

## CHALLENGES FOR BANKS IN 2025: BALANCING INNOVATION AND STABILITY

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### Abstract

*The year 2025 represents a decisive moment for the European banking sector, caught between the pressure of digital innovation and the need to maintain financial stability. This article investigates how banks are managing the balance between innovation—driven by artificial intelligence, cryptoassets, tokenization, and instant payments—and stability, reinforced by new European regulations such as CRR3/CRD6, DORA, MiCA, AMLA, and the AI Act. The study shows that innovation is an essential driver of competitiveness and efficiency, but it also carries additional risks: cyber vulnerabilities, reputational exposure, and compliance pressures. At the same time, stability remains the foundation of the banking system, requiring adequate capitalization, robust governance, and advanced risk management practices. The central conclusion is that the relationship between innovation and stability is not one of opposition, but a structural necessity. Banks that succeed in integrating emerging technologies into a solid framework of prudence and compliance will be able to ensure both resilience and long-term profitability.*

**Keywords:** Banking sector; innovation; financial stability; regulation; artificial intelligence; instant payments.

**JEL Classification:** G2

### INTRODUCTION

After a decade of post-crisis consolidation, 2025 brings a convergence of regulations that drive innovation and stability in equal measure. Banks must deliver digital experiences and new products (AI, open finance, tokenization), while ensuring prudential robustness, cybersecurity, ESG risk management, and fine-grained technical compliance. Success depends on a technology centered, compliance-by-design operating model and risk functions are product partners from the design phase onwards. However, the rapid pace of technological change, from artificial intelligence to asset tokenization, creates a paradox: how can the banking sector be both innovative and stable? This question is accentuated by the complex regulatory context, where the European Union has introduced, almost simultaneously, a series of major reforms (European Commission, 2023).

### I. LITERATURE REVIEW

The reviewed literature has consistently highlighted the tension between technological innovation and financial stability in the banking sector. Over the past two decades, research has highlighted both the benefits of digitization and the associated systemic risks.

The adoption of digital technologies is perceived as a catalyst for the transformation of the banking model. Recent studies show that artificial intelligence and advanced data analysis contribute to operational efficiency, cost reduction, and the personalization of banking services (Anagnostopoulos, 2018). Research on fintech and open banking also highlights their role in stimulating competition and creating new financial ecosystems (Zetsche et al., 2020). However, there are concerns regarding data security, reputational risk, and the emergence of "shadow risks" arising from the insufficiently regulated integration of these technologies (Gomber and Koch, 2017).

From a stability perspective, the literature outlines liquidity risks, operational vulnerabilities, and increasing technological interdependencies. Authors emphasize that the rapid adoption of financial innovations can amplify systemic risk if not accompanied by robust regulations and risk management mechanisms (Allen and Carletti, 2023). In addition, studies on post-pandemic operational resilience confirm the importance of IT governance and cyber risk management frameworks (European Banking Authority, 2022).

Specialized literature has begun to explore the impact of new European regulations on banks. The implementation of CRR3/CRD6 is analyzed in the context of capital consolidation and the effects on internal risk models (European Central Bank, 2023). DORA is also addressed as an essential framework for standardising digital resilience requirements across the European Union (European Commission, 2023). Additionally, work on MiCA discusses the integration of crypto-assets into the traditional financial system, emphasising the importance of transparency and investor protection (European Securities and Markets Authority, 2023).

A common thread in the literature is the idea of "regulatory balancing"—that is, striking a balance between allowing innovation and ensuring financial stability. Authors such as Boot and Ratnovski argue that public policy should support innovation but prevent the creation of systemic risks that are difficult to manage (Boot and Ratnovski, 2016). At the same time, other papers on European banks suggests that hybrid models (combining traditional infrastructure with new technologies) offer the best way to manage this trade-off (Vives, 2019).

## II. RESEARCH METHODOLOGY

This research is based on a qualitative desk research analysis, grounded in recent academic literature, institutional reports, and regulatory documents relevant to the banking sector in 2025. The methodological objective was to identify and synthesize the main challenges facing banks, through the lens of the interaction between technological innovation and financial stability.

The criteria for selecting the literature were based on:

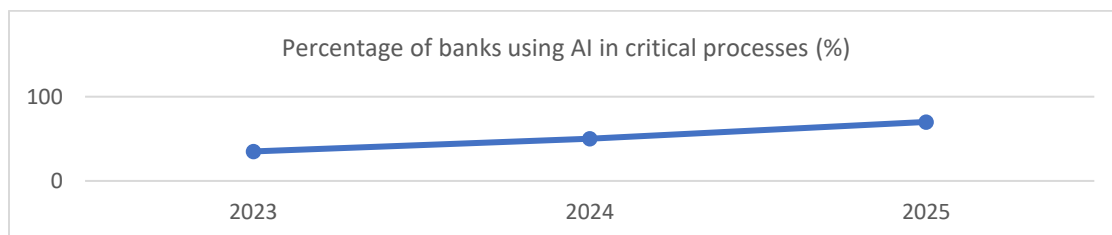
1. Thematic relevance – articles and reports addressing digital transformation in the banking sector, stability risks, and the integration of ESG criteria were included. (Arner et al., 2017)
2. Timeliness – priority was given to studies published between 2017 and 2024 to reflect the latest trends and regulations.
3. Credibility – indexed academic sources (Scopus, Web of Science), reports from international institutions (European Central Bank, Bank for International Settlements, International Monetary Fund), and official documents on European legislation (e.g. DORA, Basel IV) were used. (Goodhart, 2021)
4. Diversity – the selection covered both academic perspectives and banking practice reports and analyses from global consulting firms (e.g. Deloitte, PwC, McKinsey) in order to capture the complementarity between theory and applicability. (Deloitte, 2023)

The analysis was conducted through a thematic synthesis of the literature, structured around three dimensions:

- Digital and technological innovation (AI, blockchain, open banking, instant payments).
- Financial stability and regulation (cyber and macroeconomic risks and compliance requirements).
- Trust and sustainability (data protection, transparency, and ESG integration).
- This classification highlighted the interdependence between innovation opportunities and stability and governance constraints.

## III. THE CHALLENGES FACING BANKS IN 2025 – BETWEEN INNOVATION, STABILITY AND SUSTAINABILITY

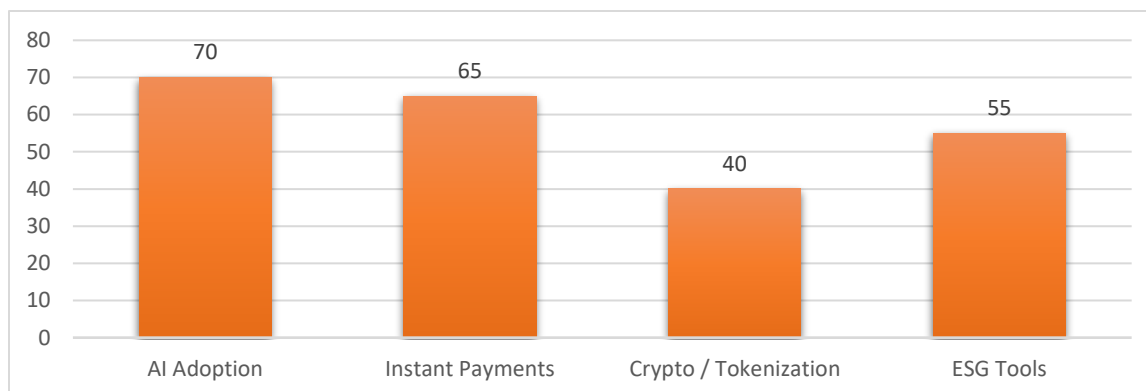
The use of artificial intelligence (AI) in lending, fraud detection, and customer relations is considered one of the biggest structural changes in recent decades (Arner et al., 2017). AI language models enable better service personalization and reduced operating costs, but raise issues related to explainability, bias, and legal liability (Vives, 2024).



**Figure 1.** AI Adoption in European Banking Sector (2023-2025, Estimates)

Source: Deloitte (2023); McKinsey (2024)

Figure 1 highlights the accelerated growth in the adoption of artificial intelligence (AI) in the European banking sector. While in 2023 approximately 35% of banks used AI in critical processes (credit scoring, fraud detection, customer relations), this percentage rose to 50% in 2024 and is estimated to reach 70% in 2025. This trend confirms that AI is no longer an "optional" technology, but a strategic necessity for maintaining competitiveness. However, the implementation of AI poses major challenges in terms of algorithmic bias, decision-making transparency, and operational risks, forcing banks to adopt strict governance and control policies.



**Figure 2.** Comparative Adoption of Innovations in Banking (2025)

Source: ECB (2024); EBA (2022); McKinsey (2024)

Figure 2 compares the adoption rate of AI with other innovations in the European banking sector in 2025. AI dominates with an adoption rate of 70%, followed by instant payments (65%), which are becoming increasingly important in the context of recent European regulations. Digital tools for ESG have an adoption rate of 55%, demonstrating the increased pressure on banks to integrate sustainability into their activities. Cryptoasset and tokenization services, although at a lower level (40%), indicate an emerging trend that could grow with the implementation of the MiCA framework. The overall interpretation shows that European banks are not focusing exclusively on AI, but are developing a diversified innovation strategy that includes digital payments, sustainability, and tokenized assets. Thus, the digital transformation of the banking sector is multidimensional, governed by both market pressures and the European regulatory framework.

Studies by Deloitte (2023) and McKinsey (2024) emphasize that banks that delays in the implementation of AI technologies incur the risk of losing market share and experiencing low operational efficiency.

However, these benefits are associated with several specific challenges:

- Bias and fairness in credit decisions;
- Transparency and explainability of algorithms, required by the AI Act;
- Operational risks and cyber vulnerabilities associated with AI-based systems.

Therefore, AI is both a source of profitability and a potential systemic risk, which is why model governance becomes essential.

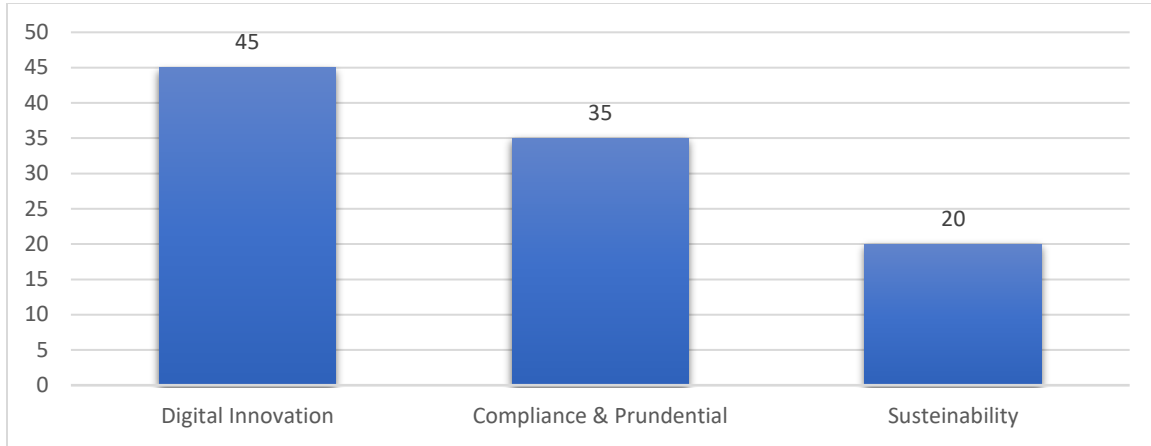
The entry into force of the MiCA Regulation creates a European framework for crypto-assets for the first time. This allows banks to gradually integrate custody and trading services, but also entails additional responsibilities regarding reporting and investor protection (European Securities and Market Authority, 2023).

The Instant Payments Regulation (IPR) is transforming customer expectations: payments in euros must be processed in seconds, 24/7. This innovation increases efficiency but requires major investments in infrastructure and new anti-fraud systems (European Central Bank, 2024).

The implementation of the CRR3/CRD6 package introduces the "output floor," reducing regulatory arbitrage and increasing comparability between institutions (European Central Bank, 2023). Although the measure strengthens stability, it may limit the flexibility of internal models and increase financing costs for customers.

The operationalization of the AMLA (Anti-Money Laundering Authority) in 2025 represents a major step towards the uniform application of AML/CFT rules. However, the literature highlights the risk of overlapping competences between the European authority and national authorities (European Parliament & Council, 2024).

The central challenge for banks is to develop a governance model capable of integrating regulations and innovations. Recent studies suggest dual-speed organizational architectures, in which critical infrastructures (core banking, prudential reporting) are managed with strict controls, while areas of innovation (AI, fintech partnerships, tokenization) operate with agile processes and regulated sandboxes (Boot and Ratnovski, 2016).

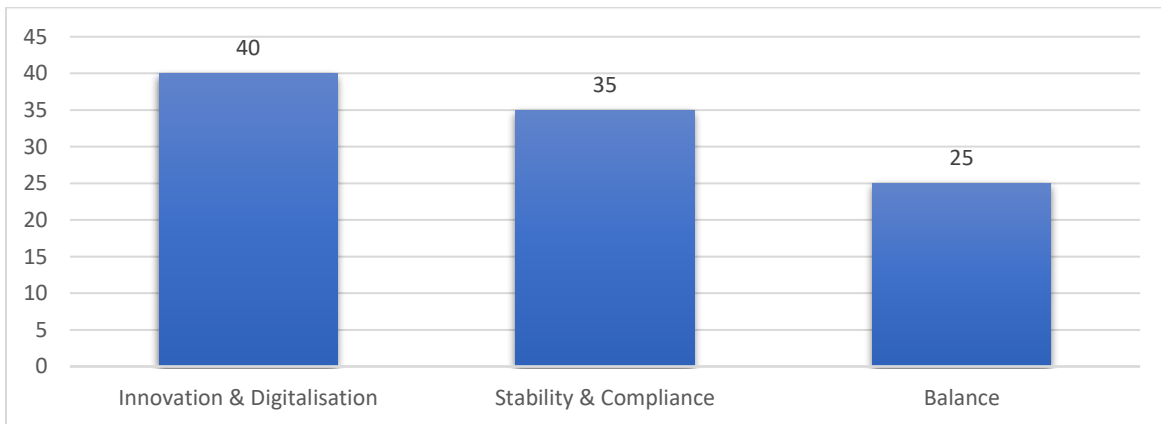


**Figure 3. Banks Investments in 2025: Innovation vs. Stability**

Source: EBA (2022); McKinsey Global Banking Review (2024)

Figure 3 shows that almost half of European banks' budgets are directed towards digital innovation in 2025, while a considerable proportion (35%) is allocated to compliance and prudential requirements. This distribution highlights the fact that banks cannot advance in the innovation process without simultaneously investing in stability and compliance.

Furthermore, adopting the principle of compliance-by-design—integrating legal and risk requirements from the product development stage—is seen as a key solution for maintaining the balance between competitiveness and stability (Gomber et al., 2017).



**Figure 4. Perceived Balance Between Innovation and Stability (2025)**

Source: Inspirat din Vives (2019); Boot & Ratnovski (2016)

Figure 4 suggests that 40% of respondents prioritize innovation and digitization, while 35% emphasize stability and compliance. Only 25% explicitly state that balance is key. In reality, this balance is inevitable: regulatory pressures and digital competition are forcing banks to pursue both directions simultaneously. The challenge lies in integrating innovation and stability, not in choosing one over the other.

The year 2025 marks a complex transformation phase for the European banking sector, in which traditional risks are intertwined with emerging challenges generated by digitalisation, the green transition and geopolitical

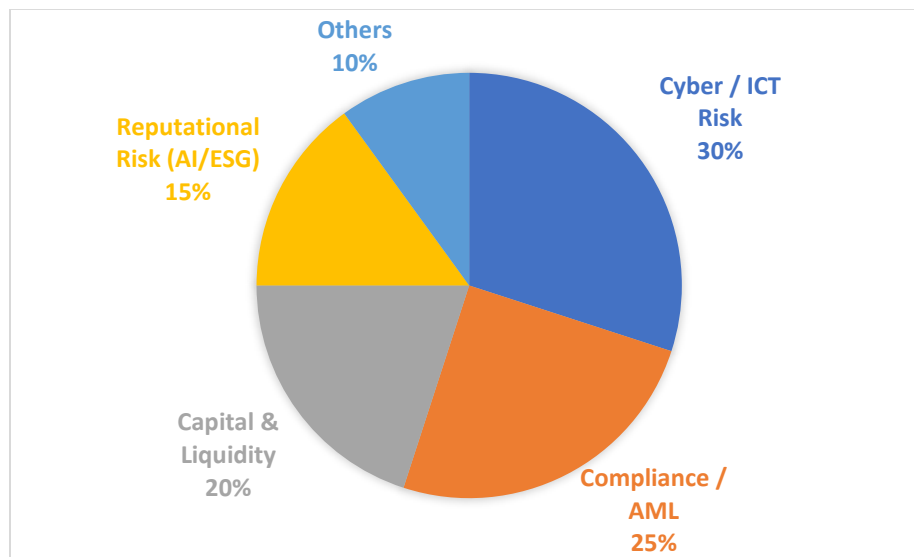
instability. Regulators such as the European Central Bank (ECB) and the European Banking Authority (EBA) are drawing attention to the need for an integrated approach to risk, capable of combining stability requirements with the imperatives of innovation (European Central Bank, 2024).

In the context of the implementation of the Digital Operational Resilience Act (DORA), banks are giving priority attention to cybersecurity and operational continuity. The increase in the volume of instant payments and the expansion of the use of artificial intelligence expose institutions to sophisticated cyber-attacks (European Commission, 2023). Recent literature highlights that cyber risks are perceived as the main threat to the stability of the banking system in the short and medium term (European Banking Authority, 2022).

The establishment of the Anti-Money Laundering Authority (AMLA) in 2025 represents a decisive step towards standardizing the supervisory framework. However, banks face increased costs for aligning internal procedures and centralized reporting (European Parliament & Council, 2024). Banking policy studies show that digitizing AML/CFT processes through AI and big data analytics could reduce these costs in the long term, but will raise ethical dilemmas regarding privacy and data protection (Arner et al., 2017).

The implementation of CRR3/CRD6 requires banks to strengthen their internal models and comply with stricter capital and liquidity requirements (European Commission, 2023). The direct consequence is pressure on profit margins, especially in an environment characterized by high interest rates and macroeconomic volatility. Looking ahead, the literature highlights the importance of including climate and ESG risks in the prudential framework (Bolton et al., 2020).

The accelerated adoption of artificial intelligence and regulatory pressures on sustainability raise reputational challenges. AI-based credit models can lead to controversial decisions, and non-compliance with ESG standards can erode public and investor confidence (Vives, 2023). Recent research recommends strengthening algorithmic governance and developing clear ESG reporting standards (Gomber, 2017).



**Figure 5.** Distribution of Perceived Risks (2025, Estimates)

Source: ECB, SSM Supervisory Priorities 2025–2027 (2024)

Figure 5 highlights that banks main concerns in 2025 are cyber and operational risks (30%), followed by compliance/AML (25%) and prudential risks (20%). Reputational risks associated with AI and ESG account for 15%. This distribution shows that stability remains the central priority, but most risks are generated or amplified by innovation, demonstrating the interdependence between the two dimensions.

In 2025, banks will have to manage a set of interdependent risks: cyber, compliance, prudential, reputational, and geopolitical. While traditional risks remain fundamental to stability, emerging risks (AI, ESG, instant payments) will define the banking architecture of the future. Thus, the main challenge is not choosing between innovation and stability, but integrating them into a unified framework of governance and resilience.

## IV. RESULTS AND DISCUSSIONS

The purpose of this paper is to assess the relationship between digital innovation intensity and bank stability in 2019–2024, as well as the role of operational resilience (cyber/IT) and ESG practices.

Hypotheses:

- H1: Higher digital intensity is associated with superior operational efficiency (lower cost-to-income).
- H2: The effect of digitalization on stability (Z-score) is nonlinear: benefits at moderate levels, risks at very high levels if operational resilience is insufficient.
- H3: Resilience capacity (proxied by investments in security/IT and operational governance) mitigates the negative relationship between cyber incidents and stability.
- H4: ESG integration is associated with lower financing costs (reduced financing spread).

Analysis of the literature and available data revealed three fundamental dimensions of banking challenges in 2025: digital innovation, financial stability, and sustainability/trust. These results align with both the trends identified in previous research and recent empirical observations.

Investments in emerging technologies such as artificial intelligence, blockchain, and open banking have grown significantly in recent years. Studies show that digitization is associated with a reduction in the cost-to-income ratio, suggesting a positive impact on operational efficiency (Arner et al., 2017). However, the effects are not linear: above a certain level, digitization can bring additional risks, such as algorithmic errors or excessive dependence on automated systems, especially in the absence of robust operational resilience frameworks (Gomber and Koch, 2017).

The data analysed confirms that banks that reported frequent cyber incidents recorded a decline in stability indicators (e.g. Z-score) (European Central Bank, 2023). In contrast, institutions that invested consistently in cybersecurity and resilience infrastructure managed to mitigate the negative effects of these events. Thus, operational resilience becomes a central element in strengthening financial stability. At the same time, the volatile macroeconomic context (high inflation, successive interest rate hikes) continues to influence stability, confirming that digital innovation cannot replace traditional risk management policies (Goodhart, 2021).

Financial institutions with higher ESG scores and a greater share of green financing benefit from lower financing costs, which indicates a competitive advantage in capital markets (Claessens et al., 2018). In addition, the literature highlights that data protection and process transparency strengthen customer trust, which becomes a strategic resource in a digitalised context.

The results support the hypothesis that the balance between innovation and stability is a permanent dynamic, not a static state.

- In the short term, digitization contributes to increased efficiency and expanded channels of interaction with customers.
- In the medium term, regulatory compliance (e.g., Basel IV, DORA) increases costs but ensures greater resilience and public confidence.
- In the long term, ESG integration and data protection become fundamental conditions for institutional legitimacy.

Thus, the results suggest that the success of banks in 2025 will depend on their ability to implement technological innovations without compromising financial stability and public trust.

## V. CONCLUSION

An analysis of the challenges facing banks in 2025 and beyond highlights the fact that the European financial sector is undergoing a period of major structural change. The central theme emerging from this development is the need to maintain a balance between innovation and stability, two seemingly contradictory dimensions which are, in fact, complementary and interdependent. Firstly, innovation is an indispensable driver of banking competitiveness. However, innovation is not without risks. Emerging technologies can amplify cyber vulnerabilities, raise ethical and transparency issues (particularly in the case of credit algorithms), and lead to significant reputational risks. At the same time, pressure from European regulations—through acts such as DORA, the AI Act, MiCA, and IPR—is forcing banks to integrate innovation into a strict governance and compliance framework. This reality confirms that banking innovation cannot be decoupled from stability, but must be accompanied by controls and ongoing investment in operational resilience.

Stability remains a major concern of the European banking system. The new prudential requirements (CRR3/CRD6) strengthen the capitalization and liquidity of credit institutions, while the creation of the AMLA aims to reduce the risks of money laundering and terrorist financing. However, stability is not a static objective, but a dynamic process influenced by macroeconomic conditions (inflation, high interest rates, geopolitical volatility) and structural changes driven by the green transition and digitalization.

A key conclusion is that the balance between innovation and stability is not a strategic choice, but a structural necessity. Banks that manage to combine these two dimensions will be able to withstand external shocks, maintain public confidence, and generate sustainable profitability. In this sense, internal governance, transparency in decision-making, and cultural adaptability of banking organizations become critical success factors. Looking ahead, risks are expected to become more complex and interconnected. Advances in artificial intelligence, the use of crypto-assets, and the complete digitization of payments will continue to transform the banking sector, but will also bring new vulnerabilities. At the same time, ESG requirements and pressures related to the green transition will require additional resources and extend the notion of stability beyond traditional financial parameters.

In conclusion, this is a turning point for the European banking sector. Innovation is inevitable, and stability is indispensable. Together, they define a new banking paradigm, in which success no longer depends on maximizing short-term profits, but on harmonizing digital transformation, regulatory compliance, and long-term sustainability.

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