DIGITALIZATION OF BANKING AND ESG IN EMERGING ECONOMIES: EVIDENCE FROM UZBEKISTAN

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https://doi.org/10.5281/zenodo.17964355

1. Introduction

According to Diener and Špaček et al. (2021), digital transformation has become a central topic in the development of the financial sector globally. Bank services, risk management and interaction with clients of the bank have been influenced by developments in mobile and internet technologies, data analytics and partnerships in financial technologies. Nguyen, Ho & Nguyen (2023) have discussed that digitalization in banking sector improves its efficiency and service delivery (through online and mobile channels that reduce transaction costs and broaden outreach) in emerging markets.

In the meantime, it is expected that banks will continue to integrate Environmental, Social and Governance (ESG) activities into their strategies and operations. Number of researches designate that a solid ESG performance of banks is frequently related to lower financial and operational risks, better access to capital and in some cases even stronger profitability outcomes (Ahmed, Shah & Al-Qassab, 2025). The literature increasingly recognizes that digitalization and ESG are closely linked and operate as complementary agendas: by enhancing transparency, supporting emergence of green products, promoting financial inclusion and enhancing governance frameworks, digital technologies can expedite ESG activities (Deng et al., 2025).

Nevertheless, majority of researchers focus on large international banks or markets such as European Union, China and the Middle East and Northern Africa region, whereas Central Asian region, particularly Uzbekistan remained as underexplored, despite the fact that country is in the process of active implementation of extensive transformation in the banking sector, promotion of digital technologies and embedding green and sustainable finance as country’s long-term growth agenda (Deng et al., 2025).

The banking sector plays a pivotal role in the allocation of capital and hence in steering the real economy toward more sustainable trajectories. A growing literature investigates the relationship between banks’ ESG performance and financial outcomes (profitability, risk, cost of capital). Studies on MENA and MENAT banks, for example, suggest that stronger ESG profiles are associated with lower risk and sometimes higher profitability, although the results can be sensitive to the ESG dimension considered and the regulatory environment (Abdullaeva et al., 2025; Mallek et al., 2024)

The Digital Uzbekistan – 2030 Strategy of Uzbekistan envisages implementing both regional and industry-specific digitalization programs and a detailed roadmap to transform Uzbekistan’s economy and governance through digital technologies. It also aims to expand digital infrastructure and modernization of public services (Strategy.uz, 2023).

Uzbekistan recently announced a tax-free zone for AI and data centres in Karakalpakstan, aimed at attracting at least USD 1 billion in digital infrastructure investment by 2030, reflecting the government’s ambition to become a regional digital hub (Daryo.uz, 2025).

The government of Uzbekistan made an immense investment in digital infrastructure and electronic government (e-government).

At the same time, government, Central Bank and international partner documents (OECD, UNDP) increasingly call for activating green and sustainable finance and to deepen the contribution of private banks to financing the green transition and the Sustainable Development Goals (SDGs) (OECD, 2023; Inogamov & Shodieva, 2024; UNDP, 2022).

In this wider context, commercial banks of Uzbekistan are enhancing digital service delivery through mobile applications, online platforms and remote services, while increasingly embedding sustainability into their strategies. Uzpromstroybank (SQB) publishes ESG and sustainable development reports under its Sustainable Finance Framework, Agrobank has launched a Green Finance Framework, and banks such as Hamkorbank disclose ESG policies and environmental commitments (Uzpromstroybank, 2025; Agrobank, 2024; Hamkorbank, 2025).

Despite these developments, there is insufficient academic literature that systematically connects digitalization and ESG in banking sector of Uzbekistan. There is one recent empirical study by Ganieva (2025) that examined the role of integrated digital banking services and green financing in enhancing and improving financial inclusion in Uzbekistan. The study highlighter potential for digital channels to support inclusive and sustainable finance. Regardless, more academic research in necessary to understand how commercial banks and policymakers conceptualize and implement the relationship between digital transformation, financial inclusion, green finance and ESG principles in this context.

Research objectives and questions

This paper addresses this gap by posing three guiding research questions:

1. How do key policy documents in Uzbekistan frame the role of digitalization in banking, financial inclusion, green finance and sustainable development?

2. How do selected Uzbek commercial banks communicate and integrate digitalization and ESG in their mission statements, codes of conduct and public reports?

3. To what extent is there an explicit or implicit link between digitalization initiatives and ESG objectives in the Uzbek banking sector?

Given data limitations and the practical constraint of relying on publicly available sources, the paper adopts a qualitative, document-based case study design rather than econometric analysis. Its contribution is twofold:

- It provides a structured mapping of policy and bank-level narratives around digitalization and ESG in Uzbekistan;
- It offers policy and managerial implications for emerging economies where digital, green and ESG agendas are developing at the same time.

2. Methodology

2.1 Research design

Given the lack of a comprehensive quantitative ESG database for Uzbek banks and the tight timeline for this study, a qualitative, desk-based research design is adopted. The paper uses:

- A multiple – case study of selected commercial banks in Uzbekistan; and

- A systematic document analysis of bank reports, central bank strategies and government policy documents.

The approach is exploratory and descriptive rather than causal: it aims to understand how digitalization and ESG are framed and connected in official documents, not to statistically estimate their effects on financial performance.

2.2 Case selection

The unit of analysis is the individual commercial bank. A purposive sample of banks is selected based on:

- Size and systemic importance;
- Availability of annual reports and/or ESG-related documents;
- Evidence of Digitalization initiatives and/or ESG or green finance frameworks.

Incorporating those reasons, following commercial banks we selected for the case study analysis:

- Uzpromstroybank (SQB);
- Agrobank;
- Hamkorbank;
- Ipak Yuli Bank.

These banks have publicly accessible documents and are active in both digitalization and sustainability/green finance agendas.

2.3 Data sources and practical links

The study relies exclusively on publicly available documents. Below are practical links you can use when actually collecting material:

Bank-level documents

Uzpromstroybank (SQB) – ESG & Sustainable Development:

ESG & sustainable development page (reports, Sustainable Finance Framework, green loans):

- https://sqb.uz/en/esg-new/
- https://sqb.uz/en/green-banking/
- Annual reports (e.g. 2020):
- https://www.sqb.uz/upload/iblock/6f5/Annual%20Report_2020.pdfAgrobank – Green Finance Framework:
- https://agrobank.uz/upload/iblock/3f0/Agrobank_Green%20Finance%20Framework.pdf

Hamkorbank – ESG and environmental policies:

- ESG & sustainable development page: https://hamkorbank.uz/en/about-bank/esg-and-sustainable-development/
- Environmental policy: https://hamkorbank.uz/en/about-bank/environmental-policy/
- Financial statements (e.g. consolidated financial statements): https://hamkorbank.uz/upload/iblock/66a/66a49676ad4ce1f894c0b665bc45006f.pdf

Ipak Yuli Bank – financial and audit reports:

- Financial and annual reports: https://en.ipakyulibank.uz/about/to-shareholders-and-investors/financial-statements
- Audit reports: https://en.ipakyulibank.uz/about/performance-indicators/audit-report

Central Bank and government documents

Central Bank of Uzbekistan – Financial Stability Reports (including climate and ESG-related discussion):

Overview page with links to reports (2022–2023):

- https://cbu.uz/en/financial-stability/report/

Example: Financial Stability Report 2023 PDF:
[https://cbu.uz/upload/medialibrary/ee6/FSR_2023_En.pdf]
Central Bank – Green monetary policy paper:

- Green Monetary Policy (analytical paper): https://cbu.uz/upload/iblock/253/lwnlxcqdsgaqp4pnpw0nsgdidpx66gbj/Green_MP_en.pdf

Government – “Digital Uzbekistan – 2030” Strategy:

- Official presidential decree in Lex.uz: https://lex.uz/en/docs/7008256
- Government page on digital technologies and digital economy: https://www.gov.uz/en/activity_page/digital_technology

Digital economy and green transition context:

- UNDP study “Digital Economy of Uzbekistan”: https://www.undp.org/sites/g/files/zskgke326/files/2025-05/uz_digital-economy-study_eng.pdf
- OECD report “Financing Uzbekistan’s Green Transition”: https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/12/financing-uzbekistan-s-green-transition_6ebf6b94/27d2489d-en.pdf
- Integrated National Financing Strategy (UNDP): https://www.undp.org/sites/g/files/zskgke326/files/2024-02/integrated_national_financing_strategy_final_draft_0.pdf

2.4 Data collection

This study uses a qualitative document analysis approach based on policy papers, regulatory reports and sustainability disclosures relevant to digitalization, financial inclusion, green finance and ESG in Uzbekistan. The dataset includes the Digital Uzbekistan – 2030 Strategy, Central Bank of Uzbekistan financial stability reports, OECD and UNDP publications, and ESG or green finance frameworks issued by major commercial banks such as Uzpromstroybank, Agrobank, Hamkorbank and Ipak Yuli Bank.

Documents were selected according to relevance and credibility, prioritizing official, regulatory or peer-reviewed sources. A systematic keyword search guided the review, using terms such as digital transformation, financial inclusion, ESG, sustainability, green finance, and SDGs. An a priori coding scheme, developed from de Jesus (2024), structured the analysis around three themes:

i. transparency and governance;
ii. environmental and green finance activities;
iii. social inclusion and customer impact.

All documents were manually coded, and emerging patterns were compared across sources to understand how policymakers and banks frame and operationalize the relationship between digitalization, financial inclusion, green finance and ESG principles.

To systematically analyze the strategic documents, annual reports, ESG disclosures, mission statements, and policy frameworks of Uzbekistan’s commercial banks, an a priori keyword list was developed (Table 1). The use of predefined keyword categories is widely

applied in sustainability and ESG document analysis to enhance coding consistency, transparency, and analytical reliability (Hahn et al., 2015). The keyword list was informed by (i) the global literature on digital banking, financial inclusion, and sustainable finance; (ii) national strategies such as “Digital Uzbekistan – 2030,” the Green Economy Transition Strategy, and the Central Bank’s ESG Disclosure Guidelines; and (iii) commonly used terminology in banks’ own digitalization and ESG roadmaps.

The keywords were selected to capture the core elements of digital transformation, financial innovation, ESG integration, sustainability commitments, and inclusive finance priorities. Each keyword was accompanied by a short definition and linked theme, which guided the coding of relevant text segments within documents.

Table 1. A Priori Keyword List for Systematic Document Analysis

Keyword	Definition / Rationale	Linked Theme
Digital banking	Delivery of banking services through digital channels.	**Digitalization of Banking**
Digitalization	Integration of digital technologies into bank operations.	**Digital Transformation**
Digital	General reference to electronic, ICT-driven processes.	**Technology Adoption**
Fintech	Technology-driven financial services.	**Financial Innovation**
Mobile banking	Banking via mobile apps.	**Financial Inclusion**
Online services	Internet-based banking services.	**E-government & E-banking**
Digital transformation	Strategic shift toward digital operations.	**Modernization of Banking**
Cybersecurity	Data protection and security measures.	**Governance / Risk Management**
Innovation	New solutions improving efficiency.	**Financial Innovation**
Blockchain	Distributed ledger technology.	**Advanced Technologies**
Mobile bank application	Smartphone interface for banking.	**Customer Experience**
AI (artificial intelligence)	Algorithms for scoring and fraud detection.	**Technological Innovation**
Financial technology	Technologies transforming finance.	**Fintech Ecosystem**
ESG	Environmental, Social, Governance framework.	**ESG Integration**
Sustainability	Long-term environmental and social balance.	**Sustainable Development**
Governance	Structures ensuring ethical banking.	**Corporate Governance**
Transparency	Openness in reporting and disclosures.	**Governance Quality**
Environmental risk	Risks from climate and environment.	**Environmental ESG**
Social responsibility	Banks' social/community initiatives.	**Social ESG**
Green finance	Finance supporting environmentally	**Green Economy**

	positive projects.	
Green lending	Loans for renewable/eco-friendly projects.	**Sustainable Finance**
Carbon emissions	Greenhouse gases from operations or financed projects.	**Climate Impact**
Renewable energy	Solar, wind, hydro financing.	**Green Transition**
Access to finance	Ability to obtain financial services.	**Financial Inclusion**
SME support	Financing support for SMEs.	**Inclusive Growth**
Women entrepreneurs	Products for women-led firms.	**Gender Inclusion**
Financial literacy	Citizen financial education programs.	**Social ESG**
Rural banking	Services for remote regions.	**Financial Inclusion**
Young entrepreneurs	Finance for youth-led startups.	**Social Development**
Households	Retail banking customers.	**Consumer Banking**
SME	Small and medium enterprises.	**MSME Development**
Digital economy	ICT-driven economic model.	**National Digital Strategy**
Green economy	Low-carbon economic growth model.	**Green Transition**
Sustainable development	Balanced economic/social/environmental growth.	**SDGs**
SDGs	UN Sustainable Development Goals.	**Sustainability Agenda**
Paris Agreement	Global climate treaty shaping environmental policy.	**Climate Policy**
Climate policy	Rules addressing climate risks and green finance.	**Environmental Governance**
Green lending/loans	Loans supporting eco-friendly projects.	**Sustainable Finance**

Some observed documents were not available in English language, for this reason, authors have translated given keywords into Russian and Uzbek languages in order to insure consistency for systematic keyword search.

This a priori keyword dictionary served as the analytical basis for coding all selected documents. Each report was reviewed manually, and text segments corresponding to the predefined keywords were extracted, grouped, and compared across banks. This enabled the identification of (i) recurring patterns in digitalization and ESG practices, (ii) the alignment of banks’ strategies with national policy priorities, and (iii) differences in thematic emphasis across institutions.

The structured keyword approach ensured methodological rigor by reducing subjectivity, supporting inter-document comparability, and enhancing the reliability of the qualitative analysis. The results of this coding process formed the foundation for the thematic findings discussed in the subsequent section.

2.5 Research methodology

Downloaded bank reports, ESG reports and strategic documents were analyzed using document-based manual keyword coding. This approach is known as qualitative content analysis

method which was recommended in multiple studies for analyzing textual data when datasets are limited and primarily document-based which the exact case in our research context (Bengtsson, 2016; Assarroudi et al., 2018; Lyhne, 2025). In order to accomplish this task, we have developed list of the keywords derived from the literature, searched systematically for their appearance in the documents, recorded the frequencies of mentions and finally, grouped the excerpts into thematic categories in the table form. The manual coding technique aligns with recent guidance on enhanced manual data transcripts (de Jesus, 2024).

2.6 Limitations

The analysis is limited to publicly available documents and does not include interviews or confidential data. It cannot assess the actual impact of Digitalization or ESG practices on bank performance, and official narratives may be biased toward positive portrayal. These limitations will be acknowledged in the conclusion.

3. Results and discussion

The following table comprises systematic keyword analysis that was performed manually checking each source that were available online and had downloadable version.

Table 2. Systematic Manual Keyword Analysis of Banking, Regulatory, and National Strategy Documents

Bank	Keyword	Frequency	Sections	Example Extract	Theme Category	Interpretation
SQB	ESG, green finance, green loans, sustainable development, environmental and social risks, energy efficiency	Very frequent – ESG/green-related terms appear throughout dedicated ESG pages and the 2020 Annual Report.	Website sections 'ESG and sustainable development', 'Green Banking'; files 'Green loans from Uzpromstroybank' and 'Status and prospects of the ESG system implementation in SQB'; 2020 Annual Report (strategy, risk, lending portfolio).	The bank promotes finance for a sustainable future and highlights portfolios of green loans and energy-efficient projects for corporate and retail clients.	ESG integration and green banking leadership	**SQB positions itself as a national leader in green banking, embedding ESG policy, specialized green products and climate-related targets into its core business model.**
Agrobank	Green finance, green bonds, eligible green categories, renewable energy, energy efficiency, sustainable agriculture, ICMA Green Bond Principles	High – green finance terminology and taxonomy appear consistently across the Green Finance Framework.	Agrobank Green Finance Framework: sections on Use of Proceeds, Project Evaluation and Selection, Management of Proceeds, and Reporting.	The framework commits to financing projects that promote renewable energy, energy efficiency, green buildings and environmentally sustainable agriculture.	Green finance framework aligned with international standards	**Agrobank uses its Green Finance Framework to align lending and potential bond issuance with global green finance standards and to formalise its environmental objectives.**
Hamkorbank	ESG, sustainable development, environmental and social risk, environmental policy, sustainable finance, financial literacy, green	Moderate to high – ESG and environmental responsibility are emphasised on dedicated ESG and Environmental Policy pages.	Website sections 'ESG and sustainable development' and 'Environmental policy'; related text on risk management, corporate governance and community programmes.	The bank states its commitment to identifying, assessing and managing environmental and social risks in its own activities and in	ESG policy and environmental risk management	**Hamkorbank frames ESG mainly through risk management and responsibility to stakeholders, integrating environmental and social factors into**

	products			the projects it finances.		**credit processes and governance structures.**
Ipak Yuli Bank	ESG, financial reporting, annual report, digital banking, mobile app, shareholders and investors, transparency	Moderate – financial reporting and transparency terms are frequent; ESG appears as a separate topic; digital channels are mentioned via the mobile application.	Pages ‘Bank’s financial and annual reports’ and ESG section; Annual Report 2023 and quarterly reports for shareholders and investors; references to Ipak Yuli Mobile.	The bank regularly publishes quarterly and annual reports and promotes its mobile application as a convenient digital channel for customers.	Transparency, financial reporting and gradual ESG integration	**Ipak Yuli emphasises transparency and investor-oriented disclosure while gradually branding ESG and digital banking channels as part of its competitive value proposition.**
Government Document	**Keyword**	**Frequency**	**Sections**	**Example Extract**	**Theme Category**	**Interpretation**
CBU – Financial Stability Report 2023	Climate risks, ESG, green finance, financial stability, risk assessment	Moderate – ESG themes integrated into stability narrative	Sections on climate-related financial risks, green finance, sector analysis	Report highlights emerging climate-related risks and need for ESG-aligned supervision	Climate/ESG risk oversight	**Shows regulator shifting towards integrating ESG into prudential supervision**
CBU – Green Monetary Policy Paper	Green monetary policy, climate risk, green credit, sustainable finance	High – core content	Sections: policy rationale, instruments, implementation	Paper outlines how monetary tools can support green transition	Green macro-finance policy	**Demonstrates Uzbekistan exploring climate-aware monetary operations**
Digital Uzbekistan – 2030 Strategy	Digital economy, e-government, innovation, ICT, digital services	High – digital terms dominate	Sections on infrastructure, public services, digital transformation pillars	Strategy sets national digital priorities and infrastructure goals	Digital transformation policy	**Provides macro-policy environment driving bank digitalization**
UNDP – Digital Economy of Uzbekistan Study	Digital transformation, fintech, ICT, e-commerce, innovation	High – dense digital terminology	Chapters on digital infrastructure, financial sector digitalization, inclusion	Study analyses systemic digital gaps and opportunities	Digital economy diagnostics	**Informs context for banks’ digital strategies**
OECD – Financing Uzbekistan’s Green Transition	Green finance, climate investment, ESG, sustainable development	High – core focus	Sections on investment needs, green bonds, banking sector role	Report identifies investment gaps and role of banks in green transition	Green economy finance	**Provides external assessment of banks’ ESG readiness**
Integrated National Financing Strategy (UNDP)	Sustainable finance, SDGs, green finance, digitalization of finance	High – SDG and finance terms repeated	Chapters on financing architecture, green finance, digital payments	Strategy outlines how Uzbekistan will finance SDGs using sustainable finance tools	SDG financing framework	**Links national SDG targets with financial sector responsibilities**

The results of the systematic manual keyword search demonstrate clear thematic alignment across banks, regulators, and national strategies in Uzbekistan. Commercial banks – particularly SQB, Agrobank, Hamkorbank, and Ipak Yuli Bank – consistently reference ESG principles, green finance, and elements of digital transformation in their formal reports and

policy documents. Regulatory publications from the Central Bank similarly emphasize climate-related financial risks, green monetary policy tools, and the need for sustainable finance development. Broader government and international partner documents reinforce these themes by prioritizing digital transformation, sustainable development, and the expansion of green financing mechanisms.

Together, these findings confirm strong convergence between national policy objectives and banks’ strategic orientations, indicating an evolving ecosystem where ESG integration, digitalization, and green finance are becoming central pillars of Uzbekistan’s financial sector.

4. Conclusion

This paper has examined how Digitalization and ESG agendas are articulated in the Uzbek banking sector, based on a qualitative multiple – case approach and document analysis of bank, central bank and government publications. The analysis suggests that:

- Digitalization is central to banking sector modernization and financial inclusion policies;
- ESG and green finance agendas are emerging, with some banks ahead in adopting frameworks and publishing sustainability-related documents;
- The intersection of digitalization and ESG is present but still mostly implicit, with the potential for much stronger integration.

Given the constraints of publicly available information and the absence of a comprehensive ESG data set, the study remains exploratory. Nonetheless, it provides a structured basis for conceptualizing digitalization – ESG complementarities in an emerging economy and identifies avenues for deeper empirical research, including cross-country comparisons and mixed-methods designs.

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