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ESG DETERMINANTS IN BANK FINANCIAL MANAGEMENT AND CONTROLLING

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ABSTRACT

Banks select environmentally and socially safe projects for investment and lending. The ESG reporting system developed in the EU for the implementation of ESG standards can be applied in Ukraine and other countries, with an emphasis on the disclosure of credit and investment aspects. At the same time, achieving full standardization of information on the consideration of ESG components in the system of internal banking management and controlling remains a pressing issue. Therefore, this article is aimed at: creating a landscape of ESG factors with the allocation of a new concept of OperESG related to operational activities; analyzing four European banks that practice comprehensive disclosure of ESG information; and developing templates for aggregation of ESG indicators that can be useful for researchers, practitioners, and supervisory authorities, respectively. The results are presented in the context of the features of the application of ESG financial management and controlling tools. A matrix of the impact of ESG factors on the operational efficiency of banks is proposed for four segments of OperESG: direct environmental, indirect environmental, social, and managerial. Based on expert assessment, 27 components of OperESG were identified. Correlation analysis between ESG ratings and selected economic indicators – assets, profit before tax, return on assets and equity, and financial leverage – was conducted on a sample of 33 banks worldwide, the results of which may be useful for investors. A methodological approach to systematizing costs, forming eco-budgets, and developing a template for assessing key ESG performance indicators, as well as creating a single metric for plan/fact analysis in order to monitor the achievement of sustainable development goals by all economic agents, is proposed.

Keywords: banks, ESG factors, controlling, ESG management, eco-budgets, ESG rating

JEL Classification: G18, G21, G28

INTRODUCTION

Over the last decade, research into the impact of ESG factors on the efficiency of all types of business has become especially relevant. The scientometric database Google Scholar contains more than 720 thousand publications with the ESG component mentioned in the title. This is due to the growing relevance of issues related to the deterioration of environmental and social parameters, the introduction of new environmental standards, and the influence of ESG factors on the competitiveness of economic agents. This confirms the general trend toward the growing role of ESG factors, as changing public expectations and increased attention to the environmental and social responsibility of business begin to affect even the market value of companies. Under such conditions, long-term competitive advantages are formed primarily in companies that follow the principles of sustainable development.

Directive (EU) 2022/2464 of the European Parliament and of the Council regards corporate sustainability reporting, launching new standards for credit institutions in disclosing their ESG achievements. But there is no universal methodology to aggregate ESG indicators at the level of countries and regions. Research papers and regulations mostly focus on the ecological aspect in investment and lending activities, but not on internal processes, so-called ESG components in operational processes. There are different ESG rating approaches, but the transmission mechanism of how they impact economic indicators and the value of banks is not properly investigated. In addition, the best practice

of leading European banks in the management of ESG factors is very useful for financial institutions across the world. So, this paper aims to reveal these aspects of ESG management and propose the vectors of their solutions.

LITERATURE REVIEW

In most publications, researchers focus on considering ESG components in the credit and investment activities of financial institutions. At the same time, some important aspects of managing their operational activity remain insufficiently covered. Thus, Wang et al. (2025), using data on Chinese companies, proved that high ESG indicators positively affect operational efficiency (using data on A-share listed companies from 2011 to 2020 in China, we find that a good ESG performance has a significantly positive impact on FOE). At the same time, a number of authors identify a significant relationship between ESG ratings, the effectiveness of corporate ESG management, banks' systemic risk, and the financial resilience of the market itself (Ling et al., 2023; Albuquerque et al., 2019; Boubaker et al., 2020).

Galletta et al. (2023) and Aevoae et al. (2022) proved that a higher degree of consideration of ESG components in banking activity reduces operational risk. Studies of the Italian banking sector by Menicucci and Paolucci (2023) state that insufficient consideration of ESG factors negatively affects its operational and market efficiency, while reducing CO2 emissions and consumables has a positive effect on banks' financial indicators.

Based on empirical studies of bank cases in the Czech Republic, Hungary, Poland, and Slovakia, Lamanda and Tamasne Voki (2024) identified a significant dependence between the depth of ESG management disclosure and the volume of assets, as well as capital adequacy. Based on statistical analysis, Andries et al. (2023) proved that insufficient ESG disclosure negatively affects the cost of bank capital; the incorporation of ESG principles helps reduce the cost of resources, and for investors, environmental and social indicators are important for decision-making; only large banks from developed countries obtain substantial advantages from the implementation of effective ESG policies. Nobili et al. (2024) also confirm that banks with high ESG ratings can raise resources more cheaply through the issuance of their own bonds.

Cao et al. (2024) conducted a stochastic analysis of the impact of investments in the ESG component of banking business on its efficiency and the influence of information technologies on this relationship. Esteban-Sanchez et al. (2017) disagree with the view that investment in the social aspect does not lead to an increase in banking efficiency.

A thorough study in this area was conducted by Algeri et al. (2025), who proved that ESG indicators have a significant effect on reducing banks' costs; banks oriented toward ESG management are more efficient than others; however, linking managers' incentives to ESG factors negatively affects cost reduction.

A separate line of research concerns the creation of a data array on the ESG aspect of financial institutions' activity. Leoni et al. (2023) emphasize the need to create an integrated platform of the relevant database, which would generate a significant synergistic effect from its use in various situations. In view of the cited publications, it can be assumed that effective management of operational ESG factors of financial institutions - and not only their consideration in credit and investment activity - will positively affect financial stability and thus help reduce systemic risk. However, these studies do not make it possible to evaluate banks' activity in managing operational ESG factors comprehensively and in a unified way. This concerns, above all, the formation of unified aggregated data by country to assess the degree of penetration of the ESG component into the operational activity of banks and corporate business as a whole.

Ukrainian authors also play a significant role in researching the impact of the ESG component on business and development. Andrusiv et al. (2026), based on a detailed analysis of how ESG factors impact companies' financial performance, concluded that the environmental component of ESG contributes to reducing operational costs by 8-15% through the implementation of energy-efficient technologies and optimization of resource utilization. The social component ensures an increase in labor productivity by 12-18% through improved working conditions, employee development programs, and corporate culture formation.

Chaikovskyi et al. (2025) deeply studied green lending and concluded that environmentally sustainable finance and green lending are closely related, as both approaches are aimed at supporting sustainable development and reducing the negative impact on the environment.

Rohov et al. (2024) found that ESG factors are important determinants of strategic decisions by international banks, as banks with higher ESG indicators showed a greater tendency to curtail operations in markets with elevated geopolitical risks.

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Thus, the studies conducted are quite substantial, but they do not make it possible to fully evaluate banks' activity in managing operational ESG factors in a comprehensive and unified manner or to take them into account in bank financial management and controlling.

AIMS AND OBJECTIVES

The main hypothesis of the study is the assumption that managerial decisions based on the use of banks' environmental ratings affect the effectiveness of their operational activity and economic performance, in particular, assets, profit before tax, return on assets and equity, and financial leverage.

The aim of the study is to determine the role of ESG determinants in the system of bank financial management and controlling, as well as to investigate their influence on managerial decisions and the strategic development of banking institutions.

To achieve this aim, the following research objectives were defined:

1. To summarize theoretical approaches to interpreting ESG factors and to propose a matrix of their impact on banks' operational activity.
2. To analyze leading international practices of integrating ESG principles into bank activity, in particular into financial management and controlling processes.
3. To analyze the relationship between the performance indicators of the banks under study and their ESG ratings.
4. To formulate a conceptual approach to integrating ESG factors into the system of banks' financial management and controlling.

Solving these tasks will make it possible to comprehensively substantiate the role of ESG determinants in the system of bank financial management and controlling, as well as to determine their influence on timely managerial decision-making in banking activity.

METHODS

The study used general scientific and special methods of scientific inquiry. In particular:

- methods of analysis and synthesis were used to generalize theoretical approaches to defining ESG factors in banking activity;
- the comparative analysis method was used to study the practices of integrating ESG principles into bank activity;
- the systems approach was used to determine the role of ESG determinants in the system of bank financial management and controlling;
- the correlation analysis method was used to test the hypothesis about the existence of a correlation relationship between the selected economic performance indicators of the banks under study and their ESG ratings;
- the generalization method was used to formulate conceptual approaches to integrating ESG factors into the process of managing banking activity.

RESULTS

Analysis of the Landscape of ESG Components in Bank Activity

ESG components of the banking business should be positioned according to certain criteria and divided into three groups. The first includes active operations; for banks, these are lending, direct and portfolio investment, provision of guarantees, and others. The second group should include passive operations, primarily the issuance of green and social bonds. The object of our study is the third group - ESG factors related to banks' operational activity; we call them Operational ESG (OperESG). Analysis of their range has shown that they form a rather broad spectrum - from energy saving to volunteer assistance to communities and clients. Thus, they are not only connected with operational activity in the narrow sense but also fit into the broader context of implementing an ESG strategy. In our opinion, at least four large OperESG segments should be distinguished, which in turn can be structured and presented in the form of a matrix (Figure 1).

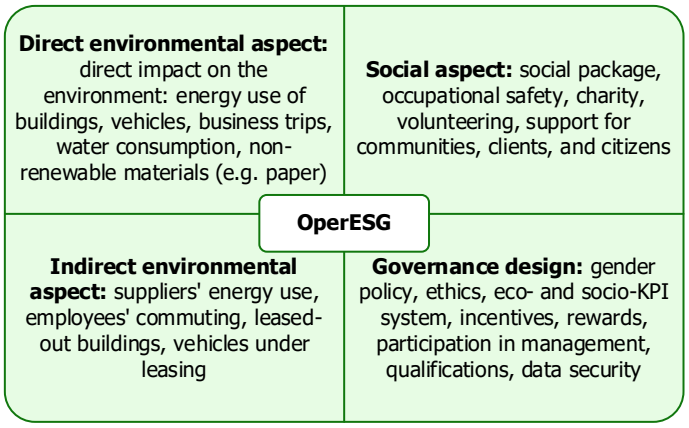

Figure 1. Matrix of the impact of ESG factors on banks' operational activity.

The proposed matrix of the impact of ESG factors on banks' operational activity (hereinafter abbreviated as OperESG), presented in Figure 1, is relevant not only for banks but can also be used for other forms of business with appropriate adaptation to their specifics. The broad spectrum of operational ESG factors, especially in financial institutions, indicates the need to structure them and to quantify the costs of taking them into account. When building the matrix, it was considered that for certain ESG factors, it is possible to determine their impact on costs, in particular: the social package (insurance, health improvement, one-time payments); occupational safety and protection; comfort for clients; and charity. ESG factors that influence bank efficiency include building heating, fuel for cars and generators; electricity, energy, and water consumption; the use of paper and other materials from renewable and non-renewable sources; the introduction of energy-saving technologies; business trips; client loyalty; outsourcing and outstaffing; the incentive and remuneration system; and changes in bank architecture.

At the same time, it is advisable to assess the impact of ESG factors on costs and to provide their qualitative characteristics for the following list: employees' private cars, commuting to and from work, suppliers' emissions, moral encouragement (certificates, acknowledgements, gifts), personal data protection and cybersecurity, financial monitoring and internal control, training and staff development, the share of women, and their salaries relative to men's salaries.

It should be emphasized that there are ESG factors for which only a qualitative assessment can be provided. These include territory pollution, volunteering, community and societal perception, compliance with anti-corruption rules, the level of corporate culture and employee loyalty, transparency of activity, and completeness of reporting. Based on an expert assessment by a group of specialists using a survey method, 27 OperESG components were generalized and systematized, although practice confirms that their number may be higher. At the same time, for certain factors, different types of assessment may be provided depending on the defined criteria and the situation. For example, a change in the organizational structure may or may not require costs. In some cases, it is possible to calculate the effect, for example, by combining divisions or relocating with the release of premises and their sale or lease. At the same time, situations are possible where certain changes in bank activity do not require costs, and it is impossible to calculate the effectiveness of their implementation reliably. This concerns, for example, the drafting of new rules and regulations, including those on ESG risk management, which may theoretically help reduce risks and increase the efficiency of banking activity, but are very difficult to quantify.

Analysis of the Activity Cases of Leading European Banks

The selected focus group for the study of OperESG includes HSBC (UK), BNP Paribas (France), Deutsche Bank (Germany), and PKO Bank Polski.

The HSBC (UK) report is largely devoted to the environmental aspect of lending operations, as well as fragmentary information on internal ESG factors and their impact on its activity (HSBC, 2024).

The bank has set an ambitious target of reducing CO2 emissions in its operational activity to net zero by 2030. To achieve this, it plans to implement a set of measures, including reducing energy consumption and greenhouse gas emissions from employees' business travel compared with the previous year; expanding cooperation with suppliers to reduce their emissions within the developed decarbonization strategy; using natural resources in building retrofitting; minimizing expenditures on paper and other materials and recycling waste; and reducing the use of other resources, especially water.

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The social aspect of the bank's activity in its reporting is considered in three dimensions: employees, clients, and local communities. The bank aims to increase the share of women in top management, raise the Inclusion Index and employees' qualifications (Level of employee satisfaction with pay and working conditions), maintain a high level of gender equality, and pay significant attention to the motivation system. Among the positive features of the bank's activity are the introduction of a Pay and Benefits review, the establishment of close relations with clients on the principles of inclusion and stability, and support for local communities in such areas as charity, volunteering, and financial literacy of the population.

Systematized data on the governance aspect in the bank's reporting are presented in Table 1.

Table 1. Governance aspect of bank activity (using HSBC as an example). *(Source: compiled by the authors based on HSBC (2024, p. 87))*

Area, sub-areas	Essence	Goals
Management standards	ESG management	Further development of the ESG aspect management
Human rights protection	Respect for human rights	Prevention of rights violations resulting from the activities of the bank and its partners
Consumers	Meeting consumer needs	Although the bank is in the top 3 in 58% of markets, it continues to strengthen its positions
	How it responds to consumer complaints	The bank is open to complaints
Integrity, communication, openness	Maintaining system reliability	Fighting financial crimes, including those affecting clients and communities
	Whistleblowing system	An international channel enables employees and clients to raise issues with management
	Responsible taxes	Pays fair taxes in all jurisdictions
	Responsible products	Services correspond to the regions of operation
	Approaches to suppliers	Their compliance with risk requirements and resilience assessment
Data security	Privacy	Data protection in accordance with the legal requirements of each country
	Cybersecurity	Investments in processes for detecting and preventing cyber risks

For each area, the report provides either target KPIs, actual numerical data, or a description of activity. The reporting also contains information on customer complaints in the Wealth and Personal Banking segment. Thus, for all OperESG components, the bank discloses quantitative indicators or provides a qualitative description.

The BNP Paribas financial group (France) develops various business lines and has dozens of sustainability reports, which somewhat complicates an overall assessment. For the study of internal ESG factor management, the Group's Integrated Report was selected (BNP Paribas, 2024a). In the context of this study, the Corporate Social Responsibility matrix deserves attention (see more in Workable, 2024), whose value lies in the fact that it provides, in a consolidated and structured form, quantitative indicators of target KPIs and the actual level of their achievement across different areas of the Group's activities (Table 2).

Table 2. Corporate social responsibility policy dashboard of the bank (using BNP Paribas as an example). *(Source: BNP Paribas, 2024a, p. 32)*

Indicator	Actual	Target for next year
1. Environmental responsibility		
▪ Volume of sustainable loans	EUR 117 bn	EUR 150 bn
▪ Volume of sustainable bonds	EUR 67 bn	EUR 200 bn
▪ Volume of assets under management classified as Article 8 or 9 under the SFDR	EUR 254 bn	EUR 300 bn
2. Social responsibility		
▪ Share of women in top management	37.1%	40%
▪ Hours of employees' charitable work over 2 years	1,268,515	1 million
▪ Share of employees who completed at least 4 courses per year	98.2%	90%
3. Civic responsibility		
▪ Number of service recipients within financial inclusion	3.9 million	6 million
4. Responsibility for the environment		
▪ Volume of client investments for the low-carbon transition	EUR 104 bn	EUR 200 bn
▪ Volume of financing for the protection of terrestrial and aquatic fauna and flora	EUR 4.3 bn	EUR 4 bn
▪ Greenhouse gas emissions (CO2e) per 1 full-time equivalent employee	1.56 t CO2e/FTE	1.85 t CO2e/FTE

Considerable attention in the report is devoted to financing environmental projects, in particular the BNP Paribas Mobility program, which provides education and assistance to clients in the transition to clean business technologies. In our opinion, this program should be classified as an internal determinant of ESG factor management. In cooperation with stakeholders, the bank developed a matrix defining its priorities: critical (data confidentiality and security, climate change and new energy, ethics and compliance with legislation, human rights, responsible investment and finance, business continuity), major, and important. It is worth noting that the substantive content of the ESG factor management determinant at BNP Paribas is also reflected in the Group's annual financial report (BNP Paribas, 2024b). In our opinion, the key advantages of the information content of this determinant include:

- the separation in the bank's organizational structure of an Engagement Department, whose function is to manage both external and internal ESG factors, allowing the Group to monitor them continuously and respond in a timely manner to identified negative challenges;
- the implementation of ethics of the highest standards (the so-called Standard 2), which includes a Code of Conduct translated into 20 languages, a whistleblowing system for any violations, anti-corruption measures, anti-money-laundering measures, counter-terrorism measures, tax compliance, customer satisfaction monitoring, and others;
- the calibration of the bank's suppliers by the level of ESG factors;
- the collection and processing of statistical data on employee absence due to illness, the number of incidents related to illness, and the number of people with disabilities;
- the disclosure of data on staff development, the incentive system, and the increase in educational level;
- the presentation of indicators of the Group's impact on the environment.

In addition, the report contains much other numerical information on the management of internal ESG factors. It should be noted that the bank actively develops the digitalization of services in the field of microcrediting for personal business, makes substantial charitable and philanthropic contributions, and organizes exhibitions and other cultural events, which helps improve its image among clients.

In the context of this study, the key provisions of Deutsche Bank's non-financial reporting (Deutsche Bank, 2024) are as follows.

The positions of Chief Sustainability Officer (reporting to the Chair of the Management Board) and ESG heads for the Americas and Asia regions have been introduced. An ESG advisory body has been created. Target indicators (KPIs) in the area of business greening are set in three areas - capital expenditures and operating expenditures - according to which the share of businesses complying with the requirements of Article 8 of the Taxonomy is determined. The bank pays substantial attention to cybersecurity, AI, business digitalization, sustainable technological development, and the creation of a green IT infrastructure based on acquiring technologies from environmentally friendly suppliers. A 24-hour Innovation Hackathon has been created for exchanging ideas and expanding knowledge. Personnel management is assessed using quantitative and qualitative parameters. In particular, personnel statistics are provided by age groups and regions, as well as the share of youth hired; indicators of return on investment in human capital are calculated (defined by profit growth outpacing growth in employee income), and average costs per employee are measured, taking into account suppliers and related expenses. A special personnel development program, the Acceleration Development Program, has been introduced; its idea is to calibrate and prepare proactive employees for managerial work. The bank calculates a Culture Pulse Index demonstrating the degree of employee satisfaction with communication with management, the motivation system, and other parameters of its activity. The share of women at all levels of bank management, the personnel structure by race, and the share of employees with disabilities are determined. Thus, the bank discloses quantitative and qualitative parameters of the OperESG component, which may indicate significant achievements in this area.

The reporting of PKO Bank Polski highlights the following key components of ESG management:

1. Ensuring the security of clients and their funds (financial and physical security of clients, security of IT systems, incident management, information protection). A system has been implemented that prevents fraud against clients through phishing websites and call centers.
2. Taking anti-corruption measures based on relevant internal documents. All employees undergo training and have the right to report cases of corruption to the compliance unit openly or anonymously.
3. Calculating the volume of greenhouse gas emissions of its borrowers and their partners, as well as taking measures to reduce them. An ESG Sustainability Department has been created with a focus on minimizing ESG risks.

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4. Following European standards and the internal Code of Ethics, with human values and uniform ethical standards placed at the forefront. As a result, there was not a single significant incident in this area.
5. Implementing social measures: social products and initiatives, support for education, savings, the development of small enterprises, and financial inclusion. Eco-volunteering should also be noted - a nationwide movement throughout the country - as well as permanent monitoring of clients' satisfaction with the bank's services.
6. The creation of two green funds - PKO Global Ecology and Social Responsibility and PKO Global Bond - focused on investing in environmental projects. According to the NFRD standard, a key indicator for the bank is the share of green assets in total assets (Green Asset Ratio, GAR).
7. The development and implementation of a questionnaire for suppliers regarding their compliance with ESG principles.
8. Accounting for its energy consumption expenditures.
9. Providing detailed information on the share of employees aged 30 to 50, staff turnover, the average salary of women, and the bonus system, which includes both rewards for KPI achievement and individual accomplishments.

Thus, the bank clearly structures nine key components of ESG management and provides an appropriate description of them.

Empirical Study of the Impact of the ESG Component on Banks' Economic Indicators

To determine the relationship between the ESG components of bank activity and banks' economic performance indicators, data from the rating company Sustainalytics, which provides socio-environmental ratings for 1,037 banks worldwide, and from The Banker magazine, which presents certain economic indicators of bank activity, were used. Using the latter, the 100 most digitalized banks in the world and 100 African banks were analyzed. Only 2 banks from the first group and 8 from the second had Sustainalytics ratings. To form a representative statistical sample, data on the 20 largest banks in the world, all of which had environmental ratings, and 3 Australian banks were added. As a result, a data set of 33 banks was formed, including 6 banks from the USA, 3 banks from Australia, 8 banks from Africa, 7 banks from China, 6 banks from Europe, and 3 banks from Japan. At the first stage of the study, the average (Simple arithmetic mean) rating for each of these groups of banks was calculated, and it was found that banks from Japan and Europe have the best average ratings (the lower the score, the lower the level of socio-environmental risk of the respective financial institution). The results are presented in Figure 2.

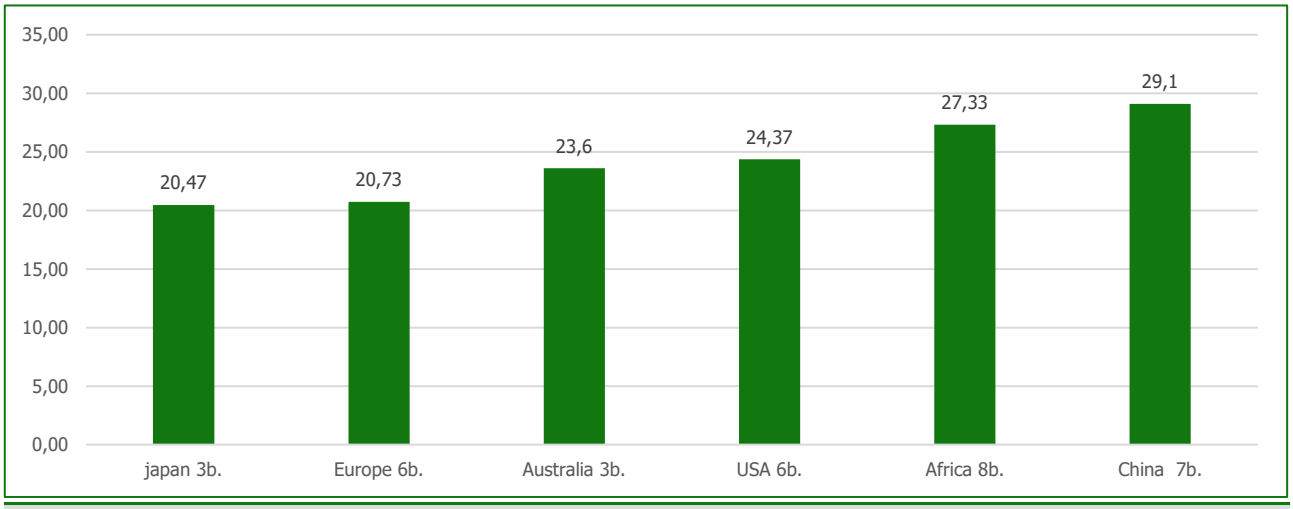

Figure 2. Average ESG rating score of the corresponding groups of banks. *(Source: compiled based on Sustainalytics (2025) and The Banker (2025))*

The high rating of European banks is confirmed by Sustainalytics data, where the top ten banks with the highest ratings consist exclusively of European banks, and the list of 1,037 banks worldwide is headed by the Italian Cassa Depositi e Prestiti SpA (Sustainalytics, 2025).

The study analyzed the correlation between environmental ratings and the financial performance indicators of the banks under study (changes in asset volumes, profit before tax, Tier 1 capital, return on assets and equity, and leverage relative to the previous year). The results are presented in Table 3.

Table 3. Correlation Coefficients between environmental rating and economic indicators of the banks under study. *(Source: compiled based on Sustainalytics (2025) and The Banker (2025)).*

Indicators	Assets	Profit before tax	Tier 1 capital	ROA	ROE	Leverage / Capital to assets
Rating, score	0.066	0.188	-0.064	0.357	0.231	0.396
Rating, rank among banks	0.064	0.162	-0.068	0.351	0.214	0.411

The analysis revealed only a weak correlation between the level of leverage and rating scores. A positive correlation coefficient means that the higher the capital-to-assets ratio was, the worse the bank's socio-environmental rating was. This means that the larger the share of assets formed from clients' funds rather than its own capital, the more the bank's management cares about maintaining a positive image as an environmentally and socially friendly financial institution. However, this conclusion requires additional research.

Directions for Improving OperESG Management

Based on the above analysis, the following unresolved issues can be identified:

1. The structure and content of non-financial reports of different banks are not identical because of the use of different approaches.
2. There is no universal metric or template for diagnosing ESG factors, which complicates comparative analysis and the evaluation of results.
3. Different ESG KPIs are used in bank activity.
4. No approach has been developed for planning the financial results of banks' ESG activity and reflecting their actual values in the balance sheet and the profit and loss statement.

The implementation of ESG factors in banks' operating model is accompanied by setting goals, establishing a process for planning income and expenses (budget formation) by ESG area, evaluating the profitability of ESG investments, and calculating the impact of ESG factors on risks, profitability, cost of capital, and so on. The paper proposes that banks should form special eco-budgets of income and expenses according to the following generalized structure:

1. The revenue side includes planning income from lending and from providing various eco-oriented financial services. Revenue planning should begin with identifying the sources of such income, which include green loans aimed at financing environmentally clean production and ESG investment products. In addition, banks may receive fee income from the services of their ESG funds.
2. The expenditure side of the bank's budget should include the amount of funds directed to:
   - environmental initiatives (reducing carbon emissions, modernizing heating and lighting systems, implementing recycling and disposal programs, creating ESG funds, etc.);
   - social initiatives (training, improving working conditions and employee health, financial support for local communities, organizing charitable events, initiatives to increase the diversity of recruitment, etc.);
   - corporate governance (developing or purchasing software for collecting and diagnosing ESG information, conducting a special advertising campaign, implementing digital document management and convenient digital client services, developing methodologies for calculating ESG key performance indicators and formats for internal management reporting, etc.).

When implementing the most significant eco-initiatives, it is advisable to create separate budgets and to discuss them collegially within banks. The formats of bank ESG budgets should be universal. The formation of such budgets and their regular monitoring will facilitate grounded managerial decisions aimed at improving the effectiveness of banks' ESG initiatives.

It is important to take ESG components into account in banks' balance sheets and profit and loss statements. This will reflect how environmentally and socially friendly they are. Based on the analysis of the cases of the above-mentioned foreign banks, the indicators most often found in their sustainability reports are wages, capital, and operating expenses, vehicle maintenance costs, electricity, water consumption, heating, paper, and others (investments in green technologies). In view of this, a template for administrative expenses and investments in green technologies adjusted to ESG factors is

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proposed under the author's title AdESG, in which both the planned level (KPI) and the actual result are reflected for financial controlling purposes (Table 4).

Table 4. Recommended AdESG template for financial controlling.

Indicators	KPI (plan)	KPI (actual)	KPI (previous year)
Wages			
Consumption			
Vehicles			
Other admin expenses and CAPEX			
Total			
Investments in green technologies			

Each of the indicators specified in Table 4 can be detailed depending on the bank management's information needs for making appropriate decisions. In our opinion, for example, wages in a bank may be specified per employee, per woman employee, or for the top 10 managers; consumption may be specified for paper, water, electricity, including renewable sources, gasoline for vehicle servicing, gas and other heating resources; and vehicles may be specified by quantity including electric cars, CO2 emissions, and the percentage of employees using environmentally friendly cars.

The unification of plans and reports on administrative and capital expenditures in the light of ESG components creates a basis for identifying bottlenecks. In this context, it should be noted that banks should establish a materiality threshold for deviations of actual values from planned values; exceeding this threshold should become the subject of review by the relevant committee of the Supervisory Board and/or Management Board, as well as of decisions aimed at clarifying the sustainable development strategy. In our opinion, when calculating the corporate income tax base, it would be appropriate to reduce it by the amount of capital expenditures on green banks' business. This would accelerate the payback of such investments and increase banks' interest in implementing them.

In our opinion, it is advisable to introduce a unified metric for evaluating the effectiveness of managing external and internal ESG factors in bank activity, which could also be adapted to non-financial institutions. Different indicators should be segmented for 3 groups: Environmental, Social, and Governance. The environmental aspect of banks' activity may be characterized by such indicators as the green asset ratio (GAR), the share of green loans in new lending, the volume of CO2 emissions, and the share of green energy in total energy consumption (GE). The social block may be represented by such indicators as the share of sick-leave hours in employees' time fund, the number of hours of charitable work per employee (CA), social expenditure per employee (SEPY), and others. The governance aspect may include such indicators as the share of women in top management (SW), the share of customer complaints in their total number (CC), and the level of employee satisfaction with working conditions and payment. As an example, we took 2 indicators for each group, put the weight in the total KPI (total for each group should be 1, and total for 3 groups should be 1). We put the weight on our own decision. In practice, we suggest collecting experts' opinions about the weight (importance) of each indicator and group as a whole and calculating the average level. A version of such a template with a conditional example is presented in Table 5.

Table 5. Template for evaluating ESG KPIs.

Indicator	Strategic goal, e.g., 2030	Current year plan	Weight in total KPI	Actual	Actual/plan*weight, %	Previous year actual	Dynamic vs previous year, %
1	*2*	*3*	*4*	*5*	*6=5/3·4 (except CC)*	*7*	*8=5/7 (except CC)*
I. Environmental aspect	-	-	0.4	-	108.5=90.7+17.8	-	104.7=107.1·0.8+95.2·0.2
GAR	20%	15%	0.8	17%	90.7	14%	107.1
GE	50%	45%	0.2	40%	17.8	42%	95.2
II. Social aspect	-	-	0.3	-	94.1	-	100.4
CA	20 hours	17 hours	0.5	15 hours	44.1	17 hours	88.2
SEPY	1 kusd	0.9 kusd	0.5	0.9 kusd	50	0.8 kusd	112.5
III. Governance aspect	-	-	0.3	-	80.9	-	90.8
SW	50%	47%	0.4	48%	40.9	47%	102.1
CC	1%	2%	0.6	3%	40	2.5%	83.3
TOTAL	-	-	1	-	108.5·0.4+94.10.3+ 80.9·0.3=95.9	-	104.7·0.4+100.4·0.3+ 90.8·0.3=99.2

Taking into account the weights of the indicators according to their importance, it is possible to calculate the dynamics of each of the three aspects, as well as ESG overall. The model makes it possible to establish not only quantitative but also qualitative characteristics, for example, to develop a new AI platform for assessing ESG risks in financial operations or new indicators for checking ESG factors in budgeting. ESG KPIs should include mandatory indicators (reflected identically by all banks) and optional indicators (defined independently by banks). Based on universal ESG KPI indicators, it is possible to calculate the level of their achievement across banking groups, countries, and regions.

The formation of a single ESG KPI system for banks and other financial institutions opens the way to comparing their contribution to sustainable development, makes it possible to identify bottlenecks, develop new strategies, and, most importantly, form a system of incentives for achieving target ESG indicators. In the future, it would be advisable to unify the reporting of financial and non-financial institutions, as well as public authorities, which would make it possible to determine goals and the level of their achievement by industry, country, and region.

DISCUSSION

Many authors (Sachs et al.,2019; Chaikovskyi et al.,2025) tackle sustainable finance with green lending and green investments, putting the priority of research on loans and investments to ecology-friendly and transition to green technology projects. This is due to the major importance of the European Green Deal (Commission, 2019). But the issue should be investigated and resolved more widely, putting more attention to the social and government components and the so-called OperESG element, which focuses on the complex transition of all activities of financial institutions to environmentally and socially friendly technologies, such as green energy, utilities consumption, local communities' development, and others.

Our results do not fully corroborate the Ling et al. (2023), Albuquerque et al. (2019), Boubaker et al. (2020), and Algeri et al. (2025) conclusions that ESG factors significantly impact companies` value, reduction of operational costs, revenue growth, and radically improve their economic indicators. Maybe their conclusions are more appropriate to European companies, but for the 33 analyzed banks around the world, we did not find a strong correlation between ecology rating and the level of the set of financial indicators.

Directive (EU) 2022/2464 launched the general principles of ESG results reporting, which also concern financial institutions. But it does not install any templates with universal indicators and methodology that allow aggregate data on the banking system level, country level, and provide plan/fact analyses. Analyses of the cases mentioned in this article extracted the most regular indicators, such as green assets and green assets turnover ratios. Other indicators are very deep in the bank. So, we suggest extracting several main indicators in each of the ESG components and identifying them as ESG KPI, calculating them on a universal methodology basis, and proposing a solution for how to consolidate them in order to estimate the integrated level of the ESG management results on the bank, banking system, and other levels. This issue needs further research.

The results of our research and conclusions are limited by the dataset of 4 European and 33 banks in different countries around the world.

CONCLUSIONS

Based on the empirical analysis of the performance indicators of 33 banks from different countries, it was not possible to establish a close relationship between their environmental ratings and economic indicators and, accordingly, to confirm the hypothesis put forward in the introduction. Meanwhile, it is worth noting that the top ten banks with the highest ratings in the sample are exclusively European banks, which indicates their high level of ESG management. The research objective to summarize theoretical approaches to interpreting ESG factors and to propose a matrix of their impact on banks' operational activity was realized by considering ESG factors in banks' activity in three key areas: active and passive operations, and in the organization of internal operational activity. The proposed matrix of the impact of ESG factors on banks' operational activity (OperESG), presented in Figure 1, which generalizes 27 components, could be applied not only to banks but also to other types of business with necessary adaptation.

The second object to analyze, leading international practices of integrating ESG principles into bank activity, was realized by the analysis of the non-financial reporting of four leading European banks. It shows a comprehensive approach of these banks to ESG management practice, but also confirms the need for further unification of approaches to planning and plan/actual analysis of ESG components of bank activity.

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The third object is related to the main hypothesis of this paper. Analyses of dependence of 33 banks` economic indicators from different countries, published in The Banker magazine, and their ecology ratings published in the Sustainanalytics portal, reveal that only a weak relationship can be traced between environmental ratings and the share of attracted funds in banks' resources, which may indicate their support for an environmentally friendly image in order to attract clients. An in-depth analysis of this issue needs more statistical data.

To gain the next objective, it is proposed to form unified statistical reporting on banks' operational activity in the context of financial management and controlling at the level of countries' banking systems and even regions. It is suggested to distinguish in balance sheets and profit and loss statements the items associated with ESG components. This applies especially to administrative and capital expenditures. A metric is proposed for distinguishing, within operating (OPEX) and capital (CAPEX) expenditures, those components directly related to the implementation of ESG components. This will allow comparative and dynamic analysis, identification of bottlenecks, and development of more effective strategies in this area.

The obtained results will contribute to shaping conceptual approaches to integrating ESG factors into the bank management system, which will further improve its efficiency, transparency, and orientation of managerial decisions and the strategic development of banking institutions toward the principles of sustainable development.

The paper confirms that ESG components require further identification and additional research. They are still insufficiently structured; in particular, there is a lack of universal methods for calculating efficiency and payback periods of investments in the development of operational ESG components, and there is a need to determine uniform ESG KPIs according to a single methodology for calculating their fulfillment, with the possibility of aggregation at the level of groups of banks and banking systems. The corporate sector as a whole face the same tasks.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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ESG-ДЕТЕРМІНАНТИ У ФІНАНСОВОМУ МЕНЕДЖМЕНТІ Й КОНТРОЛІНГУ БАНКУ

Банки здійснюють відбір екологічно й соціально безпечних проєктів для інвестування та кредитування. Система звітності ESG, розроблена в ЄС для впровадження стандартів ESG, може бути застосована в Україні та інших країнах із акцентом на розкриття кредитного та інвестиційного аспектів. Водночас досягнення повної стандартизації інфо-

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рмації щодо врахування компонентів ESG у системі внутрішнього банківського управління та контролінгу залишається актуальним питанням. Тому це дослідження спрямоване на: створення ландшафту ESG-факторів із виділенням нового поняття OperESG, пов'язаного з операційною діяльністю; аналіз чотирьох європейських банків, що практикують комплексне розкриття інформації ESG, розробку шаблонів агрегації показників ESG, які можуть бути корисними відповідно для дослідників, практиків і наглядових органів. Результати представлені в контексті особливостей застосування інструментів фінансового управління та контролінгу ESG. Запропоновано матрицю впливу факторів ESG на операційну ефективність банків за чотирма сегментами OperESG: прямий екологічний, непрямий екологічний, соціальний та управлінський. На основі експертної оцінки було визначено 27 компонентів OperESG. Кореляційний аналіз між рейтингами ESG та вибраними економічними показниками – активами, прибутком до оподаткування, рентабельністю активів і власного капіталу, а також фінансовим левериджем – було проведено на вибірці з 33 банків світу; його результати можуть бути корисні для інвесторів. Запропоновано методологічний підхід до систематизації витрат, формування екобюджетів і розробки шаблону для оцінки ключових показників ефективності ESG, а також створення єдиної метрики для аналізу план / факт із метою моніторингу досягнення цілей сталого розвитку всіма економічними агентами.

Ключові слова: банки, ESG-чинники, контролінг, менеджмент ESG, екобюджети, ESG-рейтинг

JEL Класифікація: G18, G21, G28