Digital & (Gen) AI Maturity: A Call to Action for Central Banks in a Rapidly Evolving Market

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Central Banks' Path to Leading in Digital and AI Innovation

Technology-driven innovation is transforming the financial sector and the broader economy, influencing every aspect of central bank operations. As supervisors, central banks must assess the risks tied to new technologies and the effects of evolving market structures on the sustainability of business models.[1] The financial landscape is being transformed by new entrants, such as FinTechs, BigTechs, and PSPs. These players leverage advanced technologies, like AI-powered fraud detection, to deliver more efficient, accessible, and personalized financial services, widening the gap to less innovative competitors.[2]

Central banks play a pivotal role in shaping the future of the monetary system in this digital era, providing essential infrastructure to support a rapidly evolving financial system. Regulators must enable this transformation while ensuring stability. Central banks are crucial in evaluating these impacts and helping design a regulatory framework that balances innovation with stability.

Given their strategic position, central banks should lead the conversation on how digitalization is redefining money and the role of new players in the financial services ecosystem. To meet these demands, central banks need in-depth practical knowledge, which they can only achieve by embracing digital and AI innovations and keeping pace with industry advancements.

To better understand central banks' current position as digital leaders, BCG has included them in its Build for the Future (BFF) assessment for the first time. While the primary focus is on central banks, it also extends to regulatory authorities, particularly when both functions are combined.

Executive Summary

Technology-driven innovation is reshaping the financial sector and the economy, impacting all facets of central banks' operations. Central banks are encouraged to lead the conversation about digital transformation, considering how new players and digitalization are redefining money and influencing the financial services industry.

To effectively lead the conversation, central banks should actively engage in digital and AI advancements, understanding their technological potential and implications for business models and financial markets.

BCG's Build for the Future (BFF) assessment evaluates organizational digital maturity and capacity for AI and digital innovation. Compared to other sectors, central banks are at the forefront of experimenting with disruptive technologies, such as AI and digital currencies.

However, they still trail behind digital innovators like FinTechs, BigTechs, and Payment Service Providers (PSPs).

To keep pace with these innovators, central banks need to focus on four topics. First, they need to invest in tech-savvy leadership to steer strategic initiatives and the digital talent to implement them effectively. Second, central banks should explore platform-oriented operating models to transition to scalable operating models that facilitate the widespread adoption of digital innovation. Third, central banks need to invest in their cloud transformation to build the foundation for scalable (Gen) AI adoption. Lastly, central banks must leverage their historically strong data capabilities and engage in data sharing activities.

The **Build for the Future (BFF) assessment** by BCG is a diagnostic tool that evaluates and benchmarks an organization's digital maturity across 53 capabilities, covering dimensions like customer experience, operations, and technology. Digital maturity reflects an organization's ability to create value through digital capabilities, which strongly predicts its potential for success in digital innovation.

The BFF categorizes digital maturity into four progressive stages: Stagnating, Emerging, Scaling, and Future-Built. These stages represent an organization's evolution from minimal growth and innovation to a fully equipped and adaptable state, ready to tackle future digital challenges and opportunities.

The BFF's extensive database, which includes data from over 1,000 CXO survey respondents worldwide for 2024, provides valuable insights by comparing an organization's digital performance against industry averages and leading benchmarks. For the central bank assessment, data was collected from institutions across diverse regions, including Europe, the Middle East, the Americas, and Asia, offering a comprehensive basis for guiding digital strategies and economic growth initiatives.

1. BIS (2024). Core Principles for effective banking supervision. Retrieved from https://www.bis.org/bcbs/publ/d573.htm.
2. Boston Consulting Group X Finda (2023), Future of Finance.

Achieving Leadership in Digital Innovation

BigTech companies such as Google, Meta, Tencent, Apple, and Amazon are considered digital pioneers, having reached the Scaling stage according to the BFF survey (see exhibit 1). They deploy new technologies on a large scale and adapt their operating models swiftly. Already involved in payments and SME lending, these companies leverage extensive customer bases and data to reshape the financial industry. For instance, with approval from Brazil's central bank, Meta's WhatsApp recently launched a payment service for SMEs, demonstrating BigTech's transformative impact on the financial ecosystem.[1]
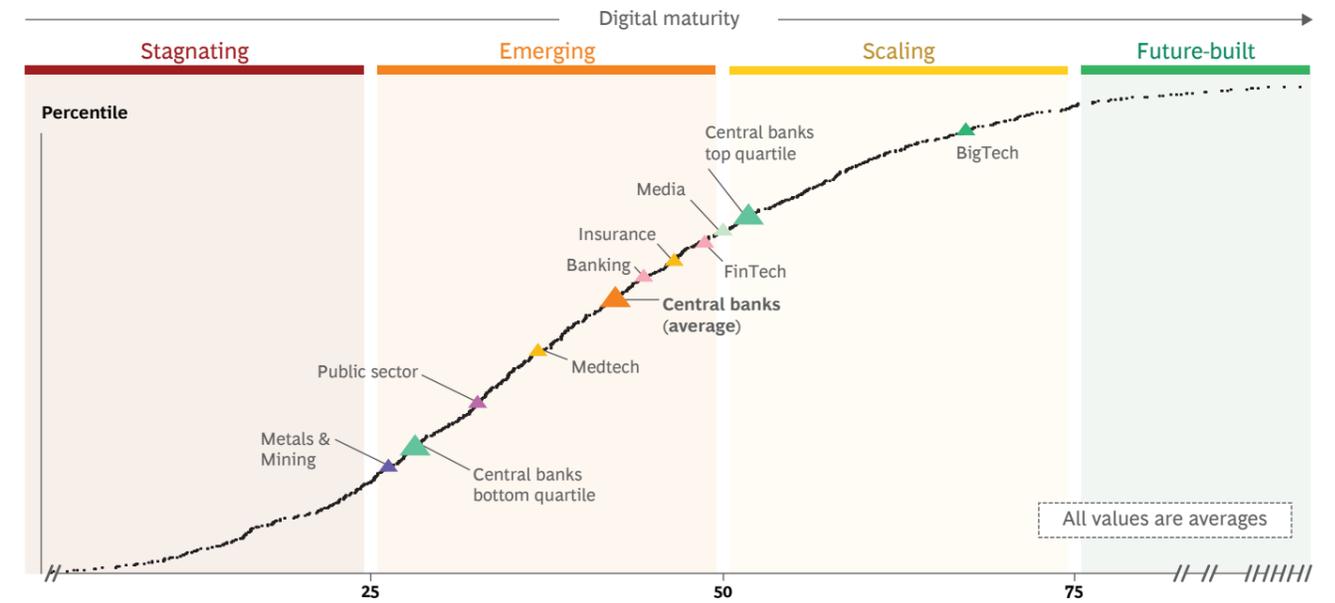
FinTechs and PSPs are also transitioning from Emerging to Scaling, moving from small-scale pilots to larger applications that redefine operational models. Currently, 65% of FinTechs, BigTechs, and PSPs are at the Scaling stage, using digital innovations to overhaul their business models and reshape the financial industry.

Most of the surveyed central banks are currently at the Emerging stage of their digital transformation journey. They have successfully piloted disruptive technologies and initiated major digital transformation programs. However, they have yet to scale these initiatives across the entire organization and fully integrate them into day-to-day operations to reach the Scaling stage and ultimately evolve into future-ready organizations.

1. Boston Consulting Group (2024), Reimagining the Future of Finance.

Exhibit 1 – Central banks place at the emerging stage, ahead of the general Public Sector, but are overall lagging behind Banking, Fintech and BigTech
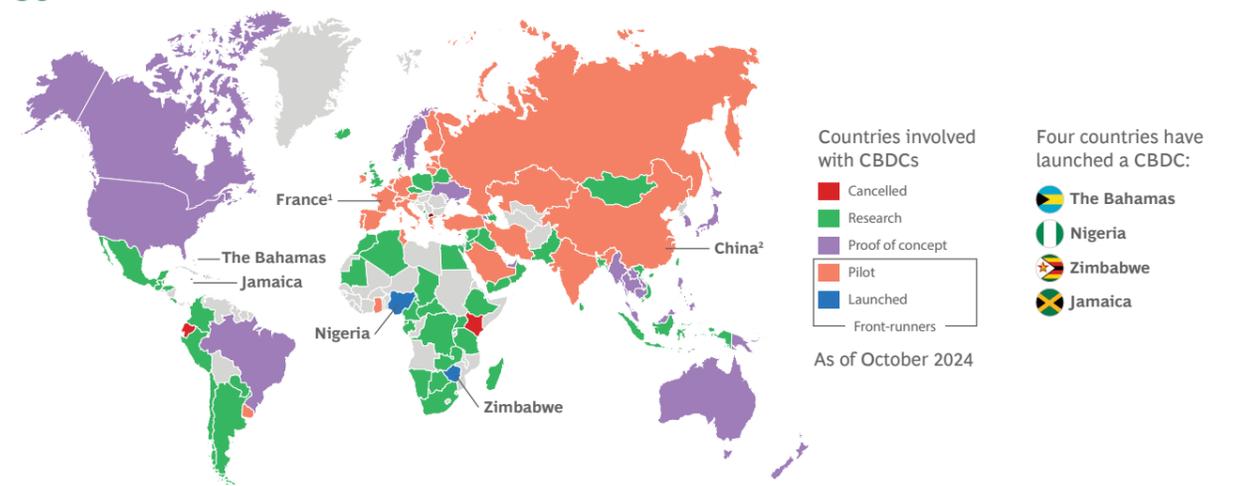

Digital maturity

Stagnating | Emerging | Scaling | Future-built

Percentile

Central banks top quartile
Media
Insurance
Banking
FinTech
Central banks (average)
Public sector
Medtech
Metals & Mining
Central banks bottom quartile
BigTech

All values are averages

25   50   75

Source: BCG Analysis.

CBDCs are a prime example of an initiative at the Emerging stage:

- CBDCs are of strategic relevance for **58%** of the surveyed central banks.

- Over **two-thirds** of central banks worldwide are currently exploring a retail or wholesale CBDC.

- Initial pilot projects are underway in **21** central banks (see exhibit 2 for CBDC status).

The transition to a scalable operating model for CBDCs is still a step that most central banks have yet to take.

Exhibit 2 – Globally, over 130 countries are investigating or deploying CBDCs

France[1]
The Bahamas
Jamaica
Nigeria
Zimbabwe
China[2]

Countries involved with CBDCs
- Cancelled
- Research
- Proof of concept
- Pilot
- Launched
- Front-runners

As of October 2024

Four countries have launched a CBDC:
- The Bahamas
- Nigeria
- Zimbabwe
- Jamaica

1. France conducting large scale sophisticated CBDC studies, but still depending on ECB for pilots and launch as part of the Eurozone.
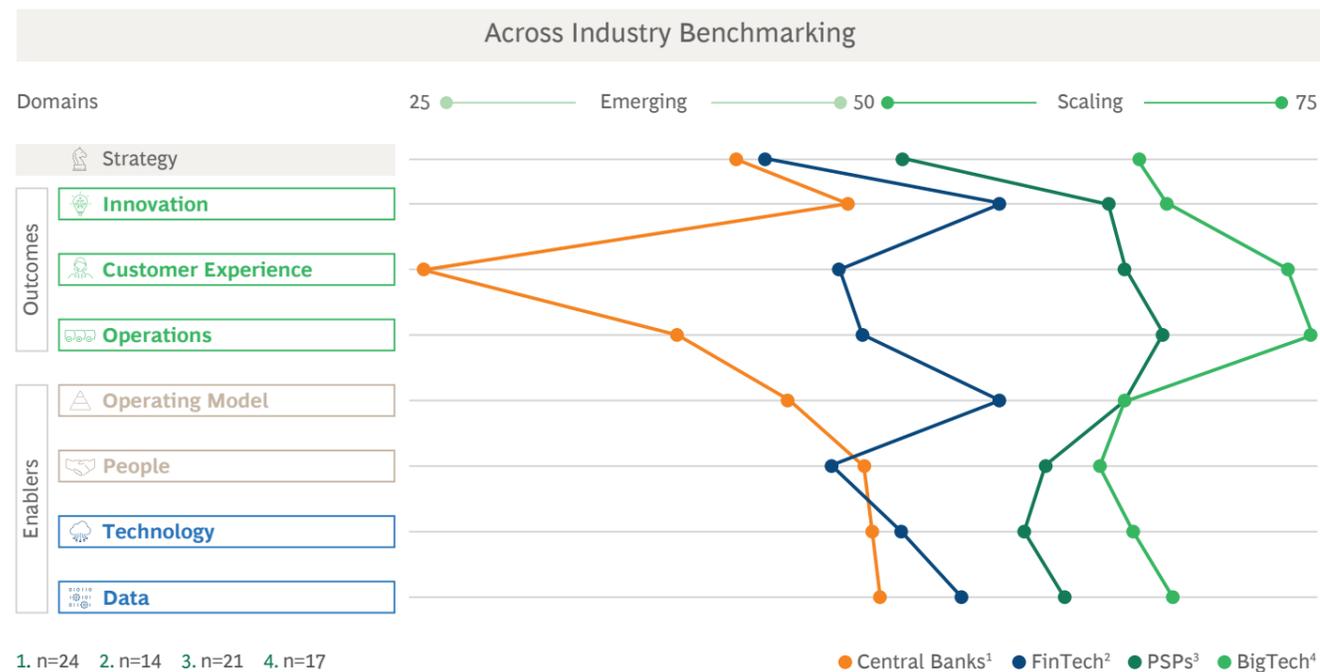2. China still declaring their solution as pilot due to low adoption, despite technical readiness.

Source: cbdctracker.org as of October 2024 (by BCG, BCG Platinion, EY, the Digital Euro Association and firmshift).
Note: If countries have multiple CBDC projects running in different phases, then 1 is selected in order: Launched > Pilot > PoC > Research.

What Central Banks Can Learn from Digital Pioneers

What can central banks learn from BigTechs, FinTechs, and PSPs to scale their digital and (Gen) AI initiatives? Our analysis indicates four key enablers (People, Operating Model, Technology, and Data) that set scaling organizations apart and enable them to enhance the impact of their digital initiatives (see exhibit 3).

Exhibit 3 - Most predominant digital maturity gaps are evident in Customer Experience, Operations & Operating Model

Across Industry Benchmarking

Domains	25 — Emerging — 50 — Scaling — 75

Outcomes:
- 🏛 Strategy
- 💡 Innovation
- 👤 Customer Experience
- 🖥 Operations

Enablers:
- 🤝 Operating Model
- 👥 People
- ☁ Technology
- 🗂 Data

1. n=24 2. n=14 3. n=21 4. n=17

● Central Banks[1] ● FinTech[2] ● PSPs[3] ● BigTech[4]

Source: BCG Analysis.

People and Operating Model

Scaling organizations heavily invest in developing the technological skills of their workforce, fostering a culture where employees integrate technology and data into daily operations. This is often achieved through a platform-oriented operating model that supports a robust partner ecosystem, enhancing the organization's overall capabilities.

Digital capabilities:
Central banks, as traditionally data-driven and analytical entities, have a strong foundation. They have begun workforce planning to address talent gaps, linking development programs at the functional level. However, compared to scaling organizations, central banks face challenges in securing and retaining AI talent, senior leadership expertise, and in overcoming a more risk-averse culture. Limited digital expertise among senior leaders can make it difficult to prioritize and secure investments for digital initiatives on a broad scale.

- **57%** of FinTechs and **59%** of BigTechs highlight their leadership's deep understanding of (Gen) AI, only **29%** of central banks report similar proficiency.

A risk-averse culture heightens the need for strong, proactive leadership to drive digital initiatives. Unlike scaling organizations, few central banks have clearly defined roles for emerging technologies. Establishing dedicated positions, such as chief data officer or chief digitalization officer, with high-caliber talent could effectively embed digital expertise at the leadership level.

Platform-based operating models:
Scaling organizations often operate with platform-oriented models that enable cross-functional teams to work with autonomy and accountability, achieving specific outcomes end-to-end. This model supports a partner ecosystem that broadens the organization's capabilities and product offerings. Central banks' efforts to develop CBDCs, such as the digital euro in the eurozone, illustrate this well; they involve partnerships with technology providers, policymakers, financial institutions, and industry experts to create impactful solutions, often within public-private collaborations.

Central banks display considerable diversity in their operating models:

- **30%** maintain a traditional, siloed structure with limited collaboration.

- **30%** use a matrix organization where priorities align with traditional reporting structures, while teams begin to collaborate across disciplines.

- **40%** have adopted platform-oriented models with cross-functional teams that promote a culture of continuous innovation.

Central banks with platform-oriented models often demonstrate a well-aligned AI vision and a stronger link between strategy and AI investments, positioning them to harness emerging technologies for product innovation more effectively.

Technology and Data

Innovative organizations have embedded (Gen) AI into their core strategies, using its potential to revolutionize operations and create new business models by leveraging extensive data assets. Cloud computing plays a crucial role in supporting (Gen) AI by providing scalable computing power, flexible data storage, and rapid prototyping—now standard practice among scaling organizations.

(Gen) AI adoption:
Scaling organizations recognize the transformative power of (Gen) AI. They not only enhance productivity but also fundamentally reshape operations and services. By contrast, most central banks are focused primarily on using (Gen) AI to boost individual productivity (see exhibit 4).

36% of FinTechs and **47%** of BigTechs integrate (Gen) AI into their strategic agendas, compared to just **21%** of central banks.

- **79%** of FinTechs and **69%** of BigTechs have the infrastructure to scale, industrialize, and reuse (Gen) AI models, while only **33%** of central banks have achieved this capability.

While deploying (Gen) AI for daily tasks yields productivity gains of 10–20%, transforming critical functions can drive productivity improvements of up to 50% and create new value propositions. Central banks should therefore position themselves to use (Gen) AI beyond routine tasks, reimagining core functions and exploring innovative business models within their mandates. This approach will allow them to fully realize the potential of their data assets.

Data sharing:
Only two central banks in our sample have implemented organization-wide (Gen) AI innovations. Given their extensive data resources, central banks are uniquely positioned to leverage (Gen) AI for transformative advancements. Although many have initiated data-sharing efforts and begun deploying machine learning and (Gen) AI models to generate predictive insights from historical data, the extent of usage and expertise still varies significantly across organizations.
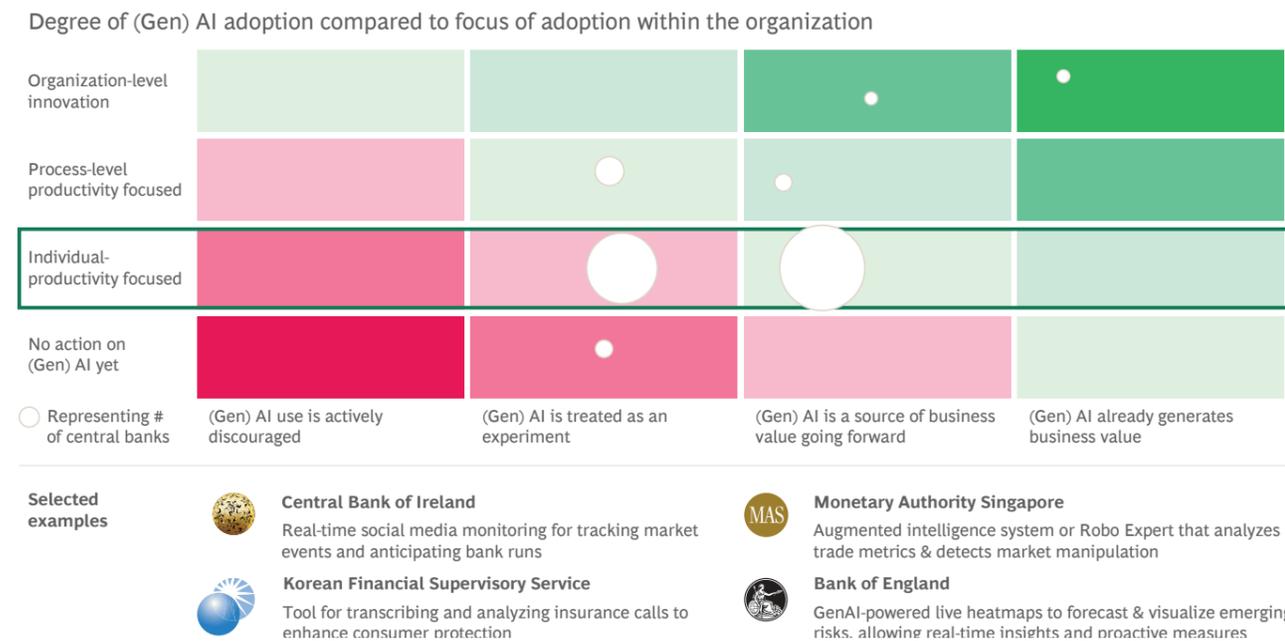
Cloud computing:
Cloud adoption has become standard among digitally mature organizations, playing a crucial role in supporting (Gen) AI by offering scalable computing power, flexible data storage, and rapid prototyping capabilities to refine AI models effectively. Cloud infrastructure enables real-time collaboration among stakeholders while ensuring secure data management. Additionally, integrated AI services on cloud platforms simplify development and deployment, allowing organizations to bring innovative solutions to market faster.

Most central banks are still transitioning to cloud-based systems, which limits their ability to fully leverage (Gen) AI benefits, such as advanced analytics, improved decision-making, and operational efficiencies. For central banks, cloud adoption requires balancing stringent security needs with the drive for innovation, often resulting in a hybrid approach that combines public cloud and on-premises solutions. This shift demands investments in infrastructure, workforce training, and the establishment of robust risk management frameworks to ensure a secure and sustainable deployment.

Exhibit 4 - (Gen) AI in central banks generates limited value so far, since most initiatives are focused on enhancing individual productivity

Degree of (Gen) AI adoption compared to focus of adoption within the organization

	(Gen) AI use is actively discouraged	(Gen) AI is treated as an experiment	(Gen) AI is a source of business value going forward	(Gen) AI already generates business value
Organization-level innovation			●	●
Process-level productivity focused		○	●	
Individual-productivity focused		◯	◯	
No action on (Gen) AI yet		●		

○ Representing # of central banks

Selected examples

Central Bank of Ireland
Real-time social media monitoring for tracking market events and anticipating bank runs

Monetary Authority Singapore
Augmented intelligence system or Robo Expert that analyzes trade metrics & detects market manipulation

Korean Financial Supervisory Service
Tool for transcribing and analyzing insurance calls to enhance consumer protection

Bank of England
GenAI-powered live heatmaps to forecast & visualize emerging risks, allowing real-time insights and proactive measures

1. Question: Which of the following statements best describes the focus of (Gen) AI initiatives in your organization?
2. Question: Which of the following statements best describes the degree of (Gen) AI adoption in your organization?

Source: BCG Analysis.

How Can Your Central Bank Utilize the Build for the Future (BFF) Assessment?

Compare: Understanding your current position will help identify gaps and opportunities in your digital strategy. The BFF supports you in assessing the maturity of your digital capabilities, evaluating the progress of existing digital initiatives, and aligning these with your long-term transformation goals.

Understand: Four enablers (People, Operating Model, Technology, and Data) are critical in driving digital transformation. The BFF supports you in considering how each one can be leveraged based on your organization's current capabilities, ongoing initiatives, and strategic objectives.

Act: Redefine the digital transformation roadmap to remain at the forefront of digital innovation where it matters. Review and prioritize strategic initiatives that align with their unique mandate—maintaining monetary stability, overseeing financial institutions, and safeguarding the payment systems—based on best practices of digital pioneers.