consistently emphasized both scientific rigor and operational efficiency, ensuring that innovation is never divorced from implementation.

Roadmap to Eco-Friendly Synthesis

Dr. Sethi is a contributing author to the insightful chapter titled "Biocatalysis: A Greener Alternative in Synthetic Chemistry" (Chapter 2), published in the Catalysis Series volume Biocatalysis: An Industrial Perspective, edited by Gonzalo de Gonzalo and Pablo Domínguez de María. Co-authored with Purbita Chakraborty and Rohit Shukla, the chapter presents a comprehensive industrial perspective on biocatalysis, with particular emphasis on its application within the pharmaceutical sector.

Published by the Royal Society of Chemistry as



Dr Madhuresh Kumar Sethi

HEAD OF CHEMICAL RESEARCH AND SCIENTIFIC AFFAIRS

part of their 2017 ebook collection, the chapter (DOI: https://doi.org/10.1039/9781782629993-00044) spans pages 44 to 76 and explores the potential of biocatalysis as a sustainable alternative to traditional synthetic methods. Dr. Sethi and his co-authors highlight the advantages and challenges of adopting biocatalytic pathways and stress the need to align existing chemical manufacturing processes with evolving bio-process strategies.

The chapter addresses key elements that constitute an efficient chemical production model and outlines how these can be transformed into more eco-friendly, biocatalytically driven frameworks. It also underscores the necessity of meticulous quality control for biocatalytic products to meet the stringent standards of global pharmaceutical regulatory bodies.

Dr. Sethi's contribution to this authoritative work reflects his deep expertise in green chemistry and industrial biotechnology. His research supports the transition toward more sustainable practices in pharmaceutical manufacturing and reinforces his role as a thought leader in advancing environmentally responsible innovation within the chemical sciences.

The Road to Research Leadership

Dr. Sethi began his scientific journey in synthetic chemistry, focusing on the design and development of cost-efficient and patent-compliant processes for Active Pharmaceutical Ingredients (APIs). At the beginning of his career, he played a crucial role at JK Industries Ltd, where he specialized in cost-effective, plant-feasible API processes. His work included impurity profiling, technology transfer, and regulatory filing support. He applied early principles of green chemistry and explored polymorphism and nanoparticle formulation techniques, setting a strong foundation for a career that would increasingly blend science with business strategy.

Following this, his tenure at Wockhardt Limited saw him build and lead combinatorial and medicinal chemistry teams focused on drug discovery. He advanced research in Multiple Drug Resistance and led initiatives to develop and patent novel chemical formulations. This phase of his career further honed his skills in early-stage drug development and innovation.

Dr. Sethi's subsequent experience at Zydus Cadila gave him exposure to biomarker research, IND filings, and pharmacologic testing. He led target validation and contributed to both biotherapeutics and small molecule development, while managing regulatory affairs, product formulation, and intellectual property. Each of these roles allowed him to develop a comprehensive understanding of pharmaceutical research, from ideation to clinical preparation.

At the Helm of a Scientific Evolution

In 2003, Dr. Sethi joined Matrix Laboratories at a time when the Hyderabad-based company was establishing its identity as a global API manufacturer. He became an integral figure in the organization's transformation into a pharmaceutical leader; honored with the Matrix Achievement Award for successfully defending complex patent litigation, which resulted in significant monetary benefit for the company. Over the next two decades, he contributed to the growth of Matrix and its evolution through acquisitions and restructuring into Mylan Laboratories and later Viatris.

> **Discovery consists of seeing what everybody has seen and thinking what nobody has thought.**
>
> DR MADHURESH KUMAR SETHI

As Head of Chemical Research and Scientific Affairs, Dr. Sethi played a crucial role in guiding the company's API development, regulatory approvals, and intellectual property strategy. He successfully led numerous programs that resulted in regulatory approvals from the United States Food and Drug Administration and the European Medicines Agency. Under his leadership, Mylan/Viatris and its successors secured first-to-market positions for key generics, including Lansoprazole, Sertraline,



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Pitavastatin Calcium, and Iron Sucrose, etc. These achievements contributed significantly to the company's global market expansion.

Dr. Sethi also led the development of iron carbohydrate complexes for intravenous use, which were later approved in the European Union. This work helped bring safer and more effective iron supplementation options to patients, particularly those suffering from chronic illnesses. His contributions extended to injectable drugs and impurity profiling, culminating in regulatory success for products like Glucagon, which received FDA approval in December 2024; Iron Sucrose Injection, USP, an intravenous iron replacement product used to treat iron deficiency anemia (IDA) in Aug 2025.

His work defending Para IV patent litigations also stands out. Through careful strategy and scientific expertise, he helped secure market exclusivity for multiple products, ensuring that intellectual property challenges did not obstruct product launches or patient access.

Engineering Quality That Endures

Dr. Sethi led the development of all products through a comprehensive literature review, structured experimental design, and rigorous analysis, maintained meticulous daily supervision and accurate documentation of all observations in full compliance with legal and data integrity standards. This disciplined approach enabled successful scale-up, sustained commercial manufacturing, and adherence to regulatory standards of the US, EU, Japan, Australia, and other major markets, ensuring consistent quality and successful defense in all litigation matters.

A Track Record of Innovation and Impact

Dr. Sethi has authored and co-authored more than 100+ patents, patent applications, a chapter in a book, and research papers across various domains of pharmaceutical science. His work reflects a deep understanding of both discovery science and its commercial applications. His contributions have

enhanced the quality and affordability of pharmaceuticals across multiple therapeutic areas.

Dr. Madhuresh Sethi is a globally recognized pharmaceutical scientist and innovator with a proven record of taking high-value therapeutics, including anti-cancer agents, anti-infectives, GLP-1 receptor agonists for diabetes and weight-loss management, and iron replacement products for iron deficiency anemia (IDA), from discovery to commercial success. His publications and patents reflect the breadth, depth, and real-world impact of his work across multiple therapeutic domains. He combines deep expertise in scalable, sustainable API manufacturing with industry-leading capabilities in Design of Experiments (DoE), flow chemistry, Process Mass Intensity (PMI) optimization, and time cycle improvement to deliver cost-efficient, environmentally responsible, and accelerated product development. Renowned for his leadership in impurity control, genotoxic nitrosamine mitigation, and regulatory compliance, Dr. Sethi has consistently aligned R&D excellence with IP strategy, ESG priorities, and market growth objectives, bringing scientific rigor, governance acumen, and strategic vision to boardrooms, driving health innovation and shareholder value.

Throughout his career, Dr. Sethi has continuously sought new methods to improve the drug development process. He is a strong proponent of integrating green chemistry and biocatalysis into API development to reduce environmental impact and manufacturing costs. He has also contributed to the advancement of asymmetric synthesis and nanomedicine, broadening the technological capabilities of the organizations he has worked with.

> **With a career built on scientific precision, regulatory acumen, and a commitment to accessibility in healthcare, Dr.**

At Aurobindo Pharma Ltd, before joining Matrix, Dr. Sethi led teams focused on non-infringing process development for regulated markets. His work included developing synthetic pathways, conducting impurity profiling, and preparing Drug Master Files for submission to global regulatory authorities. He also contributed to shaping the company's regulatory and patent strategy, which laid the groundwork for its growth in global markets.

Global Engagements in Science, AI & Governance

In 2025, Dr. Sethi demonstrated a strong commitment to staying at the forefront of scientific advancement, regulatory discourse, and industry innovation by actively participating in several high-impact conferences and expert forums across the globe.

He began the year with a notable presence at the Corporate Governance Excellence Summit & Awards 2025, held on January 18. The summit brought together distinguished leaders from government, industry, and international diplomacy. Esteemed dignitaries such as Mr. Suresh Prabhu (former Union Minister, Government of India), Mr. M. Damodaran (former Chairman of SEBI), and a host of ambassadors including H.E. Ms. Jacqueline Mukangira (Rwanda), H.E. Ms. Capaya Rodriguez Gonzalez (Venezuela), H.E. Mr. Fernando Bucheli (Ecuador), and H.E. Mr. Evagoras Vryonides (Cyprus) enriched the event with their global perspectives. The summit was marked by powerful discussions on corporate governance and the celebration of visionary leadership across sectors.

Continuing his engagement with the latest in technology and pharma, Dr. Sethi attended PwC's Agentic AI Powered Automation session on April 8, followed by the Biomolecule Workshop hosted by ETPharma on April 23, which focused on the future of generic APIs.

In May, he was part of CPHI Americas 2025, the premier pharmaceutical networking event held in Philadelphia from May 21–23, connecting global pharma leaders across the supply chain. The

momentum continued in June with the 29th American Peptide Symposium in San Diego, a globally recognized platform showcasing excellence in peptide science, breakthrough research, and international collaboration.

On July 9, Dr. Sethi contributed to critical dialogues on the future of artificial intelligence and shared services at the AI-Driven Transformation Beyond the GCC Roundtable, engaging with peers on the evolving role of AI in reshaping global capability centers.

Looking ahead, Dr. Sethi is scheduled to participate in several strategic events in the latter half of the year. These include ChemOutsourcing 2025 (September 2–5, NJ, USA), a gateway to global pharma connections across the supply chain; the CordenPharma LNP Summit 2025 on September 9 at Boston USA, which focuses on lipid nanoparticles for gene therapy and xRNA development; and the Boulder Peptide Symposium 2025, to be held from September 15–18 in Boulder, Colorado, renowned for its focus on emerging developments in peptide therapeutics.



Through his active involvement in these industry-leading platforms, Dr. Sethi continues to contribute to thought leadership, cross-border collaboration, and innovation in the pharmaceutical and biotech ecosystem.

A Global Voice in Pharma, Policy, and Patent Protection

In addition to his scientific and industrial contributions, Dr. Sethi holds several distinguished roles and affiliations that underscore his global engagement, scholarly expertise, and legal acumen in the pharmaceutical sector:

The Unseen Hand Steering Sustainable Power

In addition to his scientific and regulatory achievements, Dr. Sethi has built a strong reputation as a corporate leader and governance expert. He is a certified Independent Director under the Indian Institute of Corporate Affairs and serves as an advisor on environmental, social, and governance (ESG) practices. His perspective on ESG is informed by years of leading product development with a focus on sustainability, ethical manufacturing, and public health.

Dr. Sethi is also a registered Indian Patent and Design Agent and an active member of the Asian Patent Attorneys Association. He advises pharmaceutical firms on aligning intellectual property protection with research strategy and global business objectives. His work ensures that companies can both innovate responsibly and protect their competitive edge.

Credentials that Bridge the Future

In addition to his academic and professional achievements, he has pursued an extensive range of certifications and specialized training programs across law, technology, leadership, and sustainability. These qualifications reflect his multidisciplinary expertise and commitment to continuous learning:

This diverse portfolio of certifications underscores his comprehensive understanding of the intersections between science, law, emerging technologies, and responsible corporate leadership.

Blueprints for Ethical Innovation

One of Dr. Sethi's defining traits is his belief in the role of science as a tool for the public good. His approach to R&D leadership emphasizes knowledge-sharing, regulatory transparency, and the responsible use of intellectual property to support broader access to medication. He maintains a strong belief in mentorship and has guided many young scientists through the nuances of pharmaceutical research, regulatory documentation, and patent law.

A practitioner of methodical thinking and disciplined execution, Dr. Sethi does not view R&D as isolated lab work but as an integrated function that supports patient outcomes, operational success, and market leadership. His ability to communicate across teams, from chemistry labs to boardrooms, has made him a respected leader who can both shape technical strategy and influence corporate direction.

He places a strong emphasis on long-term thinking, consistently advocating for innovations that are scalable, sustainable, and in compliance with both current and anticipated regulatory expectations. His alignment of business objectives with scientific integrity has allowed him to guide pharmaceutical companies through regulatory transitions, patent litigations, and market shifts with clarity and success.

Enduring Legacy in Pharma Leadership

Today, Dr. Sethi continues to contribute to the pharmaceutical industry as an independent advisor, thought leader, and strategic consultant. His work spans both scientific and corporate domains, helping companies bridge gaps between R&D, compliance, and competitive growth.

His focus remains on creating pharmaceutical systems that are efficient, transparent, and geared toward public health impact. He collaborates with regulatory bodies, industry associations, and corporate boards to improve industry standards and ensure that scientific innovation is matched by accessibility and affordability.

With a career that reflects a deep commitment to research excellence, ethical leadership, and business responsibility, Dr. Sethi stands as a key figure in India's pharmaceutical ecosystem. His legacy is built not only on patents and approvals but also on his consistent drive to use pharmaceutical science for meaningful and measurable human impact. ■

NAME	ROLE	ORGANISATION
Dr Madhuresh Kumar Sethi	**Head of Chemical Research and Scientific Affairs**	**Independent**



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ANALYSIS

The board that cannot read a breach report

BY THE CIO TABLE EDITORS



Most boards now receive a cyber briefing every quarter. Far fewer could say what would make them stop a product launch. An essay on the gap between being informed and being able to decide.

Boards across Asia-Pacific now hear about cyber risk every quarter, usually late on the agenda, after the dividend and before lunch. The chief information security officer has a fixed slot and a long deck: a heat map with a few amber cells and perhaps one red, a maturity score nudged upwards against a framework most directors could not name, and a page of acronyms defined in a footnote.

The questions that follow tend to be about the red cell. Why is it red? When will it be amber? Rarely does anyone ask what the board would do if it stayed red, or whether anything planned for the year ought to wait until it changed colour. The briefing is accurate and carefully prepared, and directors leave better informed. It is much harder to say what any of them is now better able to decide.

That is the gap. Most of what boards hear about cyber risk is built to inform them. Very little of it is built to equip them.

Instruments built for someone else

The tools in a typical board pack were designed for the people who run security. A heat map shows where the risk register is most worried. A maturity score tracks a programme's progress against a framework. Counts of blocked attacks and patching percentages show whether the operational machinery is turning. All of these answer a management question: are we getting better? None of them answers the question that belongs to the board, which is what it is prepared to do, and when.

The distinction matters because regulators have already settled whose question it is. In Australia, APRA's prudential standard CPS 234, in force since July 2019, makes the board of a regulated entity ultimately responsible for its information security. In Singapore, the Monetary Authority of Singapore's Technology Risk Management Guidelines, revised in 2021, expect the board and senior management to oversee technology risk. Responsibility has moved up the building. The briefings, for the most part, have stayed where they were.

A heat map tells a board how the security team is doing. It does not tell the board what the board is prepared to do. A director who must decide whether to delay a launch, take a payments system offline or accept that a critical supplier cannot be audited needs something different: a shared sense, agreed in calm conditions, of where the lines are.

Three questions

There is a simpler test of whether a board is ready. Each director should be able to answer three questions without opening the pack.

The first is what would make us stop or delay something. A product launch, a systems migration, the completion of an acquisition. If directors cannot describe that condition in advance, they will invent it under pressure, usually with the project's executive sponsor in the room and the press release already drafted.

The second is how long it would take to restore our most critical service, and who decides during that time. The useful figure here is the honest one, which is rarely the recovery time objective printed on a slide. The useful name is that of the person who can take a system offline, speak to the regulator or authorise emergency spending at three o'clock on a Sunday morning. Too often, the honest answer to the second half is a committee.

The third is which risks we have knowingly accepted, and who signed. Every organisation runs with some unsupported software, some suppliers it cannot inspect and some systems that cannot be patched without stopping the business. That is normal. What matters is whether each was a decision, taken by someone with the authority to take it, or a drift that nobody chose.

The second question is the easiest to test in

advance. Take a rehearsal scenario to the point where someone must decide whether to shut down the customer portal. If the chair looks to the chief executive, the chief executive looks to the chief information officer, and the authority turns out to rest with an operational risk committee that meets monthly, the board has learned something about itself that no heat map would have shown. Better to learn that on a quiet weekday than on the night it matters.

A page, a rehearsal and a direct line

None of this requires a new committee. It requires a few changes to what boards ask for and how they spend the time they already have.

Start with a one-page decision log: every risk the board has accepted, the date it did so, the condition that would make it look again, and the name of the person who signed. It should come before the heat map in the pack, and a director should be able to read it in five minutes. If the page is empty, that is itself a finding. It means the organisation has been accepting risks without telling the board.

Next, run tabletop exercises in which directors play themselves. Many boards watch management rehearse an incident and come away reassured. It is more useful, and much less comfortable, for the chair to sit in the chair, with the real phone list, and be asked forty minutes in whether to pay, disclose or switch off.

Third, hear from the chief information security officer directly from time to time, without the briefing passing through two layers of management on the way up. This is no comment on the reporting line. Material edited for a board tends to be edited towards reassurance, and directors should know what the unedited version sounds like.

Finally, change what director education is for. Most of it teaches vocabulary: what ransomware is, what lateral movement means, how a phishing campaign works. Directors do not need fluency. They need to understand the handful of decisions they may face, how long each one takes, what they will know at the moment of deciding, and how little of it will be certain.

The result should be a shorter pack and a longer, less pleasant discussion, with the decision log first and the heat map in an appendix. The test of whether it has worked is simple: when a shareholder or a supervisor asks what the board decided about cyber risk last year, the chair should be able to answer from a single page, with a name against every line.





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LEADERS IN FOCUS

Jamie Dimon and the fortress a bank runs on

BY THE CIO TABLE EDITORS



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Two decades at the top of JPMorgan Chase, through a financial crisis and a costly trading loss. What a fortress balance sheet and a standing technology budget say about running a firm for the bad year.

Jamie Dimon has run JPMorgan Chase since the end of 2005, longer than almost any other chief executive of a major global bank. Through the financial crisis, a costly trading loss and a long run of record profits, his approach has stayed recognisable: keep more capital than you think you need, invest heavily and steadily in technology, and explain your thinking to shareholders at length.

Built for the bad year

Dimon learned banking under Sandy Weill at American Express, Travelers and Citigroup, then ran Bank One before it merged with JPMorgan Chase in 2004. His phrase for the balance sheet he wanted, a fortress, became shorthand for his style. In 2008 that preparation let JPMorgan take over Bear Stearns and the banking operations of Washington Mutual when both were failing.

The record is not spotless. The 2012 London Whale trading losses, running to billions of dollars, showed that risk controls can fail even in a bank that prides itself on them. The response, more oversight and more candour, became part of the story he tells about how to run a firm.

Technology as a standing commitment

JPMorgan spends more on technology than most technology companies, with an annual technology budget reported at more than 15 billion dollars. The spending is treated as a permanent cost of staying competitive rather than a project to be approved and finished. Dimon's annual letter to shareholders, often running to dozens of pages, regularly covers cyber security, artificial intelligence and payments alongside the economy and regulation.

What other leaders can take from it

For technology chiefs who struggle to win multi-year funding, JPMorgan offers a useful argument: the banks that treat technology as part of the fortress, rather than an add-on, are the ones still standing after the storm.





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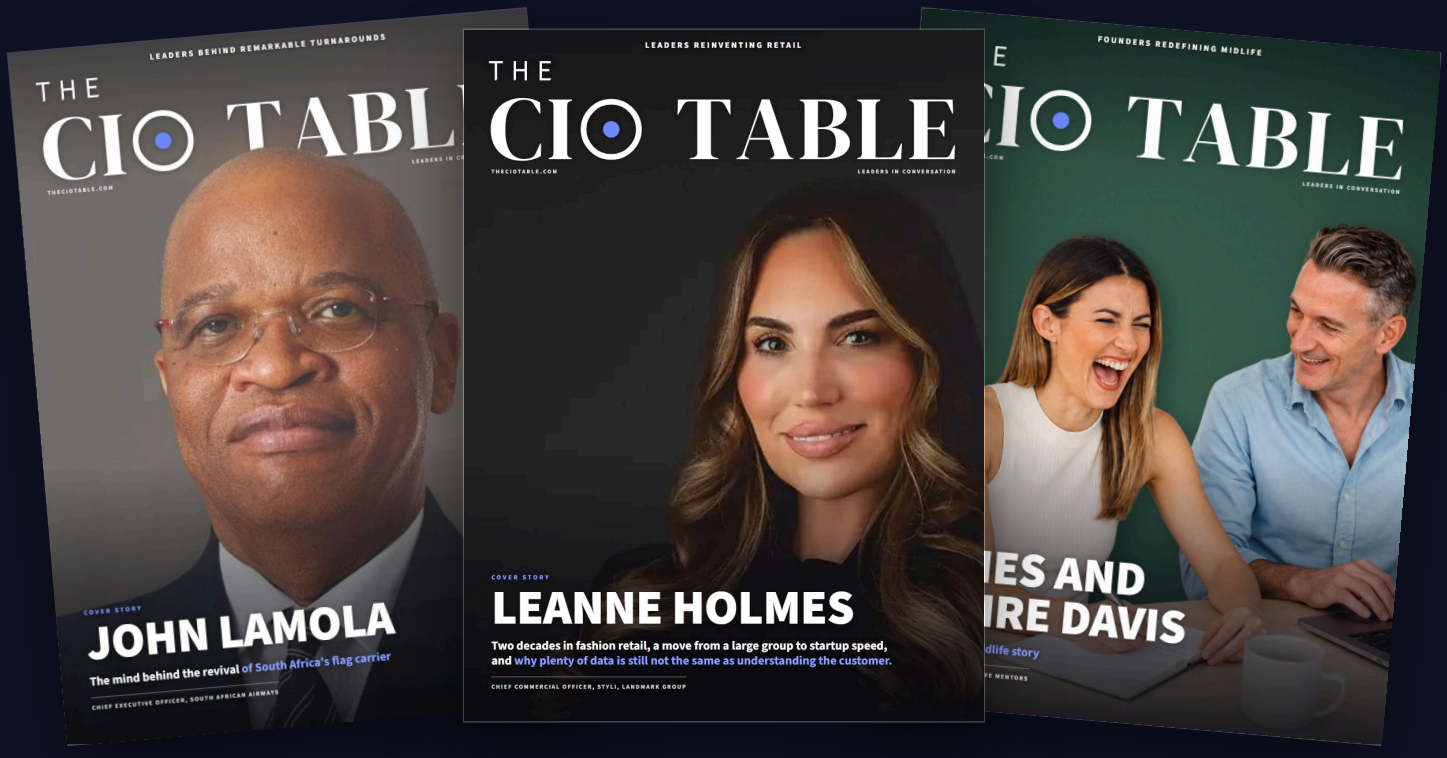
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