

Impact of Environmental, Social and Governance (ESG) Factors On Credit Risk Assessment of Development Finance Institutions (DFIS) Loans in Nigeria

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Abstract: *This study examines the effect of ESG Factors on Credit Risk Assessment of DFIs Loans in Nigeria. The objectives are to evaluate the effect of impact assessment and regulatory compliance on default rate of DFI's loans in Nigeria, assess the effect of community engagement and involuntary resettlement on the default rate of DFI's loans in Nigeria, examine the effect of transparency and disclosure practices on the default rate of DFI's loans in Nigeria. A quantitative and qualitative research design was adopted, and primary data were collected from 135 respondents across selected DFIs. Data were analysed using descriptive statistics, correlation, multiple regression techniques, and thematic content analysis. The findings revealed high levels of agreement among respondents on the importance of ESG factors in credit risk assessment. Correlation results showed significant positive relationships between ESG dimensions and credit risk, while regression analysis indicated that ESG factors jointly explain 63% of the variation in credit risk. Governance factors emerged as the strongest predictor, followed by environmental factors, while social factors showed a significant inverse relationship with credit risk. These results suggest that ESG practices play a critical role in shaping lending outcomes and risk management in DFIs. The study concludes that effective integration of ESG factors enhances credit risk assessment and reduces loan default rates in DFIs. The study recommends among others the institutionalization of ESG frameworks in credit appraisal processes, strengthened governance and disclosure practices, and improved social and environmental risk management systems to enhance financial sustainability and developmental impact.*

Keywords: ESG factors, credit risk assessment, DFIS loans, community engagement, transparency and disclosure practices

INTRODUCTION

Recent financial decision-making has increasingly moved beyond traditional indicators, as relying solely on outdated measures no longer reflects the realities of a liberalised and rapidly evolving financial environment. While conventional credit risk tools such as Probability of Default (PD), Loss Given Default (LGD), and Exposure at Default (EAD) remain relevant, they are now complemented by more advanced financial and portfolio-based metrics, including

Risk-Based Internal Lending Limits (RILL), Planned Credit Management Standards (PCMS), and Impending Credit Conditions Standards (ICCS). These evolving approaches now incorporate Environmental, Social, and Governance (ESG) considerations, recognizing that non-financial risks have material financial implications and must align with corporate strategies for long-term sustainability (Fi UNEP & Global Credit Data, 2025; OECD, 2020).

Therefore, as environmental, social, and governance considerations have become more important in the context of credit risk management, beyond the conventional finance pillars, the current prognosis for growth among ESG factors is positive. These topics include energy use, pollution, compliance with laws, worker exploitation, development of civilised relations, disclosure in good faith, reporting, and legal and ethical behavior. As ESG has been pointed out by Bani-Khaled et al. (2025), non-financial performance information indicators cum indices other than financial statements, help organisations to use a roadmap in measuring their performance and related risks. This is particularly important for Development Finance Institutions (DFIs), whose funding mechanisms are centred on projects, which have a long return horizon. This requires that the projects generate returns, both financial and developmental. Besides, it is also relevant to incorporate ESG considerations in the credit risk assessment and analysis framework due to the increased threat to credit quality resulting from the risks related to climate, such as environmental hazards (i.e., scorching heat, floods, fire) (Delegkos et al., 2024; Hock et al., 2024; Ochieng & Okaka, 2017; Jean, 2022).

The integration of ESG in credit risk has become more popular over the years, but it is important to mention that there are also growing threats. Typically, environmental, social, and governance (ESG) factors differ from the quantitative financial indicators as they, unlike the latter, are usually maps of political, economic, and social interests with very little to do with uniform credit standards, consequently, variances and consistencies among sectors and borrower comparability (Pagano et al., 2019; Das & Kaur, 2021). Whereas for many development financiers, it is many times a functional issue that gets more complicated when it comes to changes in favourable environmental and social trends and evolving country risk perceptions or poor investment-seeking behavior, it is completely a question of time. As a consequence, the need for taking into account the environmental, social and governance concerns in the credit risk management with well-substantiated and specific adjusting models is even more compelling that it seeks to advance risk assessment and financial intermediation as well as foster the development of renewable and sustainable societal aspects (Bonacorsi et al., 2024; UNEP FI & Global Credit Data, 2025).

Statement of Problem

Development financial institutions (DFIs) have begun to be viewed as a critical link to builders of the economy, environmental conservers, and aid to poverty alleviation, particularly in developing countries like Nigeria. Development Financial Institutions (DFIs), unlike commercial banks, are more aligned towards a broader mission - they seek to generate economic performance and financial performance at the same time by taking long-term banking decisions that present a high level of risk and that are always shunned by private sector finance. They fund such activities as the provision of the physical infrastructure, such as

electricity, roads, and bridges, as well as the promotion of the existing industries, which normally have their viability delayed by a long holding period before any profits are realised.

Even where benefits are identified, there is a challenge in executing such a project due to the financial risk, where the project is an excessive stretch, there are consequences on the environment and people, and lastly, extraordinary levels of coordination are required to implement such a project (Irwin, 2020; World Bank Group, 2024). Because of the risks that some non-profit corporate and industrial constructions involve, DFIs are by and large perceived to have a higher risk exposure than typical banks, protecting them from certain sorts of territory and market hazards, as well as other financial threats such as weather changes, political ill will, failure of politics, and negative communities who tend not to figure in the project, which may in turn affect the potential of the project and the repayment of the loan.

To make sure that they don't have to face too much danger financially, for example, the World Bank Group, Africa Development Bank, the Islamic Development Bank, the European Investment Bank, the Development Bank of Nigeria, Bank of Industry, as organisations both national and international have also incorporated environmental, social and corporate governance issues in their credit risk assessment process. According to the ICR Facility (2025), the World Bank Group (2024) has recognized this approach and is fully committed to such practices. However, despite adoptions, there is limited knowledge, in particular empirical, on the extent of integration of social, environmental, and economic factors in the assessment, and credit rating of bonds, also known as bond assessment (Siddhartha & Alessandra, 2024). The new innovation models in loan approval, for instance, still put a higher value on financial numbers such as cash flows, collateral, and even the capital structure, with most ratings ignoring the ESG risks by classifying them as investment or risk control metrics. This created conflict between ESG endeavors and their utilisation in web-based decision-making fintech repercussions.

Moreover, integrating ESG into credit risk assessment introduces additional complexity, as these factors are often qualitative, dynamic, and difficult to quantify within conventional financial models. Environmental risks may arise from regulatory penalties or climate-related events, while social risks can stem from community conflicts or land acquisition issues, and governance risks from poor transparency or weak internal controls (Gomez et al., 2021; Taylor, 2022). Empirical evidence suggests that incorporating ESG indicators into credit models can significantly improve default prediction and risk management outcomes (Bonacorsi et al., 2025; Doblas *et al.*, 2022; Ahmad, Dutta, & Kutan, 2025). Nonetheless, challenges persist globally, including inconsistent ESG metrics and limited institutional capacity, particularly in developing countries (UNEP FI & Global Credit Data, 2025). In Nigeria, these issues are further compounded by regulatory and institutional constraints, highlighting a critical research gap in understanding the relationship between ESG factors and credit risk in DFIs. Addressing this gap is essential for strengthening risk frameworks, enhancing portfolio resilience, and ensuring that development finance achieves both financial sustainability and long-term developmental impact. The main objective of this study is to examine the Impact of ESG Factors on Credit Risk Assessment of DFIs loans in Nigeria while other specific objectives are to:

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- i. Evaluate the effect of impact assessment and regulatory compliance on the default rate of DFI's loans in Nigeria.
- ii. Assess the effect of community engagement and involuntary resettlement on the default rate of DFI's loans in Nigeria.
- iii. Examine the effect of transparency and disclosure practices on the default rate of DFI's loans in Nigeria.

The following hypotheses will be formulated to provide answers to the research questions stated above:

H₀₁: Impact assessment and regulatory compliance have no significant effect on the default rate of DFI's loans in Nigeria.

H₀₂: Community engagement and involuntary resettlement do not affect the default rate of DFI's loans in Nigeria.

H₀₃: Corporate transparency and disclosure practices have no significant effect on the default rate of DFI's loans in Nigeria.

This research is major when it comes to shedding some light on how Environmental, Socioeconomic, and Governance (ESG) aspects determine the evaluation of credit risk in Development Finance Institutions (DFIs), as the greater part of the literature covers commercial banks and businesses in general. It aims to offer an understanding of how, for the first time in the banking literature, financing secured by certain environmentally sound and socially desirable projects can be priced. Practical implications of the results would be useful for people who provide finance, such as risk officers or development agencies. Their risk management practices would benefit from the enhanced estimation of the default and severity risks of the different segments of the portfolio, which will bring additional costs into the pricing of credit.

This study examines how Environmental, Social, and Governance (ESG) factors influence credit risk assessment in Development Finance Institutions (DFIs), with a focus on Nigeria. It departs from studies on commercial banking by concentrating on DFIs, which are exposed to higher developmental and institutional risks. The research evaluates how ESG considerations shape credit appraisal process and borrowers' repayment capacity (Irwin, 2020; Cornett *et al.*, 2020). The study covers Nigerian DFIs, namely the Bank of Industry (BOI) and the Development Bank of Nigeria (DBN); regional DFIs, including the African Development Bank (AfDB), African Export-Import Bank (Afreximbank) and African Finance Corporation (AFC); as well as global DFIs, namely the Islamic Development Bank (IsDB) and the International Finance Corporation (IFC) of the World Bank Group, thereby allowing for comparative analysis (Mackenzie *et al.*, 2023). Using data from 2010 - 2025, the study integrates financial and ESG sources with qualitative insights to assess credit risk outcomes.

LITERATURE REVIEW

Environmental Factors: Impact Assessment and Regulatory Compliance

However, at a great risk of sounding counterintuitive, it is equally important that the cost-benefit analysis of integrating the environmental, social, and governance concerns (ESG), when viewed in the legal and operational assessment processes, to a Development Finance

Institution (DFI) is most relevant, given that the projects that They support are very large and high risk in nature. These projects usually have implications on the environment, for example, but not limited to, Western Slope forestry in the USA, socio-economic factors relating to adverse incorporation, and factors associated with the inclusion of green tourism, and pollution from gases resulting from industrial, manufacturing, and other processes (Hoegh *et al.*, 2020; Hollis, 2019).

This led to an increase in the importance of impact assessment in regions covered by DFI projects, as there are rules on environmental control, which enable technicians to consider such prospects before giving out credits. This is crucial because, as shown, it affects the structure and form of the project; it is an issue that the banks care about, given that the management of relevant risks could direct the credit to a profitable location. This is because this is a new policy that was recommended in the challenge of development by the banks. Conversely, where there is no such system, where it is not even worthwhile doing assessments, where there is no compliance and there are no results of the system, environmental destruction and social exclusion, as well as people financially unable to overturn credits occurs, leading to an increase in default rate as well (Heinkel, Kraus, & Zechner, 2021; Friede, Busch, & Bassen, 2021; Rossi, 2024; EBA, 2025).

Social Factors: Community Engagement and Involuntary Resettlement

Outlining the ESG concerns that can be seen as equally significant in the current context of this investigation and are therefore labelled the L category in social structure, there is the issue of effective social risk management in development finance through community engagement and land acquisition. These aspects, as also emphasized by Cernea (2020) and Esteves (2025), are of greater significance, especially in the big projects that often impact the people in the peripheral areas who are more sensitive or the so-called weak members of society (World Bank, 2024).

The idea of the engagement of the society involves a constant and structured discourse between project developers and those for whom projects are commenced, with the aim of openness, trust, and coordination within the parties involved, amidst other goals, in order to avoid spillages actions from proponents or respondents as well as the constraints to their already established rules of law and organisation structure. While promoting economic growth is a noble goal, there are certain tradeoffs that are not worth making in the name of growth. Otherwise, such tradeoffs would worsen the credit risks since socio-economic layers of society residing in and around the project's settlements will not stand for additional years of suppression from the project developers (Cernea, 2020; Esteves, 2025).

Governance Factors: Transparency and Disclosure Practices

How well the ESG aspect is managed in a company will be assessed based on the level of transparency and disclosure control systems. Compliance and internal risk management, as the only two aspects of risk management in organisations, are dependent on the development of these two constituents. Good governance is a critical factor in the management of risk and is crucial to achieving a sustainable lifestyle, particularly in countries such as Nigeria, where

there is underdevelopment and the absence of reliable information (Scott, 2021; Lu, 2024; OECD, 2025).

Improving the visibility of transparency allows for more effective credit evaluation that hinges on more concerns and under tight supervision (Ahmad et al. 2025; Mackenzie et al, 2023; UNCTAD 2023). Higher quality corporate reporting has a strong relationship with financial risk management, such as lower chances of default, reduced cost of borrowing, and improved credit assessments and ratings. An increasing number of companies with good ESG scores are noticeably less risky and have better individual credit ratings, lower cost of debt, and fewer integrity issues (Ahmad, Yaqub, & Lee, 2025; Le & Ngo, 2023). For DFIs, transparency also strengthens accountability mechanisms and supports early intervention when risks emerge, thereby mitigating potential credit losses.

A crucial variable explored within the frame of this research is the credit risk concerning the default rate of DFI loans. Nullification of credit risk signifies simply the likelihood that one counterparty in financial instruments or other contractual agreements does not satisfy its obligations on time. In the case of DFIs, non-repayment risk indeed implies a very serious menace, and this is because high default rates erode the capacities of any institution, including the DFIs, and are consequently a major impediment in the realisation of development goals (OECD, 2025; World Bank, 2024). The idea put forward is that the default rate of DFI loans is appropriate for use as the sole measure of default risk. This is caused by the default rate, as it describes all the risk that was foreseen and happened; rather, it looks at how many loans were actually defaulted. The default rate indicates the percentage of assets that are in default or are non-performing loans within a specified time frame, indicating the failure of the debtor to fulfill its debt servicing obligations due to a lack of ability or willingness (Frías, Jurado, & Ferreiro, 2022; Gao *et al.*, 2025).

Conceptual Framework

This section presents the conceptual framework guiding the study. It illustrates the relationship between Environmental, Social, and Governance (ESG) factors and credit risk in Development Finance Institutions (DFIs). The framework provides a visual and theoretical representation of how ESG dimensions are expected to influence credit risk outcomes, thereby forming the basis for the study's empirical analysis.

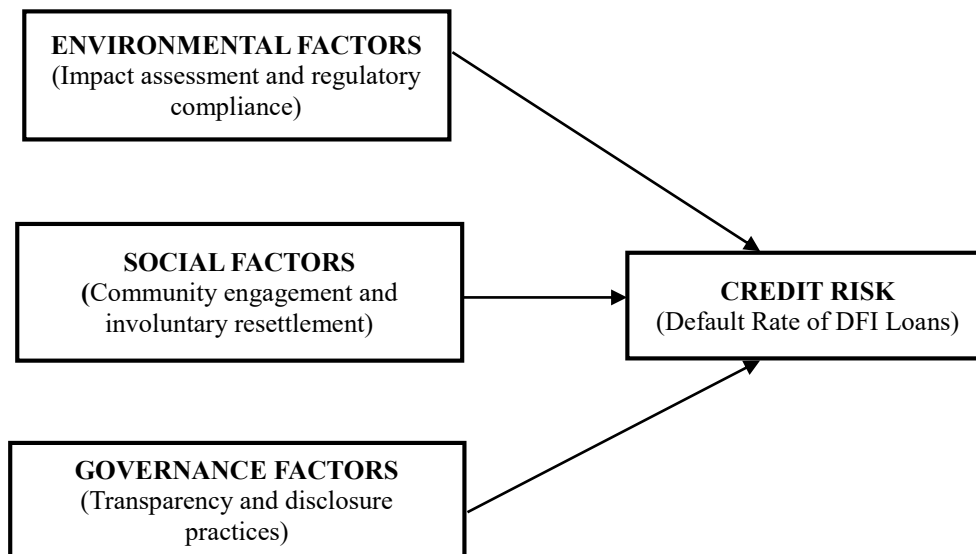


Figure 1: Conceptual Framework of ESG Factors and Credit Risk in DFIs

Theoretical Review

Risk management theory emphasizes the systematic identification, assessment, and mitigation of risks to protect organizational value and ensure sustainability (Jorion, 2022). Traditionally, credit risk models focused on financial ratios, collateral, and borrower credit history. However, recent scholarship recognizes that non-financial risks, including ESG risks, can materially affect financial outcomes and must be integrated into risk management frameworks (Mackenzie et al., 2023; Cevik & Charifzadeh, 2024). In development finance, environmental and social risks often manifest as operational disruptions, regulatory sanctions, or reputational losses that directly impair project cash flows. Environmental non-compliance can result in fines or project suspension, while social conflict can delay construction or halt operations altogether. Governance weaknesses exacerbate these risks by limiting transparency and delaying corrective action (Ahmad *et al.*, 2025). Risk management theory supports the inclusion of ESG factors as leading indicators of credit risk. Impact assessments, regulatory compliance, and disclosure practices function as preventive controls that reduce the likelihood of adverse events. The theory therefore explains why ESG integration enhances the predictive accuracy of credit risk assessment and contributes to lower default rates in DFI portfolios (Gao *et al.*, 2025).

Empirical Review

Multiple academic works have shown that performance in the domain of corporate social responsibility significantly influences the credit risk of a company. Extensive research has also found that stronger ESG performance and better disclosure practices are associated with a lower likelihood of default, improved loan performance, and higher credit ratings (Doblas *et al.*, 2022; Ahmad *et al.*, 2025; Le & Ngo, 2023). Ahmad *et al.* (2025) further observed that institutions with poor environmental and social practices often experience higher financing costs and inefficient loan utilisation.

Difficulties emerge when addressing environmental performance or accounting for lingering credit risk in the studies that do not. According to Cornett *et al.* (2020), environmental

performance is taken into consideration when making a lending decision more and more nowadays by banks, as firms facing environmental risks are required to pay more in the form of credit spreads. In contrast, Heinkel *et al.* (2021) note that firms that face environmental risks to a greater extent adjust their capital structures in a more cautious way due to the increased financial constraints. And not only this, even the default risk that is prevailing in the sector of energy is intensified due to the corporate ESG as established by Gao *et al.* (2025).

Scholars who have examined the social factors in real situations have reached a point where relations with the stakeholders are acknowledged and considered significant. To this extent, social acceptability was effective in grandfathering the project concepts while reducing the potentiality of conflicts in the long term. This approach was among the conclusions when more projects aimed at reducing social conflicts failed. And with the process of these projects having much success, subsequently, new studies emphasize increasing social distress as such projects face violent rejection and violent tension as opposed to resistance. In the years to come, such projects will tend to become the prevailing risks, necessitating the adaptation of new risk management approaches.

The role of social factors in real situations is examined in the considered situation. Relations with the stakeholders are understood as important to the implementation of a project. In this instance, social acceptability was achieved by grandfathering the project concepts, hence preventing the future escalation of conflicts. This approach constituted one of the recommendations when more projects aiming at relieving social conflicts for one reason or another did not work. With the success of these projects going on, consequently, additional studies have highlighted aggravating social tension in such projects, where they face not only passive but also active resistance. In the near future, the above-mentioned projects might even transform into the primary risks of the business, requiring new modes of risk management.

Governance receives a great deal of investigative coverage. With specific reference to the research conducted by Ahmad, Yaqub, and Lee (2025), it was established that companies that present quality ESG statements have lower chances of credit risk and borrowing cost imbalance. According to Lu (2024), the regulation of ESG rating agencies has been seen to improve the quality of governance. ESG concerns on non-financial performance measures are promoted by various initiatives for responsible investment. However, it is Le and Ngo (2023) who provide evidence that Commitment in ESG data showing consistent improvements is accompanied by higher credit ratings enhancement, whereas Wang and Lee (2023) prove that non-performing loan (NPL) levels will be lower with increasing governance quality regardless of the industry structure.

METHODOLOGY

The study adopts a mixed-methods research design that combines quantitative and qualitative approaches to examine the influence of ESG practices on credit risk in Development Finance Institutions (DFIs). The quantitative component employs a cross-sectional design using primary data collected through structured questionnaires administered to DFI staff, enabling the assessment of current ESG practices and their effects on credit risk. Complementing this,

the qualitative component utilizes semi-structured questionnaires to provide deeper insights into institutional perspectives, governance challenges, decision-making processes, and contextual factors affecting ESG integration which may not be usually found in data of numerical values (Creswell & Plano Clark, 2021). This mixed-methods approach enhances the comprehensiveness of the study by integrating empirical analysis with rich institutional context.

The study population comprised both institutional data and human respondents drawn from selected Nigerian, African and global DFIs, including the Bank of Industry (BOI), Development Bank of Nigeria (DBN), African Development Bank (AfDB), African Export-Import Bank (Afreximbank), Islamic Development Bank (IsDB) and World Bank Group (WBG). From an institutional perspective, the population covers all ESG disclosures, financial statements, and credit risk indicators published by these DFIs between 2010 and 2025. From a human perspective, the population includes staff involved in credit appraisal, risk management, ESG compliance and portfolio monitoring.

A multi-stage sampling technique was adopted to ensure adequate representation across the selected DFIs. Purposive sampling was first used to identify relevant departments, such as credit risk, investment and environmental and social (E&S) units, whose staff are directly involved in ESG implementation and credit risk assessment. Stratified sampling was then applied based on institutional type and functional roles to capture diverse perspectives across organisational levels, while simple random sampling was used to select respondents within each stratum to reduce selection bias and enhance representativeness. A total of 135 questionnaires were administered across the selected institutions. This approach improves the reliability and balance of the study by ensuring that respondents possess the relevant knowledge and experience, in line with established survey research practices.

Primary data was collected using a structured questionnaire comprising sections on demographic information, environmental practices, social practices, governance structures, and perceived credit risk outcomes, all measured on a five-point Likert scale (Hair *et al.*, 2023). In addition, interview questions for the qualitative aspect of the study were carefully designed and included. The qualitative data was analysed by identifying and discussing emerging patterns and themes.

Quantitative data analysis involved the use of descriptive statistics, correlation analysis, and regression models. Credit risk indicators, default probabilities, served as the dependent variable, while ESG indicators constituted the independent variables. The choice between fixed-effects and random-effects models was based on the results of the Hausman test. Qualitative data were analysed using thematic content analysis (Braun & Clarke, 2021).

The validity of research instrument was ensured through content, construct, and criterion-related procedures. Content validity was achieved through expert review, while construct validity was assessed by aligning questionnaire items with established ESG frameworks such as those of the Global Reporting Initiative and the World Bank. Reliability was assessed using

Cronbach's alpha, with values of 0.70 and above considered acceptable (Hair et al., 2023). Pilot testing further enhances instrument reliability.

RESULTS AND DISCUSSION

Descriptive Analysis

This section presents a summary of respondents' answers to the research questions. The results are presented using mean, standard deviation, skewness, and kurtosis statistics.

Table 1: Results of Descriptive Analysis

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Imp_A	134	4.4092	.45592	-.386	.209	-.725	.416
Re_Co	134	4.4913	.45486	-.237	.209	-1.238	.416
Co_Eng	134	4.5286	.47119	-.524	.209	-.866	.416
Inv_Re	134	4.4801	.43550	-1.018	.209	.735	.416
Discl	134	4.2836	.49813	-.310	.209	-.380	.416
Cre_Ri	134	4.2761	.60148	-.445	.209	-.729	.416

Key: Imp_A = Impact assessment (environmental factor), Re_Co = Regulatory compliance (environmental factor), Co_Eng = community engagement (Social factor), Inv_Re = involuntary resettlement (Social factor), Discl = disclosure practices (Government factor), Cre_Ri = Credit Risk

The descriptive statistics reveal a strong level of agreement among respondents regarding the relevance of ESG factors in credit risk assessment within Development Finance Institutions (DFIs). All study variables recorded high mean scores above 4.0 on the Likert scale, with community engagement, regulatory compliance, involuntary resettlement, and impact assessment showing the highest ratings, indicating that respondents perceive these ESG dimensions as critical determinants of credit risk outcomes. The relatively low standard deviation values across the variables suggest a high degree of consistency in responses, reflecting shared perspectives among participants on the importance of ESG integration in DFI operations.

In addition, the negative skewness values observed across all variables indicate that responses were concentrated toward the higher end of the scale, further reinforcing the strong positive perception of ESG practices. Most variables also exhibited platykurtic distributions, implying that responses were fairly evenly distributed around the mean while maintaining overall consistency. Collectively, these findings demonstrate stable and reliable data patterns, providing empirical support for the study's conceptual framework and establishing a solid basis for subsequent inferential analysis of the relationship between ESG factors and credit risk assessment.

Test of Hypothesis

This section presents the results of the hypotheses tested in line with the study objectives. The findings are presented in Table 2, showing the statistical relationships between the study variables and the significance of the results.

Table 2: Hypothesis Testing

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.358	.382		-.938	.350
	Env_Fa	.745	.115	.510	6.506	.000
	Soc_Fa	-.440	.138	-.294	-3.197	.002
	Govt_Fa	.770	.091	.638	8.432	.000
a. Dependent Variable: Cre_Ri						

The regression results indicate that ESG factors in general have implications as far as credit ratings within DFIs are concerned, and this effect is notably high. The explanatory power of the model is high, and it explains about 63% of the variance in credit risk, which is a good percentage. The overall model is significant, indicating that the three environmental, social, and corporate governance factors influence credit risk alternatively. This proves how important the inclusion of ESG considerations is in the assessment of credit risk.

It is further noted that at an individual level, the most appreciable positive relationship with credit risk is as a result of governance features, which is closely followed by environmental drivers, and that both of the latter features are significant. It should be noted that social aspects, however, bear a significant negative association with credit risk, which means that if social standards are met, then credit risk is mitigated. Consequently, the relationship of the three dimensions to credit risk is clearly there, and it enables the rejection of the null hypotheses due to the proportional nature of the evidence.

Qualitative Analysis

This section presents the qualitative analysis of data obtained from interviews conducted with selected respondents. The analysis focuses on identifying recurring themes, patterns, and insights related to ESG practices and credit risk assessment within DFIs.

Table 3: Qualitative Analysis

ESG Dimension	Key Themes	Key Insights
Environmental Factors	Mandatory compliance structures Continuous monitoring mechanisms Risk transmission to credit outcomes	EIAs are required before loan approval; strong compliance systems exist; poor environmental practices increase default risk through project disruptions and regulatory penalties
Social Factors	Proactive risk mitigation Stakeholder engagement Operational disruption	Resettlement planning and community engagement are critical; unresolved social issues lead to delays, higher costs, and repayment challenges
Governance Factors & Credit Risk Outcomes	Transparency as risk control Institutional accountability improves credit quality	Disclosure and internal controls enhance credit decisions; governance is the most influential ESG factor; strong ESG reduces default rates while weak ESG increases credit risk

The qualitative findings highlight the importance of cross-cutting ESG factors in shaping credit risk outcomes within Development Finance Institutions (DFIs). Respondents emphasized that Environmental Impact Assessments (EIAs) are integrated into the loan appraisal process as a key screening requirement prior to project approval, alongside structured compliance procedures such as regulatory reviews and safeguard assessments. Institutions also employ post-approval monitoring mechanisms, including periodic reporting, site inspections, and compliance audits, to ensure continued adherence to ESG standards.

The findings further reveal that weak EIAs, regulatory non-compliance, and poor implementation of ESG measures increase project uncertainty, expose borrowers to financial penalties and operational disruptions, and ultimately undermine repayment capacity. Social and governance issues also emerged as critical themes, particularly stakeholder participation, transparency, accountability, and effective resettlement planning. Respondents noted that strong community engagement and proactive resettlement measures help minimize delays and financial liabilities, while improved disclosure practices and governance structures contribute positively to credit quality and risk management.

DISCUSSION FINDINGS

The regression findings provide strong empirical evidence of the significant role of Environmental, Social, and Governance (ESG) factors in credit risk assessment within Development Finance Institutions (DFIs). The model explains approximately 63% of the variation in credit risk ($R^2 = 0.630$), indicating substantial explanatory power and confirming the relevance of ESG dimensions in credit risk evaluation. These findings are consistent with prior studies by Doblas *et al.* (2022), Ahmad *et al.* (2025) and Le and Ngo (2023), which found that stronger ESG performance is associated with lower default risk and improved lending

outcomes. However, while existing studies largely focus on corporate and commercial banking institutions, this study contributes to the literature by providing empirical evidence specific to Nigerian DFIs, thereby addressing the gap identified by the World Bank (2024) and Organisation for Economic Co-operation and Development (2025) regarding the limited availability of development finance-focused ESG research.

The findings further reveal that environmental factors exert a significant positive influence on credit risk assessment ($\beta = 0.510$, $p < 0.001$). This supports the studies of Cornett *et al.* (2020) and Rossi (2024), who argued that environmental compliance and exposure to environmental risks are closely linked to default risk and credit risk premiums. Unlike many previous studies that rely on broad environmental indicators, this study incorporates environmental risk measures that are more relevant to DFIs involved in infrastructure and development financing, thereby extending the existing literature.

Social factors were found to have a significant negative relationship with credit risk ($\beta = -0.294$, $p = 0.002$), indicating that stronger social safeguards and stakeholder engagement mechanisms contribute to lower credit risk exposure. This finding aligns with studies by Esteves (2025) and Li and Zheng (2009), which highlighted the role of social disruptions, community conflicts, and project interruptions in increasing repayment risk. The findings also support the arguments of Cernea (2020) and Irwin (2020), who emphasized the financial implications of involuntary resettlement, including delays, cost overruns, and heightened default risk. By examining involuntary resettlement as a distinct social risk variable, this study contributes additional insight to the ESG and credit risk literature.

Governance factors emerged as the strongest predictor of credit risk ($\beta = 0.638$, $p < 0.001$), underscoring the critical role of transparency, accountability, and disclosure practices in credit risk management. This finding is consistent with studies by Ahmad *et al.* (2025), Wang and Lee (2023), and Le and Ngo (2023), which identified governance quality and disclosure practices as important determinants of reduced credit risk and non-performing loans. This finding is particularly important for DFIs, where information asymmetry is often high due to the long-term and complex nature of development projects.

Overall, the study confirms the interconnected nature of ESG dimensions in influencing credit risk outcomes, consistent with the observations of Mackenzie *et al.* (2023) and the Organisation for Economic Co-operation and Development (2025). However, the findings demonstrate that governance factors exert the strongest influence, followed by environmental factors, while social factors contribute to mitigating credit risk. By disaggregating ESG dimensions and linking them directly to credit risk indicators within DFIs, the study addresses important gaps in the literature, which has traditionally relied on aggregate ESG scores and focused predominantly on commercial banking institutions.

CONCLUSION AND RECOMMENDATIONS

The findings of the study provide strong evidence for the integration of Environmental, Social, and Governance (ESG) criteria into the credit risk management frameworks of DFIs. The results indicate that compliance with environmental standards helps reduce operational and regulatory risks, while effective social practices mitigate project-related disruptions and implementation challenges. Governance factors, particularly transparency and accountability, emerged as the most influential determinants in strengthening credit risk management and improving lending decisions. Overall, the study concludes that the integration of ESG considerations into credit risk assessment contributes significantly to improved asset quality, financial sustainability, and institutional resilience, thereby positioning ESG practices as a critical component of effective credit risk management within DFIs.

The study offers several recommendations for strengthening credit risk management within Development Finance Institutions (DFIs). It recommends the integration of ESG risks into credit risk assessment frameworks, alongside significant improvements in governance structures, particularly in the areas of transparency, accountability, and disclosure practices. The study also emphasizes the need for stricter compliance with environmental standards and enhanced community engagement processes to reduce project-related risks and social conflicts. In addition, DFIs are encouraged to adopt well-coordinated resettlement frameworks, develop integrated credit risk models that incorporate ESG variables, and provide continuous training for risk management professionals on ESG assessment practices. Furthermore, the harmonisation of ESG reporting standards and regulatory frameworks across institutions would strengthen sector-wide risk management and promote sustainable financing outcomes.

Suggestions for Further Studies

Future studies should expand the scope of analysis to include comparative and longitudinal investigations across different countries and categories of financial institutions in order to provide deeper insights into the evolving relationship between ESG factors and credit risk. Further research should also examine the mediating or moderating roles of variables such as financial performance, institutional capacity, and regulatory effectiveness in shaping ESG–credit risk dynamics. In addition, scholars are encouraged to employ advanced analytical techniques, including Structural Equation Modelling (SEM) and machine learning approaches, to improve predictive accuracy and enhance understanding of the complex interactions between ESG dimensions and credit risk outcomes.

Contribution to Knowledge

This study contributes to the existing literature by providing empirical evidence on the relationship between ESG factors and credit risk within the context of Development Finance Institutions (DFIs) in Nigeria. Methodologically, the study advances ESG research by disaggregating ESG dimensions into specific proxies rather than relying on aggregate ESG indices, thereby offering deeper insights into the distinct influence of environmental, social, and governance factors on credit risk outcomes. The findings particularly highlight the dominant role of governance factors in shaping credit risk assessment, emphasizing the

importance of transparency, accountability, and disclosure practices in lending decisions. Consequently, the study provides valuable insights for both academics and practitioners by supporting the development of ESG-integrated credit risk models and strengthening sustainable financing policies within DFIs.

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