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ESG Performance, Returnee CEOs and Bank Efficiency: Evidence from MENA Banks

Zeineb Ghazouani, Naima Lassoued, Imen Khanchel and Haifa Barouni

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Abstract

This study examines the effect of ESG performance on bank efficiency and whether this relationship is moderated by CEO returnee. Based on sample of 100 banks from MENA Countries observed from 2010 to 2022, the results indicate that ESG performance ESG has a significant negative impact on banking efficiency. These findings suggest that ESG decreases bank efficiency. Furthermore, we analyzed the moderating effect of CEO returnees on the relationship between ESG and bank efficiency. The results show that CEOs with foreign experience and education positively moderate this relationship, thereby contributing to the improvement of bank efficiency.

1. Introduction

The concept of Corporate Social Responsibility (CSR) has garnered considerable global attention, as economic growth has often been accompanied by social issues such as increasing inequalities, cultural conflicts, and environmental degradation. Aware of these challenges, the United Nations officially launched the "Global Compact" initiative in 2000, encouraging businesses to actively engage in social responsibility, particularly in the areas of human rights, labor standards, and environmental protection.

As a key pillar of the financial sector, banking plays a crucial role in sustainable development, (Ersoy et al..,2022). Thus, ESG criteria have become essential elements for assessing the sustainability and social impact of banks, particularly in the Middle East and North Africa (MENA) region. The region's economic and cultural diversity presents specific challenges while offering unique opportunities to integrate ESG criteria into the banking sector.

Over the past decade, corporate social responsibility initiatives have also increased in the MENA region. For example, the creation of new CSR professional networks has helped raise awareness of the concept. One such network is 'CSR Middle East,' founded by Mehmet Gul, a non-profit online professional platform where businesses, civil society groups, agencies, and organizations exchange ideas about their corporate social responsibility initiatives. Additionally, the network includes 1,285 member companies from 18 countries in the MENA region.

Despite the growing awareness of the importance of sustainable and responsible investment by investors and authorities, the MENA region has made significant progress in several areas of ESG performance. However, many complex obstacles remain to be overcome. Countries in the MENA region face persistent issues such as water scarcity, desertification, and air pollution, which are significant environmental challenges.In addition to societal issues, the MENA region is heavily impacted by problems of underemployment and high, dysfunctional unemployment rates. Similarly, the region faces major governance challenges, including political instability, high levels of corruption, and institutional weaknesses.

Some analyses have been conducted on the sustainability indicators available on the World Bank website.Firstly, regarding environmental criteria, some countries are committed to energy development and diversifying their energy resources. Tunisia has the highest percentage of energy consumption at 12.88%, making significant progress towards energy independence. It is followed by Jordan and Morocco, with rates of 11.04% and 10.92%, respectively, while Egypt, Lebanon, and Iraq recorded relatively lower rates of 6.51%, 6.71%, and 1.08%,

respectively. Other countries in the region reported rates below 1%. These figures are notably low, especially considering that Kuwait has large oil reserves but has not developed its energy resources.Regarding CO2 emissions, Qatar has the highest rate at 31.727, followed by Bahrain, Kuwait, the United Arab Emirates, and Oman, all of which have high CO2 emissions. This may pose significant challenges related to climate change. For other countries such as Tunisia, Jordan, Lebanon, Morocco, and Iraq, the respective emission rates are relatively low at 2.409%, 1.919%, 3.792%, and 1.819%. These countries are in the process of reducing their CO2 emissions through efforts to mitigate fossil fuel use and deforestation.

For the social criterion, Jordan has the highest unemployment rate at 19.21%, followed by Tunisia with a rate of 18.629%. Similarly, Iraq, Lebanon, and Morocco also have high rates. This indicates that a significant portion of the active population is unemployed and seeking jobs. In some countries, due to their economic stability, job opportunities are crucial for most of the population. In contrast, other countries, such as Qatar (0.14%), Bahrain (1.786%), and Oman (2.94%), have low unemployment rates. This low unemployment could be attributed to the resilience and economic stability of these countries.

Finally, several countries have significant corruption control rates. Among them, Iraq has the highest level of corruption at -1.334%, followed by Egypt at -0.811%, Morocco at -0.412%, Lebanon at -1.179%, Tunisia at -0.1167%, and Bahrain at -0.093%. These negative rates indicate that these countries have a high level of corruption. In contrast, other countries with positive corruption control rates indicate lower levels of corruption, greater transparency, and a stronger perception of governance. This can help strengthen the confidence of both foreign and domestic investors, encouraging investment and supporting economic development.

The impact of ESG on corporate efficiency is a relatively new topic in empirical finance. Previous studies primarily focus on the effect of ESG on corporate performance, but the literature on ESG and banking efficiency is still very limited (Tasnia, Alhabshi& Rosman, 2021). For this reason, we are motivated to undertake this research, and this paper aims to examine the impact of ESG performance on banking cost efficiency and to determine whether the CEO's foreign experience and education moderate this relationship.

Using a sample of 100 banks from MENA countries observed over the period 2010–2022, our empirical analysis reveals a significant negative effect of ESG performance on banking cost efficiency. Furthermore, it provides evidence of the moderating influence of returnee CEOs on this relationship.

This paper contributes to literature in sever always. First, it complements the growing body of research examining the effects of ESG criteria on performance, credit risk, and bank value (Al-

Hiyari, 2022; Mahboub et al., 2022; Shakil, M., 2019; Alam et al., 2022; Elidrisy, 2024; Chang et al., 2021).

To the best of our knowledge, the effect of ESG performance on banking efficiency in the MENA region has not yet been studied. This research sheds light on the impact of ESG criteria on banking efficiency within the MENA region.

Secondly, this study enriches the literature by analyzing whether CEO returnee (acquired experience or education abroad) strengthens or weakens the relationship between ESG performance and banking efficiency. It specifically explores the extent to which these CEOs, returning to their home countries and integrating CSR practices into their strategies, can influence banking cost efficiency.

The remainder of this paper is structured as follows: Section 2 discusses the theoretical framework and develops the hypotheses. Section 3 outlines the empirical approach. Section 4 presents and discusses the results. Finally, Section 5 concludes.

2- THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

2.1 ESG Performance and banks efficiency

Theoretically, two theories may explain the effect of ESG performance on banks efficiency. According to stakeholder theory, companies seek to align the interests of stakeholders (Evan and Freeman, 1988), as it posits that the overall value and performance of an organization can be determined by the company's actions in relation to the preferences and interests of its stakeholders (Freeman, 1984).

Furthermore, Freeman (1984) found a positive relationship between corporate social performance and organizational financial performance, as the goals, interests, and expectations of the organization are aligned with those of the stakeholders, thereby reducing agency conflicts. However, improving the conditions surrounding a company's internal stakeholders can significantly impact their loyalty and productivity, leading to better financial performance (Huselid, 1995; Frank &Obloj, 2014). Thus, Companies with better environmental performance generally provide comprehensive and detailed information, which enables them to better meet stakeholders' expectations, increase trust in the company and reduce financing costs.

Regarding banks, stakeholder theory suggests that strong corporate social responsibility (CSR) capabilities should have a positive effect on efficiency by reducing input costs, such as lower deposit rates (Wu & Shen, 2013), improving input utilization, such as better human capital

management, and increasing output through higher fees charged to customers (Wu & Shen, 2013), as well as higher loan interest from customers (Kim et al., 2005).

Then, the legitimacy theory occupies a prominent place in research on ESG and corporate social responsibility. Companies protect their legitimacy by voluntarily sharing environmental, social, and corporate governance data. As Deegan et al. (2000) pointed out, stakeholders have the right to know the environmental consequences of the company's activities at any time, and not only when management is forced to act in response to events that threaten the company's legitimacy. Furthermore, stakeholders demand that banks comply with social and environmental standards, maintain strong corporate governance, and consider ESG risks in their operations and investments. Failure to meet these expectations may cause banks to lose stakeholder legitimacy. This negatively impacts their risk of default, as stakeholders may withdraw their support and funding, leading to a decline in revenues and increased financing costs.

The question of the influence of ESG on the efficiency of banks is relatively recent in the banking literature. Many studies find that ESG activities positively impact performance, and some studies observed a negative or nonlinear relationship.

Firstly, Alam et al. (2021) empirically examined the impact of banks' ESG scores on their efficiency on a global scale. After analyzing a large sample of 578 banks in 57 countries between 2011 and 2019, they assert that higher ESG performance reduces bank efficiency. Furthermore, as highlighted by Azmi et al. (2021), in their sample of 251 banks across 44 emerging economies between 2011 and 2017, they observe that the relationship between ESG and efficiency is non-linear, indicating that banks with very high ESG scores are more efficient. Using a DEA model, they consider loans, other operating income, and other productive assets as outputs of the bank, while deposits, personnel expenses, and fixed assets are treated as inputs. The fundamental principles of their conclusions remain consistent across different ESG dimensions and various bank characteristics, such as size, specialization, and the geographical location of the banks' headquarters.

Subsequently, Alam, Banna & Hassan (2022) studied the impact of ESG performance on the efficiency of conventional and Islamic banks. Based on a sample of 14 conventional banks and 11 Islamic banks from 4 countries in the MENA region (Kuwait, Qatar, Saudi Arabia, and the UAE), they observed that the overall ESG score has a significant positive effect on the technical efficiency of conventional banks, supporting the stakeholder theory of ESG, but no significant effect on the technical efficiency of Islamic banks. Then, based on individual ESG pillar scores, the authors found that environmental activities have a significant and positive influence on the

technical efficiency of both conventional and Islamic banks, while social activities seem to have a significant impact only on conventional banks. There is no evidence that governance activities of banks have an impact on their technical efficiency.

Green activities have contributed to the profitability of banks in developed economies, possibly due to large-scale energy-saving programs implemented across all banks. Banks in developing economies were able to enhance their efficiency through socially responsible activities and good governance, likely due to improved reputation and consumer trust. For this reason, Chang et al. (2021) studied the impact of ESG on the cost efficiency of both developed and developing Asian banks between 2015 and 2018. They showed that environmental factors led to an increase in cost efficiency only in developed Asian economies. Social factors reduced the cost efficiency of banks in developed Asian economies, while they increased it in developing Asian economies. Furthermore, governance reduced the cost efficiency of banks in developed Asian economies, while it increased in developing Asian economies.

In addition, Belasri et al. (2020) studied the impact of CSR on banking efficiency using an international sample of 184 banks in 41 countries between 2009 and 2015. They found that corporate social responsibility has a positive effect on bank efficiency only in developed countries, in countries where stakeholder orientation is significant, and in countries that protect their investors. Thus, it has no effect on the efficiency of banks in developing countries. The results suggest that banks' investments in corporate social responsibility do not constitute a waste of resources but can, on the contrary, promote better utilization of these resources.

Nevertheless,Mahboub et al. (2022) conducted a study to determine the influence of corporate social responsibility (CSR) practices in the environment (ENV), human resources (HR), products and consumers (PC), as well as community involvement (CI) on the financial performance of 81 commercial banks operating in certain MENA region countries for the year 2018. They found a significant positive relationship between CSR practices in human resources (HR) and PC and the financial performance of banks in the MENA region. However, there is a non-significant relationship between CSR practices in ENV and CI and the financial performance of these banks. Thus, banks in the MENA region are encouraged to adopt CSR practices focused on human resources and products and consumers to improve their financial performance.

Chaarani (2022) measured the impact of internal and external corporate governance mechanisms on the financial performance of banks in the Middle East and North Africa (MENA) region in 2020. According to these findings, corporate governance measures such as the presence of independent board members, high ownership concentration, the absence of

political pressure on board members, and strong legal protection had a positive impact on the financial outcomes of banks. However, corporate governance mechanisms such as performance-based compensation, the presence of women on boards, and moderate board size did not have a significant effect on bank performance, especially during the crisis period.

Similarly, according to a study conducted by El Khoury, Nasrallah, &Alareeni (2021) based on 46 publicly listed banks in MENAT region countries between 2007 and 2019, they observed that bank performance is negatively related to ESG investments, and the relationship is non-linear. Based on empirical data, they demonstrated that the costs incurred by banks exceeded the long-term benefits of social and governance programs.

H1:ESG performance has a positive impact on the cost efficiency of banks

2.2 The moderating role of CEO's Returnee

CEO returnee are individuals who return to their home country after gaining international experience by studying or working abroad. According to the upper echelons theory, the CEO plays a crucial role in decision-making, which ultimately impacts the company's outcomes (Hambrick, 2007; Hambrick& Mason, 1984).

According to Hambrick & Mason (1984) and Hambrick (2007), it is suggested that company leaders play a critical role in strategic management, and that financial and non-financial outcomes are influenced by the quality and characteristics of these leaders. Specifically, CEOs can choose the most efficient and effective strategies to promote sustainable growth for their companies. According to the Upper Echelons Theory, the specific characteristics of top executives, such as psychological and observable traits (including past experiences, career paths, educational background, and age, among others), play a crucial role in shaping strategic policies.

Some studies have expanded the existing literature on the Upper Echelons perspective, focusing on new traits of CEOs, namely research, financial expertise, and the CEO's experience and education abroad. These CEO characteristics differ from those previously examined and play a crucial role in decision-making within the organization and in financial performance.However, some authors, according to the upper echelon theory (Hambrick & Mason, 1984; Hambrick, 2007), have found that general managers who have received research training, possess financial skills, have foreign experience, and are relatively young, can influence the improvement of sustainable management, performance, and environmental information disclosure within publicly listed Chinese companies.

Furthermore, when a CEO has significant experience, it is expected that they will enhance their performance as a CEO to generate greater profits for the company. According to Upper Echelons Theory, foreign experience has a significant impact on a company's strategic choices, such as its environmental performance, and CEOs who have gained foreign experience assimilate specific values during their time abroad, which enables them to offer diverse perspectives for decision-making and to promote sustainability initiatives within the company. As demonstrated by studies from Wen and Song (2017) and Zhang et al. (2018), managers or directors who return to their home country encourage their companies to invest in CSR. Consequently, CEOs with foreign experience may be more inclined to promote eco-innovation due to their heightened environmental ethics.

Ghardallou (2022) examines in his study the relationship between CSR and financial performance and investigates whether CEO characteristics, such as education and experience, influence the relationship between corporate social responsibility and company profitability. The study aims to understand the impact of CEO characteristics on CSR and financial stability, using a sample of 34 publicly listed Saudi companies between 2015 and 2020. The results indicate that the CEO's education (MBA) exerts a positive moderating effect on the interaction between company performance and CSR. Thus, CEOs with an MBA are more likely than other CEOs to disclose the company's environmental outcomes.

Additionally, Almulhim et al. (2023) studied the effect of corporate sustainability on financial performance and examined whether CEO characteristics influence the relationship between corporate sustainability and financial performance in publicly listed companies on the Saudi Stock Exchange (MENA region), using a sample of 127 non-financial companies between 2014 and 2022. They demonstrated a significant negative relationship between corporate sustainability and financial performance. Moreover, they proved that CEO characteristics influence the interaction between corporate sustainability and financial performance; specifically, the activity level of CEOs mitigates the negative impact of corporate sustainability on financial performance. However, the CEO's education and tenure had a negative impact on the association between sustainability activities and financial performance.

Furthermore, Al-Hiyari et al. (2022), using a sample of publicly listed companies from seven emerging markets between 2011 and 2019, attempted to verify whether environmental, social, and governance (ESG) outcomes are positively related to investment efficiency (IE) in emerging economies. They also examined the possibility that board cultural diversity could influence the relationship between ESG and investment efficiency. This study highlighted that cultural diversity on the board negatively impacts the effect of ESG performance on efficient

investment for companies operating in overinvestment-prone environments. According to this finding, ESG performance appears less crucial in mitigating managerial overinvestment tendencies when companies' boards comprise more foreign directors.

Finally, Beji et al. (2021) and Harjoto et al. (2015, 2019) demonstrated that cultural diversity within the board of directors is positively correlated with ESG performance. According to Temprano and Gaite (2020) and Issa et al. (2021), the presence of foreign directors on boards positively impacts company performance. In this way, board members from diverse cultural backgrounds may help companies address the interests of various stakeholder groups.

Despite the variety of studies on the role of certain CEO characteristics in institutional performance and their integration into corporate social responsibility, few studies have examined the impact of the CEO's international experience and education on banking performance. Therefore, we included the CEO's international experience and education as moderating factors of banking efficiency in our study.

H2: The CEO's foreign experience and education significantly affect the relationship between ESG performance and banking cost efficiency.

3. EMPIRICAL DESIGN

3.1 Sample selection

In this study, we initially aimed to focus on all the countries in the MENA region. However, due to the scarcity of certain data, several countries had to be excluded. The final selection of countries was based on the availability of ESG data and the presence of CEOs with international experience or education.The final sample consists of 100 banks from the MENA region, covering the period from 2010 to 2022.

We collected the financial and ESG data of the various banks from the Thomson Reuters database. These scores are gathered from verifiable public domain documents such as the banks' annual reports. Additionally, by using the World Bank website, we obtained macroeconomic information for the MENA region countries, specifically GDP growth.The annual World Economic Policy Uncertainty index score (Ahir et al., 2018) is obtained from the policy uncertainty website. Finaly CEO returnee data is hand-collected from annual reports.

3.2 Variables and measures

3.2.1 | Dependent variable

Cost efficiency refers to the costs incurred by banks to produce output. It reduces the input (resources used) for a given level of output (results).In another way,Cost efficiency (CE) measures the cost that banks must incur to generate outputs, based on the minimum cost charged by the most efficient bank operating under the same conditions to achieve the same results.

To assess banking efficiency, we use the frontier efficiency approach, calculated using the non-parametric technique of Data Envelopment Analysis (DEA), which is based on mathematical programming. We chose the DEA method due to its widespread acceptance and its low requirement for particularly stringent assumptions (Pedraja-Chaparro et al., 1997). To calculate banking efficiency, a non-parametric approach (DEA) can be used to evaluate the efficiency of banks by utilizing certain inputs and outputs.

According to Yue et al. (2013), we used total funding (total deposits plus total borrowed funds), fixed assets, loan loss provisions, and personnel overhead costs as inputs variables. Then, we selected output variables including other productive assets, total loans, and off-balance sheet items. Although technically, off-balance sheet items are not considered interest-earning assets, they represent a growing source of income for banks.

We estimated cost efficiency (CE) using the formula proposed by Coelli et al. (2005) as shown below:

The efficiency score is determined by solving Equation 1.

$$Min\ \lambda, x_0^* = \sum_{i=0}^{m} w_i\, x_0^*$$

Subject to: $\sum_{j=0}^{n} \lambda_j w_{ij} \leq x_0^*$ i=1, 2…,m;

$\sum_{j=1}^{n} \lambda_j y_{rj} \geq y_{r0}$ r=1, 2…, s

$\sum_{j=1}^{n} \lambda_j = 1$,(1)

$\lambda_j \geq 0$j=1, 2…. n

Let w_i represent the input price vector, which is the cost-minimizing vector of input quantities for given input prices (wi), y_{r0} represents the output level, and x_0^* : is the i-th input that minimizes the cost.

3.2.2 Independent variables

Our independent variable is ESG performance, measured by the ESG_Score. We collected the ESG scores from the Refinitiv database by Thomson Reuters. The ESG score is an overall company rating based on self-reported information regarding environmental, social, and governance aspects.

Its value ranges from 0 to 100. It provides a comprehensive rating of a bank's ESG performance and has been used in previous banking studies.

3.2.3 Dependent variables

Foreign experience of CEOs (FOR_EXP)

The binary variable for the CEO's foreign experience equals 1 if the CEO has worked abroad, and 0 otherwise.

Foreign education (FOR_EDU)

The binary variable for the CEO's foreign education equals 1 if the CEO has studied abroad, and 0 otherwise.

3.2.3 Control variables

To examine the potential influence of additional variables on efficiency, a set of control variables is added to the analysis, and they were selected based on their relevance in previous research. Thus, two distinct types of control variables are included: those specific to banks and those related to countries.

Bank-Specific Variables

Firstly, return on assets (ROA), is a profitability indicator for banks, measured by net income divided by total assets. According to Chih et al. (2010), ROA provides an accounting perspective on the company's efficiency and performance, as it shows how effectively the company has utilized its assets.

Secondly, loan-to-deposit ratio (LTD),It indicates the proportion of loans funded by deposits (Shen et al., 2016; Wu & Shen, 2013). According to Shen et al. (2016), banks engaged in CSR attract more deposits, which positively influences their lending volume. This ratio reflects the funds available for banks to fulfill their social responsibilities (Cornett, Erhemjamts& Tehranian, 2016).

Thirdly, bank capital adequacy ratio (CAR) measured by total equity to total assets ratio. As an indicator of compliance with regulatory capital requirements, it serves as an approximation of the solvency or the strength of banks' equity (Siueia, Wang, and Deladem, 2019).

Subsequently, loan loss provision (LLP) measured by Loan loss provision to total loans (Al-Wesabi and Ahmad,2013)

Lastly, bank size (size), measured by the natural logarithm of total assets. However, Belasri et al. (2020) found a positive relationship between bank size and banking efficiency.

Industry-Specific Variables

Bank concentration (BANK_CONC): The proportion of total commercial banking assets held by the five largest commercial banks (Lassoued et al., 2023). Additionally, a highly concentrated banking sector appears to have a significantly positive impact on banking efficiency. Consequently, concentration can lead to various lasting effects on banking efficiency, bank stability, and competition.

Banking sector development(DOM_CR): Measured by the share of domestic credit to the private sector relative to GDP (Lassoued et al., 2023). Alternatively, it measures the total credit granted by resident financial institutions to various sectors of the national economy, including households, businesses, and the government. Indeed, this variable assesses the development of the banking sector, the availability of domestic credit, and its impact on the economy.

Three macroeconomic variables are incorporated:Economic Policy Uncertainty Index (EPU)and the country's economic growth (GDP_GR).

Global Economic Policy Uncertainty Index (EPU)is assessed based on the frequency with which the term “uncertainty” is used in national reports by the Economist Intelligence Unit (Lassoued et al., 2023).The EPU is a complex concept of uncertainty that reflects the uncertainty of managers, consumers, and policymakers regarding future events (which may or may not occur). It also relates to macroeconomic phenomena such as GDP growth, microeconomic phenomena such as corporate growth rates, and other events such as elections, wars, and climate change (Hites Ahir et al., 2022).

Subsequently, GDP Growth is the rate adjusted to the real GDP growth of each country (Angkinand& Wihlborg, 2010). It is used to assess a country's economic situation and to compare economic performance across different countries.

3.3 Econometric specification

First, the effect of ESG performance on cost efficiency is investigated. The following models are conducted:

$$CE_{it} = \beta_0 + \beta_1 ESG_{it-1} + \beta_2 ROA_{it-1} + \beta_3 LTD_{it-1} + \beta_4 LLP_{it-1} + \beta_5 CAR_{it-1} + \beta_6 SIZE_{it-1} + \beta_7 BANK\_CONC_{it-1} + \beta_8 DOM\_CR_{it-1} + \beta_9 GDP\_Growth_{it-1} + \beta_{10} EPU_{it-1} + \varepsilon_{it}$$

Next, the CEO Returneeis introduced as the moderatingvariable in the relationship between ESG performance and cost efficiency. The concept of CEO returnee consists of two main characteristics: the CEO's international experience and foreign education.

$$CE_{it} = \beta 0 + \beta_1 ESG_{it-1} + \beta_2 FOR\_EXP_{it-1} + \beta_3 ESG_{it} * FOR - EXP_{it} + \beta_4 ROA_{it-1} + \beta_5 LTD_{it-1} + \beta_6 LLP_{it-1} + \beta_7 CAR_{it-1} + \beta_8 SIZE_{it-1} + \beta_9 BAN - CONC_{it-1} + \beta_{10} DOM - CR_{it-1} + +\beta_{11} GDP_{Growth_{it-1}} + \beta_{12} EPU_{it-1} + \varepsilon_{it}$$

$$CE_{it} = \beta 0 + \beta_1 ESG_{it-1} + \beta_2 FOR\_EDU_{it-1} + \beta_3 ESG_{it} * FOR - EDU_{it} + \beta_4 ROA_{it-1} + \beta_5 LTD_{it-1} + \beta_6 LLP_{it-1} + \beta_7 CAR_{it-1} + \beta_8 SIZE_{it-1} + \beta_9 BAN - CONC_{it-1} + \beta_{10} DOM - CR_{it-1} + +\beta_{11} GDP_{Growth_{it-1}} + \beta_{12} EPU_{it-1} + \varepsilon_{it}$$

4. EMPIRICAL ANALYSIS

4.1 Descriptive statistics

Table 1 presents the summary statistics. The mean value for efficiency cost (CE) is 0.219 with a standard deviation of 0.195. The means of ESG scores are 0.389, for ENVI, 0.254 for SOCI, 0.34and 0.54 for GOV. Control variables show an average profitability (ROA) of 0.044, loan to deposit ratio (LTD) of 0.087, company size (SIZE) of 12.242, Bank concentration (BANK_CONC) of 82.619, Banking sector development (DOM_CR) of 62.614, GDP Growth of 2.65, and Global Economic Policy Uncertainty Index (EPU) of 0.159.

Table 2 reports the correlation matrix of the variables. The correlation coefficientbetween ESG performanceand cost efficiency is -0.342, signifyinga negative relationship between these two variables. Additionally, foreign education and foreign experience display a positive correlation with cost efficiency, with a correlation coefficient respectively of 0.0034, 0.029. Finally, the correlation values are below 0.8, indicating the absence of severe multicollinearity among the variable.

TABLE 1 : Descriptive statistics.

Variable	Mean	Std. Dev.	Min	Max
CE	.219	.195	.021	.961
ESG	.389	.171	.074	.732
ENVI	.254	.228	0	.77
SOCI	.34	.199	.025	.754
GOV	.54	.216	.048	.903
FOR EDU	.853	.354	0	1
FOR EXP	.927	.285	0	2
ROA	.044	.219	-.037	1.866
LTD	.087	.439	0	6.53
LLP	.023	.393	-.137	14.328
CAR	.089	.115	-.24	.573
SIZE	12.242	2.315	8.178	19.616
BANK CONC %	82.619	13.693	61.975	100
DOM CR %	62.614	24.168	5.414	106.341
GDP GROWTH %	2.65	3.964	-10.519	13.936
EPU	.159	.168	0	.984

TABLE 2: Pairwise correlations.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) CE	1.000															
(2) ESG	-0.342*	1.000														
(3) ENVI	-0.357*	0.697*	1.000													
(4) SOCI	-0.354*	0.903*	0.698*	1.000												
(5) GOV	-0.173*	0.750*	0.301*	0.415*	1.000											
(6) FOR_EDU	0.034*	-0.012	0.030	0.010	-0.056	1.000										
(7) FOR_EXP	0.029	-0.036	-0.017	-0.019	-0.034	0.233*	1.000									
(8) ROA	0.377*	0.044	0.019	0.057	0.002	-0.009	-0.009	1.000								
(9) LTD	-0.076*	0.261*	0.117*	0.239*	0.206*	0.020	-0.016	-0.009	1.000							
(10) LLP	-0.019	-0.012	-0.047	-0.002	-0.020	0.014	0.006	-0.011	0.007	1.000						
(11) CAR	-0.110*	0.000	-0.092	-0.034	0.045	-0.057	0.051	0.010	0.162*	0.037	1.000					
(12) SIZE	0.881*	0.329*	0.358*	0.354*	0.125*	0.097*	0.133*	-0.011	-0.078*	-0.016	0.012	1.000				
(13) BANK_CONC	-0.192*	0.070	-0.017	0.044	0.114*	0.261*	0.301*	-0.023	0.044	0.020	0.030	-0.022	1.000			
(14) DOM_CR	0.132*	0.172*	0.045	0.213*	0.031	0.189*	-0.040	0.055	0.053	0.014	0.023	-0.065*	-0.042	1.000		
(15) GDP_GRO	-0.016	-0.056	0.180*	-0.065	-0.021	0.001	0.055*	-0.038	0.022	-0.003	-0.123*	-0.032	0.095*	-0.409*	1.000	
(16) EPU	0.139*	-0.002	-0.094	0.009	0.008	-0.144*	-0.235*	0.039	0.023	-0.027	-0.007	-0.008	-0.258*	-0.004	-0.075*	1.000

**** p<0.01, ** p<0.05, * p<0.1*

4.2 Baseline analysis

Table 3 presents the results of our main regression examining the impact of ESG performance on cost efficiency (CE). The first column shows that the ESG score is negative and statistically significant ($\beta = -0.0281$; p-value<1%), It can therefore be stated that banks' involvement in ESG leads to a decrease in their cost efficiency. According to hypothesis H1, we expected to observe a positive relationship between ESG performance and banking efficiency. However, the results do not support this hypothesis, as the coefficient associated with the ESG variable is negative and significant.The negative impact of ESG on banking cost efficiency can be attributed to several factors. First, the strong commitment of banks to sustainable projects or green infrastructure may lead to high short-term costs, with benefits that will only materialize in the long term. Furthermore, investments in non-profitable and higher-risk projects can increase costs, which may outweigh the benefits, thus leading to banking inefficiency.Furthermore, the implementation of ESG practices by banks may lead to additional costs. The daily operations of banking institutions become complex, requiring both staff training and the management of external partnerships, which generate significant costs and can lead to banking inefficiency.
Some findings have confirmed our result. Friedman (1970) stated that 'the social responsibility of businesses consumes and depletes the company's limited resources without providing significant returns.' This perspective suggests that ESG incurs costs that reduce profits. Furthermore, Grisales &Caracuel (2021) asserted that the ESG score is negatively related to firm performance.However, Azmi et al. (2021) studied the impact of ESG on bank value and found that a high level of ESG activity leads to a negative relationship between ESG and Tobin’s Q, while a low level of ESG activity results in a positive effect between ESG and Tobin’s Q. Furthermore, according to Friedman’s trade-off theory (1970), firms face inefficiency due to investments in ESG activities, as the funds invested could be allocated to more profitable projects.

4.3 Moderating analysis

In our study, we chose to examine the interaction effect between ESG performance and CEO returnees on banking efficiency. We thus focus on two specific characteristics of CEO returnees: the CEO's experience and foreign education. Table 3 columns 2 presents the results of the moderating effect of CEO's experience and foreign education on the relationship between banking cost efficiency. Theresults show that the interaction variables ESGxFOR_EXP and ESGxFOR_EDU have a significant positive relationship with cost efficiency. These findings

support hypothesis H2, suggesting that the CEO's experience and foreign education significantly affect the association between ESG performance and banking cost efficiency.

The CEO's foreign experience and education played a significant role in banking efficiency. A CEO with foreign experience or education often has a more global perspective on management practices and greater sensitivity to international standards, including those related to ESG. This exposure enables a deeper understanding of sustainability standards, global regulatory requirements, and investor expectations. Consequently, this experience can facilitate the implementation of more effective and integrated ESG strategies, thereby contributing to improved banking efficiency.

CEO foreign experience influences corporate decisions that focus on Corporate Social Responsibility (CSR) activities (Kim et al., 2018). The company benefits from a CEO's international expertise in making strategic decisions (Azam et al., 2018). International experience has been examined across various organizational contexts and has been shown to impact a company's activities and achievements (Shahab et al., 2019). CEOs have the opportunity to leverage their international networks to seek recommendations or assistance when challenges arise.

Furthermore, upper echelon theory demonstrates that the CEO plays a crucial role in the decision-making process, which ultimately affects the company's outcomes (Hambrick, 2007; Hambrick & Mason, 1984). Foreign CEOs of local companies have the ability to understand and align the company's strategic objectives with institutional regulations related to environmental and sustainable development. Companies are increasingly accountable to their stakeholders and from a sustainable development perspective, they address societal concerns, comply with international laws and regulations, and adopt international approaches, including integrating Sustainable Development Goals. This enables them to maintain profitability (Moyer & Hedden, 2020).

However, executives with international education have an enhanced ability to assimilate and apply new knowledge and practices, particularly in areas related to sustainability and governance. By applying this expertise, the CEO can leverage ESG performance as a genuine driver of efficiency for the banks.

TABLE 3: The effect of ESG on bank efficiency and role of CEO Returnee

VARIABLES	(1) CE	(2) CE	(3) CE
ESG	-0.0281***	-0.0171*	-0.0594***
	(0.089)	(0.0096)	(0.0203)
FOR_EDU		0.0240**	
		(0.00992)	
FOR_EDU×ESG		0.0455*	
		(0.0254)	
FOR_EXP			0.0189**
			(0.00922)
FOR_EXP×ESG			0.0321***
			(0.0102)
ROA	0.325***	0.293***	0.296***
	(0.0221)	(0.0233)	(0.0244)
LTD	-0.00193	0.00126	0.000569
	(0.00257)	(0.00216)	(0.00161)
LLP	-0.00156	0.000801**	-0.00147***
	(0.00109)	(0.000340)	(0.000299)
CAR	-0.0506**	-0.0771***	-0.0543***
	(0.0223)	(0.0214)	(0.0189)
SIZE	0.0702***	0.0683***	0.0665***
	(0.00575)	(0.00358)	(0.00321)
BANK_CONC	-0.00726*	0.00135	0.00235
	(0.00413)	(0.00127)	(0.00112)
DOM_CR	-0.00612	0.00383***	0.00462***
	(0.00429)	(0.00132)	(0.00141)
GDP_GROWTH	0.0407	0.0808	0.0300***
	(0.0304)	(0.0011)	(0.00812)
EPU	0.340	0.0123	0.00764
	(0.330)	(0.0147)	(0.0152)
Constant	0.121	-0.687***	-0.661***
	(0.426)	(0.0466)	(0.0420)
Year×Country fixed effect	Included	Included	Included
Observations	1115	1115	1115
Number of code	100	100	100

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.4 Additional evidence

We chose to analyze the impact of each pillar of ESG on banking cost efficiency. According to the results presented in Table 5, it appears that environmental and social pillar have a significant negative effect on banking cost efficiency, suggesting that environmental and social factors contribute to making the bank less efficient. In contrast, the governance pillar seems to have a positive effect on banking cost efficiency. Furthermore, we examined the interaction effect between the CEO's foreign education and the different ESG pillars (FOR_EDU×ENVI, FOR_EDU×SOC, FOR_EDU×GOV) on banking efficiency. The results show that these

interactions have a positive and significant impact on banking cost efficiency. Similarly, for the CEO's international experience, we found that the interaction effect between FOR_EXP×ENVI, FOR_EXP×SOC, and FOR_EXP×GOV also exerts a positive and significant impact on banking efficiency.

TABLE 4: Additional evidence: ESG scores and role of CEO Returnee

VARIABLES	(1) CE	(2) CE	(3) CE	(4) CE	(5) CE	(6) CE	(7) CE	(8) CE	(9) CE
ENVI	-0.0446***			-0.0485**			-0.0854***		
	(0.0123)			(0.0247)			(0.0325)		
SOC		-0.0416***			0.0143			-0.00758	
		(0.0103)			(0.0238)			(0.0228)	
GOV			0.0155**			0.00277*			0.0139
			(0.00614)			(0.00150)			(0.0146)
FOR_EDU				0.0158**	0.00311	0.0051			
				(0.00769)	(0.00707)	(0.00109)			
FOR_EDU×ENVI				0.0225**					
				(0.0108)					
FOR_EDU×SOC					0.0314**				
					(0.0147)				
FOR_EDU×GOV						0.00203**			
						(0.00108)			
FOR_EXP							0.0242	-0.00372	0.0260***
							(0.0168)	(0.0121)	(0.00645)
FOR_EXP×ENVI							0.0534***		
							(0.0126)		
FOR_EXP×SOC								0.0521*	
								(0.0272)	
FOR_EXP×GOV									0.0346**
									(0.0167)
ROA	0.293***	0.287***	0.292***	0.294***	0.288***	0.291***	0.289***	0.292***	0.294***
	(0.0235)	(0.0233)	(0.0238)	(0.0231)	(0.0233)	(0.0237)	(0.0225)	(0.0234)	(0.0245)
LTD	0.00117	0.00126	0.00183	0.00141	0.00128	0.000761	0.00311	-0.000723	0.00172
	(0.00217)	(0.00214)	(0.00227)	(0.00199)	(0.00215)	(0.00232)	(0.00226)	(0.00224)	(0.00170)
LLP	0.000177	0.00103***	0.000996***	0.000904***	0.000983***	0.000522*	-0.00120***	0.000536	-0.000773**
	(0.000284)	(0.000329)	(0.000356)	(0.000282)	(0.000324)	(0.000296)	(0.000346)	(0.000542)	(0.000374)
CAR	-0.0767***	-0.0817***	-0.0718***	-0.0808***	-0.0796***	-0.0696***	-0.0744***	-0.0624**	-0.0569***
	(0.0197)	(0.0205)	(0.0206)	(0.0202)	(0.0219)	(0.0217)	(0.0260)	(0.0250)	(0.0191)
SIZE	0.0639***	0.0629***	0.0670***	0.0639***	0.0629***	0.0677***	0.0633***	0.0636***	0.0656***
	(0.00285)	(0.00288)	(0.00327)	(0.00308)	(0.00289)	(0.00385)	(0.00297)	(0.00249)	(0.00317)
BANK_CONC	0.0207	0.0229*	0.0211*	0.0162	0.0203	0.0152	0.0143	0.0316**	0.0455
	(0.0128)	(0.0134)	(0.0124)	(0.0134)	(0.0143)	(0.0127)	(0.0161)	(0.0145)	(0.0115)
DOM_CR	0.0351***	0.0311**	0.0370***	0.0283**	0.0277*	0.0369***	0.0478***	0.0494***	0.0411***
	(0.0132)	(0.0134)	(0.0133)	(0.0141)	(0.0146)	(0.0142)	(0.0146)	(0.0146)	(0.0148)
GDP_GROWTH	0.116	0.133	0.0886	0.0749	0.114	0.0831	-0.0663	-0.0494	0.294***
	(0.0890)	(0.0921)	(0.0871)	(0.0905)	(0.0939)	(0.0892)	(0.0974)	(0.0994)	(0.0821)
EPU	0.0190	0.0199	0.0145	0.0114	0.0174	0.0136	-0.0100	0.0195	0.00808
	(0.0128)	(0.0134)	(0.0136)	(0.0139)	(0.0142)	(0.0149)	(0.0166)	(0.0134)	(0.0150)
Constant	-0.435	-0.225	-0.156	-0.537	-0.522	-0.361	-0.248	-0.245	-0.553
	(0.395)	(0.389)	(0.429)	(0.417)	(0.384)	(0.495)	(0.440)	(0.355)	(0.419)
Year×Country fixed effect	Included	Included	Included	Included	Included	Included	Included	Included	Included
Observations	1115	1115	1115	1115	1115	1115	1115	1115	1115
Number of code	100	100	100	100	100	100	100	100	100

4.5 Additional evidence: Type of diploma and CEO outside MENA

To deepen our analysis, we re-examined the regression by introducing a new moderate effect, namely the CEO's education level (bachelor's, master's, doctorate), in the relationship between

ESG and banking cost efficiency. The results indicate that the interaction between ESG and a CEO holding a master's degree has a positive and significant impact on banking cost efficiency. Similarly, a CEO with a doctorate positively and significantly influences this relationship. We then tested whether a CEO returning from a country outside the MENA region (FOR_OutsideMENA) could affect this relationship. Our findings suggest that the interaction effect between ESG and a CEO returning to their home country has a positive and significant impact on banking cost efficiency. A CEO with more than a bachelor's degree, such as a master's degree, is generally better equipped to grasp the complex concepts associated with ESG performance. This enables them to more effectively integrate these principles into the company's strategies, thereby enhancing efficiency, reducing regulatory risks, and optimizing costs.

Moreover, a master's degree typically provides in-depth training in strategic management, data analysis, and decision-making based on complex information. These skills enable CEOs to identify opportunities related to ESG initiatives, such as optimizing energy efficiency, improving working conditions (thereby reducing turnover), and proactively managing environmental or social risks, all of which contribute to cost reduction and banking efficiency. Ultimately, CEOs with advanced education are often exposed to innovative ideas and best practices in ESG performance. This exposure can foster the implementation of innovative strategies, thereby enhancing banking operations' efficiency while reducing unnecessary costs. A doctorate typically develops advanced analytical and research skills, enabling the CEO to thoroughly assess ESG initiatives, avoid unprofitable investments, and optimize resource allocation, thereby directly influencing cost efficiency. Moreover, in the face of the complex risks banks encounter (financial, environmental, social), a CEO with a doctorate is better equipped to integrate advanced models for evaluating and managing these risks, contributing to reducing potential losses and enhancing efficiency.

In the second part, we tested the interaction effect between ESG and CEOs who returned from a country outside the MENA region on banking efficiency. The results suggest that CEOs with international experience positively moderate this relationship. Indeed, having international experience provides a broader perspective and expertise in best practices from developed markets, where ESG standards are often better integrated and understood. This enables them to adopt ESG strategies aligned with global standards. Furthermore, they are able to implement ESG policies that may reduce financing costs.

TABLE 5: Additional evidence: Type of diploma and CEO outside MENA

VARIABLES	(1) CE	(2) CE
ESG	-0.0212	-0.0291*
	(0.0145)	(0.0165)
BMD=2		0.0170**
		(0.00777)
BMD=3		0.0907***
		(0.00870)
ESG×BMD=2		0.0096**
		(0.0044)
ESG×BMD=3		0.0270***
		(0.0102)
FOR_ OutsideMENA	0.00223	
	(0.00690)	
ESG×FOR_ OutsideMENA	0.0603***	
	(0.0179)	
ROA	0.295***	0.295***
	(0.0257)	(0.0260)
LTD	0.00952	0.0120
	(0.0279)	(0.0276)
LLP	-0.0779	-0.0692
	(0.136)	(0.142)
CAR	-0.0618***	-0.0541**
	(0.0203)	(0.0213)
SIZE	0.0583***	0.0586***
	(0.00183)	(0.00187)
BANK_CONC	0.0154	0.00582
	(0.0133)	(0.0142)
DOM_CR	0.0501***	0.0504***
	(0.0142)	(0.0146)
GDP_GROWTH	0.123	0.165*
	(0.0883)	(0.0935)
EPU	-0.00724	-0.0155
	(0.0141)	(0.0148)
Constant	-0.566***	-0.569***
	(0.0251)	(0.0258)
Year×Country fixed effect	Included	Included

4.6 Robustness checks

To ensure the robustness of the results, four econometric techniques were employed in this study. Firstly, we use the 2SLS method to address the potential problem of endogeneity of the explanatory variables. It is possible that the GSE is correlated with unobserved factors also affecting cost efficiency. To remedy this problem, in a first step we estimate instrumental

equations including seniority and gender as instruments, then estimate the main model using the predictions from the first step. The results reported in the table confirm our initial results.

Secondly, we apply GMM, which also allows us to take into account the potential endogeneity of the explanatory variables. This approach uses lagged values of the endogenous variables as an instrument when external instruments are limited. In addition, it uses past values of the endogenous variable (as an exogenous variable) to better capture temporal dynamics. The results reported in columns 4, 5 and 6 indicate the same result as the main model, confirming that these results are not due to endogeneity.

Thirdly, a potential selection bias problem may emerge from the fact that it's possible that the best-performing banks are also those that attract CEO returnees, creating a selection bias in the observed data. Heckman's two-stage method was therefore applied to correct this statistical problem.

In a first step, a Probit model is estimated to explain the probability of a CEO having international education or experience. The explanatory variables also include CEO attributes (age, gender, seniority, etc.). In a second step, and based on the results of the Probit model, the inverse Mills ratio is calculated for each observation. The results of this test, shown in columns 7 and 8, confirm the relationships found in Table 3.

Finally, the PSM method is also used to construct a control group from banks without CEOs with international education/experience. This better isolate the causal effect of these variables of interest on cost efficiency, taking into account observable executive characteristics. Columns 9 and 10 report results quite similar to our main models.

TABLE 6: Robustness checks

	2SLS			GMM			Heckman two-step method		PSM	
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ESG	-0.0662***	-0.0166***	-0.0744**	-0.0902***	-0.121*	-0.546*	-0.00995	-0.00272	-0.00132	-0.00331
	(0.0171)	(0.0062)	(0.0367)	(0.0238)	(0.0071)	(0.311)	(0.0252)	(0.0324)	(0.0144)	(0.0138)
FOR_EDU		0.0426***			0.0939**		0.0421***		0.0364***	
		(0.0113)			(0.0446)		(0.0110)		(0.0133)	
FOR_EDU×ESG		0.0682**			0.204**		0.0641**		0.0579*	
		(0.0270)			(0.0862)		(0.0262)		(0.0340)	
FOR_EXP			0.0261			0.430		0.101***		0.0265***
			(0.0161)			(0.300)		(0.0208)		(0.00689)
FOR_EXP×ESG			0.0449***			1.361***		0.0491***		0.0273***
			(0.0170)			(0.355)		(0.0130)		(0.0084)
ROA	0.297***	0.287***	0.288***	0.345***	0.299***	0.200***	0.291***	0.292***	0.283***	0.214***
	(0.0103)	(0.00845)	(0.00854)	(0.0368)	(0.0442)	(0.0579)	(0.00831)	(0.00843)	(0.0250)	(0.0266)
LTD1	0.00172	0.00319	0.00288	0.0156	0.0296**	-0.0107	0.00281	0.00254	0.00443*	0.00204
	(0.00423)	(0.00368)	(0.00371)	(0.0211)	(0.0143)	(0.0867)	(0.00365)	(0.00368)	(0.00225)	(0.00205)
LLP	0.000981	0.000892	0.000913	0.212	-0.284	0.884	0.000875	0.000901	0.00142	0.00102
	(0.00442)	(0.00385)	(0.00388)	(0.219)	(0.255)	(1.132)	(0.00384)	(0.00387)	(0.000876)	(0.00136)
CAR	-0.0252	-0.0845***	-0.0772***	-0.0705***	-0.0828***	-0.0756**	-0.0799***	-0.0722***	-0.0726***	-0.0564*
	(0.0308)	(0.0225)	(0.0226)	(0.0269)	(0.0136)	(0.0377)	(0.0223)	(0.0222)	(0.0190)	(0.0305)
SIZE	0.0720***	0.0692***	0.0692***	0.0693***	0.0250	0.193*	0.0693***	0.0692***	0.0716***	0.0690***
	(0.00159)	(0.000928)	(0.000936)	(0.0159)	(0.0244)	(0.102)	(0.000928)	(0.000936)	(0.00353)	(0.00319)
BANK_CONC	0.0624	-0.0266*	-0.0211	-0.0853	-0.0308	0.0876	-0.00248	-0.00188	-0.0304	-0.0151
	(0.0393)	(0.0156)	(0.0155)	(0.0268)	(0.0457)	(0.186)	(0.00156)	(0.00155)	(0.0234)	(0.0210)
DOM_CR	0.0952***	0.0739***	0.0808***	0.0780**	0.0801*	-0.0891*	0.00733***	0.00803***	0.0823***	0.0685***
	(0.0119)	(0.0106)	(0.0106)	(0.0389)	(0.0440)	(0.0505)	(0.00106)	(0.00106)	(0.0190)	(0.0227)
GDP_GROWTH	0.0398	0.0984	0.117	0.106*	0.0375	-0.0992	0.00757	0.00988	0.177*	0.0928
	(0.107)	(0.0889)	(0.0895)	(0.0621)	(0.0816)	(0.554)	(0.00884)	(0.00888)	(0.0931)	(0.135)
EPU	0.0184	0.0160	0.0154	-0.0327**	-0.0432**	-0.0400***	0.0226*	0.0208	0.0226	0.0148
	(0.0151)	(0.0135)	(0.0137)	(0.0154)	(0.0194)	(0.0089)	(0.0136)	(0.0137)	(0.0150)	(0.0107)
CE_{t-1}				-0.0326	-0.00860	-0.260				
				(0.0481)	(0.0458)	(0.294)				
Year×Country fixed effect	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
AR(2) (p.value)				0.325	0.467	0.355				
Hansan(p.value)				0.119	0.249	0.238				
Observations	1106	1106	1106	1019	1019	1019	1108	1108	1115	1115
Number of code	100	100	100	100	100	100	100	100	100	100

5. CONCLUSION

This paper has two main objectives. First, it seeks to determine the impact of ESG practices on banking cost efficiency. Second, it explores how the CEO's experience and international education moderate the relationship between ESG performance and banking efficiency. By analyzing a sample of 100 banks from MENA countries over the period 2010–2022, the results show that ESG has a significant negative impact on banking cost efficiency. It can be argued that investments in ESG may lead to an increase in the costs borne by banks, which could result in banking inefficiency. Brammer and Pavelin (2004), as well as Nejati and Ghasemi (2012), view Corporate Social Responsibility (CSR) as an inefficient use of a company's resources. According to them, allocating resources to CSR may place the company at an economic disadvantage compared to its competitors.

Moreover, the results highlight that the CEO's experience or international education can make the relationship between ESG and banking efficiency positive. In other words, CEOs with international experience or education are generally more inclined to adopt responsible ESG practices, enabling the bank to manage its costs effectively while maintaining efficiency.

However, like any research, this paper has some limitations. First, our final sample consists of 100 banks from the MENA region, due to the lack of available ESG data for certain countries in this region. This constraint limited our analysis, but it may also serve as a starting point for future studies, which could expand the analysis to an international scale or incorporate other moderating variables, such as CEO power or compensation. It would also be relevant to assess the effect of green bonds on banking efficiency or examine the impact of ESG on operational costs or technical efficiency.

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