Sustainability as a Risk-Mitigation Tool: Comparative Evidence from Islamic and Conventional Banking Systems

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Abstract: The implementation of Sustainable Development Goals (SDGs) proposed by the United Nations has encouraged banks to adopt sustainability practices. Although previous research mainly focuses on the performance implications of SDG adoption, there is little data on the impact of sustainability on the risk of banks, especially in comparison with Islamic and conventional banks. This research fills this gap by making a comparative analysis of the effect of SDG adoption on the risk profile of Islamic and conventional banks in the Asia-Pacific region. SDGs are measured by construction an ESE Index from the indicators proposed by the United Nations. The two-step system GMM (Generalized method of moments) method is used to analyze panel data of Islamic and conventional banks in the Asia-Pacific region to compare the relationship between SDGs and the risk of Islamic and Conventional banks. The results show that SDGs are negatively related to the risk of conventional banks as compared to the Islamic banks, as the conventional counterparts are more mature and have good risk management practices. In contrast, Islamic banks already operate under Shariah principles that emphasize ethical investment, risk sharing, and socially responsible financing, which are already aligned with sustainability goals. The present work is relevant to the sustainable banking literature by providing comparative evidence of the effect of SDG adoption on risk in banking models and by employing it in a dual banking framework. The results give important implications for regulators, policymakers, and banking institutions by highlighting the role of SDGs adoption on the risk mitigation of Islamic and Conventional banks so that the financial stability is enhanced within the banking operations.

Keywords: Islamic and conventional banks, Sustainable development goals, Risk, United Nations.

INTRODUCTION

The implementation of the Sustainable Development Goals (SDGs) of the United Nations has gained even greater significance for the banking industry, both concerning the aspect of performance and with regard to the stability and resilience in the long term. Banks are major financial intermediaries; thus, they are the ones mobilizing resources to sustainable economic activities and are consequently supposed to align their operations with economic, social, and environmental goals. When they act as intermediaries, they must align themselves with the sustainability practices. While acting as intermediaries, they may face risk. This risk can be mitigated if the banks strengthen their operational resilience through the adoption of sustainability. Although there has been an increasing literature on the relationship between the SDG adoption and financial performance of banks, the risk implications of sustainability practices are not well explored, specifically in comparison of Islamic and Conventional banks (Sendi *et al*., 2024).

The management of risk is part of the survival and value creation of banks because the overexposure to financial, operational, and reputational risks may destabilize the bank and destroy the trust of the stakeholders. The threats to the banking industry posed by the sustainability-related problems like climate change, social inequality, health crisis, and environmental degradation are major in impacting the quality of assets, capital sufficiency, and profitability over time (ElAlfy & Weber, 2019). Therefore, it is crucial to comprehend the role of SDG utilisation in the risk management of a bank to determine the true level of effectiveness of sustainable banking. Sustainability and risk are normally considered in a complementary way. The former views sustainability practices as offering insurance-like coverage, which can improve the chances of survival in the long term because of the strengthening of relationships with stakeholders and decreased risk of negative reputation (Sharma *et al*., 2024). The second school of thought considers compliance to economic, social, and environmental benchmarks as a risk-aversion tool, in which sustainable business practices increase the amount of uncertainty and resilience to regulatory, environmental, and reputational shocks (Apicella *et al*., 2025). In spite of such theoretical arguments, empirical evidence to support the association between sustainability, especially SDGs and a holistic approach to bank risk is scanty.

Notably, the previous literature has not given much consideration to heterogeneity among the banking systems, especially Islamic and conventional banks. The Islamic banks are designed under the Shariah frameworks that place high value on risk-sharing, asset-based financing and ethical investment, which can already interest themselves with the goals of

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sustainable development. Traditional banks in their turn are mainly guided by profit-maximization models where sustainability is often motivated by regulatory or reputational factors. These framework and philosophical distinctions imply that the implementation of SDG can cause various effects on risks in Islamic and conventional banking systems, but there is a lack of comparative empirical data on this problem (Durre & Kulmie, 2025).

This study offers novel contributions to the existing literature. To begin with, it expands the literature in Islamic finance by offering comparative evidence of how sustainability practices are a risk-reduction mechanism in both Islamic and conventional banking systems. Although most previous literature has largely examined the issue of financial performance and stability outcomes independently, this paper combines the concept of sustainability and risk perspectives in a comparative banking framework. Second, the research adds to the discussion of socioeconomic sustainability by exploring how environmental, social and economic perspectives of sustainable development goals enhance institutional resilience and decrease risk exposure in the banking sector. Third, theoretically, the findings will enrich the risk management theory since sustainability is found to be a strategic instrument to counter financial and operational risks, thus providing a wider outlook to the conventional risk-control systems.

1. THEORETICAL FRAMEWORK

1.1. Stakeholder Theory

According to Freeman (2004), the Stakeholder Theory posits that a business organization should consider the interests and well-being of all stakeholders, rather than just shareholders, when formulating its strategic policies. This involves the balancing of the social, environmental, and economic aspects of sustainability. Through the incorporation of sustainability into their activities, corporations would be in a position to improve the long-term well-being of all employees, customers, investors, and society in general. In this respect, the adoption of SDGs has the potential to become a tool to minimize organizational risk since those banks that make efforts to interact with stakeholders can better cope with uncertainty, reputational risk, and operational shocks (Stauropoulou *et al*., 2023).

1.2. Maqasid al- Shariah Framework

Besides Stakeholder Theory, the study is based on the Maqasid al-Shariah framework, which is the overall goals of the Islamic law to maintain faith, life, intellect, lineage, and wealth. In the context of Islamic finance, these objectives are not limited to the increase of profits and include social justice, fair wealth distribution, financial inclusion, and social welfare. The fact that sustainability practices are allied to Maqasid principles gives a solid theoretical framework in discussing sustainability as a risk-reduction tool within the Islamic banks.

1.3. Institutional Theory

The Institutional Theory also substantiates the comparative paradigm of this research by describing that organizations within various regulatory, normative, and cultural contexts evolve unique strategic responses. The institutional logics, governance structures, and ethics of Islamic and conventional banks differ. Such variations can determine how far sustainability initiatives are embraced and incorporated into the risk management practices.

All these theoretical views offer a holistic basis of the study. Although Stakeholder Theory is used to explain why sustainability is important in meeting stakeholder expectations, the Maqasid al-Shariah framework places sustainability in the context of Islamic socio-economic goals and Institutional Theory explains why there is a systemic disparity in the banking models.

2. LITERATURE REVIEW

2.1. SDGs and Risk of Banks

The issue of sustainability has been receiving a lot of focus in the banking industry as a result of increased regulatory pressures, stakeholder demands, and increasing environmental and social risk awareness (Chen *et al*., 2025). Banks are no longer rated based on their financial performance only, but the extent to which they incorporate the economic, social, and environmental factors in their operations is also emphasized (Aslam & Jawaid, 2023). Previous research indicates that sustainability-focused banks are likely to have reduced risk exposure, increased asset quality, and higher levels of long-term stability because sustainable practices encourage wise lending, improved risk screening, and more robust means of governance (CHITOROAGA, 2024).

From the perspective of risk management, sustainability programs assist banks in reducing the risks of credit, operations, and reputation through the promotion of well-informed lending and investment choices (Scott *et al*., 2024). The empirical evidence suggests that the banks that have greater sustainability engagement also have reduced earnings volatility Ruan & Liang (2025), fewer non-performing loans

(Atichasari *et al*., 2023), and are more resilient during financial crises (Chiaramonte *et al*., 2022). These results endorse the fact that sustainability is not just a compliance-focused task but a risk-reduction and cost-reduction tool. The banks seeking to address the long-term risk must incorporate the economic, social, and environmental factors not only in their investment decisions but also in their routine operations (Ewim *et al*., 2023).

2.2. SDGs and Risk of Islamic Banks

The inherent features of Islamic banks, which include the prohibition of Riba, gharar, and maysir (speculations) while promoting the asset-backed financing at the same time, are naturally aligned with the fundamental objectives of sustainability. Islamic finance insists on ethical investment, social and distributive justice, in combination with real economic activity (Nurdiana *et al*., 2025).

According to the existing literature, it is observed that the risk-taking behavior of Islamic banks is generally lower than that of conventional banks, especially in times of financial stress (Ghenimi *et al*., 2024). The excessive leverage and speculative exposure are minimized through the asset-backed structure of the Islamic financing, and the profit-and-loss sharing structure helps in financial stability. Further, Shariah governing structures are an additional source of control, which can also improve risk management and ethical adherence (Srairi & Kateb, 2025).

These benefits notwithstanding, Islamic banks are also not risk-averse. Research has observed that the inability to diversify sufficiently, regulatory restrictions, and sensitivity to certain sectors can increase the level of risks. Thus, the topic of sustainability as one more risk-reduction mechanism in Islamic banking is also a critical field to study (Hassan, 2025).

2.2.1. SDGs and Maqasid al-Shariah: A Conceptual Link

The SDGs agenda proposed by the United Nations clearly resonates with Islamic socio-economic thought particularly the framework of Maqasid- Al-Shariah. The Maqasid stress on maintenance and encouragement of faith (din), life (nafs), intellect (aql), lineage (nasl), and wealth (mal), which are meant to guarantee social justice, economic prosperity, and human progress. These goals are closely aligned with various SDGs such as poverty eradication, quality education, decreased inequalities, responsible consumption, and institutional justice. Thus, Islamic banks might not necessarily implement sustainability as an externally dictated reporting or strategic framework; however, sustainability principles can already be implicit in their operating philosophy via Shariah governance, ethical investment principles, banning harmful activities, and risk-sharing structures.

2.3. SDGs and risk of Conventional Banks

Sustainability strategies have become more and more a response by conventional banks to regulatory changes, pressures as an investor, and global programs, like the Sustainable Development Goals (SDGs). The incorporation of sustainable initiatives in conventional banking is mostly voluntary and market-driven as opposed to Islamic banks, and hence its ability to mitigate risks is an empirical issue. The available literature indicates that the traditional banks that incorporate sustainability practices enjoy better risk-adjusted returns, reduced credit risk, and reputational capital. Sustainable lending policies promote superior screening of borrowers and the viability of the long-term projects, thereby minimizing the risk of default (Zheng *et al*., 2025). Nevertheless, in other studies, heterogeneous impacts are reported, meaning that the effect of sustainability on risk is not consistent across regions, bank size or in the strength of the regulatory. These discrepancies indicate the necessity to compare them in order to understand whether sustainability is a more effective risk-reducing factor in particular banking systems (DeMenno, 2022).

2.4. Comparative Evidence: Islamic and Conventional Banks

Comparative analysis of the Islamic and conventional banks shows there are significant differences in terms of risk behavior, stability, and alignment of sustainability. The moral basis of Islamic banks and the principle of risk-sharing imply a close alignment with sustainability principles, which could make Islamic banks more powerful in risk mitigation. By comparison, traditional banks are more dependent on formal sustainability models and regulatory inducements in risk management. There are still inconclusive empirical results. Some studies state that Islamic banks are stable and less risky, whereas others have no significant difference when the institutional and macroeconomic factors are controlled (Iqbal *et al*., 2024).

Although there is increasing interest in the area of sustainability and bank risk, literature supports have not provided comparative evidence of sustainability as a risk mitigation mechanism in both Islamic and conventional banking systems in a comprehensive manner. The literature is usually interested in the financial performance instead of the risk,

single-dimensional measurements of sustainability, or the banking models on their own. The current research fills these gaps by giving empirical evidence on the risk implication of the sustainability adoption in Islamic banks and conventional banks. Through the use of a comparative framework, the research is valuable to the existing body of literature on sustainable finance, banking stability, and risk management and provides valuable insights to policymakers, regulators, and banking professionals.

In support of the above literature, the following are the hypothesis:

H1: The adoption of SDGs measured through economic, social, and environmental indicators has a negative and significant effect on the risk of Islamic banks.

H2: The adoption of SDGs measured through economic, social, and environmental indicators has a negative and significant effect on the risk of Conventional banks.

3. DATA AND METHODOLOGICAL APPROACH

3.1. Sample

The analysis is on the banking industry in the nine nations of the Asia-Pacific. Countries were selected on the basis of the strongest GDP and the presence of Islamic banks. The choice of banks was based on the ranking of the banks given in the Asian Banker database, which lists the strongest banks in every country. In this study, a total of five banks of each country were used and hence came up with a sample. The annual reports of the banks in 2017-22 have been used to gather data since the Sustainable Development Goals (SDGs) were introduced in 2015 and started implementation in the next year. Each of the chosen banks has officially indicated that they have implemented SDGs, either in their annual reports or in other sustainability-specific reports.

In the sample, five banks of each country are chosen based on their ranking as the strongest banks at The Asian Banker database in the Asia-Pacific region. The choice criterion was taken based on the assumption that financially sound and systematically important banks have a higher likelihood of having the governance framework, reporting ability and strategic direction necessary to make SDG adoption and sustainability disclosures. The Asian Banker ranking uses objective indicator like risk profile, profitability, asset quality, liquidity and balance sheet growth, thus providing an objective and comparable sampling framework among countries.

3.2. Variables

3.2.1. ESE Index

This paper uses the ESE index to assess the extent to which banks have implemented the SDGs. The index has 21 indicators and 7 indicators of the economic, social, and environmental dimensions, which were chosen by the United Nations Statistical Division Report. The selection of indicators was done based on relevance to the banking industry, and it addresses aspects like financial inclusion, responsible lending, and climate-related initiatives. The ESE score is between 0 and 21 with higher scores denoting greater compliance with SDGs. The frequency-of-disclosure procedure is used to construct the index: banks would receive a 1 score in case they utilize an indicator and 0 in case they do not, adhering to the dichotomous approach of (Rashid & Riaz, 2018) and (Li *et al*., 2019). It involves gathering data from banks' annual and sustainability reports, making them reliable and accountable. It enables quantitative, standardized evaluation of SDG adoption across many banks, offering a new indicator of sustainability performance in the banking industry.

3.2.2. Bank Risk

Among the goals set for the study, there is a need to find the effects of the SDGs' adoption on the risk of Islamic and conventional banks. This is important because the aggregation of systemic risks leads to severe financial crises, which are costly and often lead to massive defaults and affect profitability (Altunbas *et al*., 2017). The profitability, solvency, liquidity, and efficiency risks are used to determine the bank risk in this study by the use of a z-score. The basic objective of the Z-score is to create a relationship between the capital of a bank and its return volatility and to be able to ascertain how much fluctuations in return can be allowed by a particular bank. Z-score is the measure of the probability that a bank may face some financial problems or even go bankrupt in the next one or two years. Since the Z-score is the inverse of the likelihood of insolvency, a bank with a higher Z-score is considered to be more stable and less dangerous. The Z-score essentially calculates the number of standard deviations below the expected return on assets that would cause a bank to become insolvent due to the depletion of its equity (Lapteacru, 2016); and (Kumar Pradhan & Routroy, 2014). The Z-score is calculated using the following formula in line with previous literature (Köhler, 2015); (Demirgüç-Kunt & Huizinga, 2010); (Stiroh & Rumble, 2006).

The formula for z-score is Z-Score= $\frac{ROAi.t+CARi.t}{\sigma \mathrm{ROAi.t}}$

Where ROA is return on assets, CAR is capital ratio, and $\sigma \mathrm{ROA}$ is the standard deviation of ROA. This

variable is calculated by taking ratios from annual reports of the banks.

3.2.3. Control Variables

This paper uses the two variables of capital ratio (CR), nonperforming loans (NPL), and bank size (BS) as control variables to explain the bank specifics that effect the bank risk. It has the capital ratio (CR) to reflect a bank's financial strength and stability in absorbing potential losses. Asset quality and credit risk are proxied by the percentage of nonperforming loans (NPLs), since the higher the percentage of NPLs, the higher the risk of default and the poorer the financial health. The bank size (BS), which is usually measured as the natural logarithm of total assets, is added to eliminate the effect of scale since bigger banks may enjoy economies of scale and diversification in operations. These variables have been used by many previous studies (Arhinful *et al*., 2025).

3.3. GMM

The system Generalized Method of Moments (GMM) estimator is applied in the current paper to a dynamic panel data model introduced by Arellano and Bover (1995) and Blundell and Bond (1998). System GMM is also more efficient in standard moment conditions, compared to the difference GMM estimator, because system GMM makes the estimation more accurate, by bias reduction and minimization of root mean squared error. The estimator does this by integrating equations both in first differences and levels and, in the process, leverages on extra conditions on the moment as well as improving on the effectiveness of the structure of variance covariance. The system GMM is also chosen based on a number of reasons. To begin with, the data structure meets the standard stipulations of system GMM estimation, *i.e*., the number of cross-sectional units is more than the time dimension ($N > T$ N>T). Second, system GMM can include pre-determined explanatory variables, which is especially important in this research. Regressors are supposed to be correlated with the error terms of the past, and not correlated with the current and future disturbances. In this supposition, lagged values of these variables are valid internal instruments as it is a method described by Roodman (2009). Third, the estimator is useful because it can take control of the unobserved country-specific effects by annihilating time-invariant heterogeneity by differencing and other appropriate instruments. Validity of the instrument set is evaluated with the help of the Sargan and Hansen tests of over-identifying restrictions and the Arellano-Bond tests of serial correlation are applied to prove the lack of second-order autocorrelation of the residuals. In a further effort to guarantee robustness, the heteroskedasticity is countered using the robust standard errors. Lastly, system GMM addresses the biases of endogeneity and omitted variable issues that prevail with cross-sectional and static panel estimations. The estimator gives consistent and efficient estimates of parameters by employing internally generated instruments and transforming them such that they meet the exogeneity requirements. In general, system GMM is deemed to be stronger to heteroskedasticity and autocorrelation and more efficient compared to other one-step or difference GMM estimators.

3.4. Econometric Models

Impact of SDGs on the risk of Islamic banks:

$$R=\alpha+ \beta1(ESE\textit{Islamic})i,n+ \beta2(ESE)i,n+ \beta3(CR)i,n +\beta4(NPL)i,n+\beta5(BS)i,n+e$$ Equation (**1**)

Impact of SDGs on the risk of Conventional banks:

$$R=\alpha+ \beta1(ESE\textit{Conventional})i,n+ \beta2(ESE)i,n+ \beta3(CR)i,n +\beta4(NPL)i,n+\beta5(BS)i,n+e$$ Equation (**2**)

4. RESULTS AND ANALYSIS

4.1. Descriptive Analysis of Conventional Banks

The descriptive statistics of the sample banks show that there is medium variance in the practices of sustainability, financial health, and risk. The average index of ESE is 11.18 (SD = 3.89), indicating that there is a moderate level of activity of the banks in sustainability initiatives with the scores being 0- 20.

Table 1: Descriptive Statistics of Conventional Banks

Variable	Observation	Mean	Std. Dev.	Min	Max
ESE	169	11.178	3.889	0	20
CR	169	15.156	5.855	0.221	31.04
NPL	169	3.236	4.112	0	18.2
Bank Size	169	14.73	5.092	1.33	26.59
Z-Score	169	8.412	3.676	0.256	18.187

The average capital ratio (CR) stands at 15.16 (SD = 5.85) and depicts fairly capitalized banks, with a few having a lower capital adequacy, with the lowest being 0.22. The NPL ratio of non-performing loans (NPL) is 3.24% (SD = 4.11%), which means that the credit risk is not that high, and some banks have serious problems with the quality of assets, with the highest values of 18.20. The bank size has a mean of 14.72 (SD = 5.09), and a sample of a good variety of smaller and bigger banks. The overall stability is moderate with a mean Z-score of 8.41 (SD = 3.68), though there are banks with very low solvency buffers (minimum = 0.26) and there are banks with high stability (maximum = 18.19). On the whole, these statistics show that there is enough variation in the key variables, and the dataset can be used to study the correlation between the SDG adoption and bank performance.

In general, the descriptive statistics demonstrate the significant variation in the measures of sustainability engagement and financial indicators, which offer an adequate foundation in conducting empirical analysis. The average to high variance of ESE scores, capitalization, credit risk, and stability indicate that data is suitable to explore the correlation between SDG adoption and bank performance.

4.2. Correlation (Conventional Banks)

The Pearson correlation coefficients between the key variables of the study will be reported in the table. In general, the correlations are low to moderate, indicating that multicollinearity is not a concern and justifying the inclusion of all variables in the subsequent regression analyses. The correlations between the ESE index and Z-score (0.077) and capital ratio (0.070) are weak indicating that there is no significant effect of sustainable development practices on the short-term bank stability or capital adequacy at the bivariate level. In the same way, the correlation with non-performing loans (0.003) and bank size (0.036) is insignificant, which means that ESE adoption is not dependent on the risk of credit and institutional size, but probably it is a long-term, strategic orientation and not a response measure to the present financial situation. The capital ratio (CR) is also among the performance and risk indicators, whose correlation with Z-score (0.804) is strong and shows that capitalization helps to boost the stability of banks. There is also a moderate positive correlation of non-performing loans with Z-score (0.299) and almost no correlation with CR (0.027), which implies that credit risk does not affect the overall stability but is not highly predetermined by the level of capital. Bank size has a negative relationship with both Z-score (-0.270) and NPL (-0.110), which is in line with the literature stating that larger banks might face slightly lower stability scores as a result of the complexity of their operations, but they have portfolio diversification and scale. In general, the analysis of correlation proves that the relationships between the ESE adoption, risk measures, and bank size are theoretically consistent, and there are no two variables that have a pair-wise correlation of more than 0.80 (except CR-Z-score, which is not surprising due to the conceptual overlaps), which is a good backbone of dynamic panel analysis.

4.3. GMM Analysis for Conventional Banks

Table 3: GMM Analysis for Conventional Banks

Variables	Z-Score
z-score LI.	0.0648***
ESE	0.0314***
CR	0.4853***
NPL	-0.0202
BankSize	0.0044
Prob> chi2	0.000
No of obs	112
No of Instruments	15
No of Banks	28
Sargan Test(p-value)	2.819
AR2 (p-value)	0.37

*** p < 0.01, ** p < 0.05, * p < 0.10

The research methodology uses a two-step system Generalized Method of Moments (GMM) estimator with an aim to consider the possibility of endogeneity and

Table 2: Correlation for Conventional Banks

Variables	(1) ESE	(2) Z-score	(3) CR	(4) NPL	(5) Bank Size
ESE	1.000				
Z-score	0.077	1.000			
CR	0.070	0.804	1.000		
NPL	–0.003	0.299	0.027	1.000	
Bank Size	0.036	–0.270	0.008	–0.110	1.000

dynamic effects in the study of the effects of the adoption of ESE on the risk of the conventional banks.

Before estimation, it was necessary to validate the instruments to ensure that the results obtained are consistent and efficient. To test the validity of the instrumental variables, the Sargan test was computed. Although the failure to reject the null hypothesis does not automatically imply that all the instruments are strong, the p-value can be interpreted as an indicator of instrument relevance (Baum *et al*., 2012); (Chao *et al*., 2014). In the present study, the Sargan test produced a value of 2.819 with a p-value of 0.2443 (> 0.05), indicating that the instruments employed in the model are valid. This confirms that the instruments are not correlated with the error term and can be reliably used to address endogeneity in the regression of Z-score on ESE index. The model was further evaluated for weak instruments. To account for heteroscedasticity, robust standard errors were employed. The results indicate that the model is robust to heteroscedasticity, and the estimated coefficients can be considered efficient under non-constant variance conditions. Collectively, these diagnostic tests the Sargan test for instrument validity, the evaluation of instrument strength, and robust standard errors to address heteroscedasticity, provide confidence that the GMM estimates are consistent and reliable.

The table shows the two-step Arellano-Bond dynamic panel GMM results that test the determinants of bank stability that are represented by the Z-score. In line with the results of previous research on the dynamics of banking risk, the lagged dependent variable (L1.Zscore) coefficient is positive and statistically significant (= 0.0648, p < 0.01), which proves the persistence of bank stability over the years. This observation confirms the opinion that the adjustment of bank risks is more gradual than immediate, which justifies the adaptive specification (Arellano and Bond, 1991; Berger *et al*., 2017). The coefficient is also below one, which is another piece of evidence of the convergence to a long-run equilibrium. The findings indicate that there is a positive and significant correlation between ESE (Economic, Social, and Environmental Indicators of SDGs) and conventional bank risk (r = 0.0314, p = 0.01). This result implies that banks that are well-sustainable are more resilient and risk insolvency less. The outcome is aligned with the stakeholder theory, which holds that when business operations are aligned with the interests of all stakeholders, business stability increases in the long run (Freeman, 1984), and with the theory of change, which holds that sustainability of business practices leads to increased financial and risk outcomes in the long run. This evidence is empirically consistent with previous research that reported that sustainability and SDG involvement would enhance risk-adjusted performance and stability of banks (Scholtens, 2017; Buallay, 2019; Miralles-Quirós *et al*., 2019).

The capital ratio, which is used as a control variable, is positively and significantly related to the Z-score of conventional banks, showing that higher capitalization leads to greater bank stability. Z-Score has a negative relationship with non-performing loans (NPL), but the correlation is not statistically significant. Although the negative sign is as expected and is supported by existing theoretical literature and previous studies that indicated that increasing NPLs decrease the soundness of banks, the insignificance indicates that, in the sampled financial institutions, NPLs do not have their own independent impact on bank stability, despite the presence of changing effects and sustainability participation. On the same note, the size of a bank has a positive but not statistically significant coefficient, which means that the size alone is irrelevant in determining increased stability after having both risk dynamics and sustainability issues under control. In general, the findings support the hypothesis that the sustainability-focused policies (ESE/SDGs) and effective risk management of credit risk make banks safer, and the high persistence effect provides evidence of the necessity of the dynamic process of adjusting to the risks in the banking risk model.

4.4. Relationship between the Adoption of SDGs and the Risk of Islamic Banks

4.5. Descriptive Analysis

Table 4: Descriptive Statistics of Islamic Banks

Variable	Observation	Mean	Std. Dev.	Min	Max
ESE	101	10.930	4.846	0	19
CR	101	14.650	6.579	-6.5	23.76
NPL	101	2.833	2.796	-0.8	12.11
Bank Size	101	13.927	4.323	5.659	22.89
Z-Score	101	20.515	9.302	-12.224	31.873

The above table highlights the descriptive statistics of Islamic banks, 2017 to 2022, using an unbalanced panel of 101 observations. The means of the ESE index are 10.93 with a standard deviation of 4.85 which means that the sustainability and SDG-related activities are moderate with a significant cross-bank dispersion. The mean capital ratio is 14.65% (SD = 6.58), which indicates that the capital adequacy of Islamic banks is typically well-capitalized as per the prudential requirements, although the standard deviation indicates that the level of capital adequacy varies among institutions. The average proportion of non-performing loans is 2.83 (SD = 2.80), and it is fairly good, in terms of the quality of assets, and is also in line with Islamic banking, in terms of asset-based financing. The highest rate of 12.11%, however, points to the fact that there are banks that have a high credit risk. Bank size has an average of 13.93 (SD = 4.32), which represents a varied sample of small and large Islamic banks. The mean of the Z-score is 20.52 (SD = 9.30), which indicates an average good level of financial stability, but the high dispersion indicates a great difference in the solvency and risk profiles. In general, the descriptive statistics indicate that there is sufficient variability in sustainability practices, as well as financial indicators, which proves the appropriateness of the data regarding the further econometric analysis.

4.6. Correlation of Islamic Banks

Correlation analysis of the Islamic banks (n=101) has shown that the Z-score is significantly and positively related to capital ratio (r= 0.998), and moderately related to bank size (r= 0.256), indicating that more well-capitalized and larger banks are more likely to be financially sound. The positive relationship between non-performing loans (NPL) and Z-score (r = 0.123) is rather weak, indicating that there is little relationship between credit risk and the overall stability of these banks. ESE adoption and Z-score are negatively associated with each other (r = -0.162). This means that the greater the sustainability engagement, the more there might be slight coincidence with less stability, perhaps through short-term costs or allocation of resources. In general, it can be seen that the correlations of capital adequacy and bank size are the strongest determinants of stability, whereas NPL and ESE have only weak connections, and none of the variables exhibit a problematic overlap.

4.7. GMM Analysis of Islamic Banks

Table 6: GMM Analysis for Islamic Banks

Variables	Z-Score
z-score Ll.	0.058***
ESE	0.009
CR	1.413***
NPL	-0.154
BankSize	-0.0015
Prob> chi2	0.000
No of obs	101
No of Instruments	17
No of Banks	37
Sargan Test	0.5129
AR2 (p-value)	0.221

*** p < 0.01, ** p < 0.05, * p < 0.10

The findings show that the ESE index is positively but statistically insignificantly related to the Z-score of Islamic banks, which implies that the sustainability engagement has a positive impact on stability, but the strength of the effect is not high to be statistically differentiated in the sample. This observation does not mean that SDG implementation has no significance to the Islamic banks; it just might be the reflection of the structure and functioning specifics of Islamic banking, where the ethical governance, social responsibility, and risk-sharing principles are already in the business model. As a result, the marginal effect of formal SDG involvement on quantifiable financial stability might be medium. Alternatively, the sustainability program outcomes in the Islamic banks may be realized either in a longer frame or indirectly via reputation, stakeholder trust, and quality of assets, and not by a direct and immediate decline of insolvency risk. Few studies are available on this relationship, including (Ammar *et al.*,

Table 5: Correlation for Islamic Banks

	Z-Score	ESE	CR	NPL	Bank size
Z-Score	1.000				
ESE	-0.1624	1.000			
CR	0.9980	-0.1679	1.0000		
NPL	0.1234	-0.0912	0.1286	1.0000	
Bank Size	0.2556	-0.0946	0.2568	-0.0112	1.0000

2023). In the following study, risk remains insignificant to mediate the relationship between financial risk and the performance of Islamic banks. According to the Sargan test of over identifying restrictions, the instruments employed in the GMM estimation are valid (2 = 12.18, p = 0.5129). The p-value is greater than the 5% significance level, so we cannot reject the null hypothesis that the instruments are exogenous, which supports the suitability of the set of instruments. As far as control variables are concerned, the capital ratio is significant, while the non-performing loans and bank size are insignificant.

5. DISCUSSIONS

The empirical studies on the connection between Sustainable Development Goals (SDGs) involvement and bank risk are few especially on the comparative studies carried out in the Asia-Pacific region between conventional and Islamic banks. Though there has been increasing focus on ESG-related processes and financial stability, little is well known on whether SDG engagement can improve the bank resilience among various banking models. The current research fills this gap by examining the effects of SDG performance, as an Economic, Social and Environmental (ESE) index, on the risk of banks, proxied by the Z-score of both Islamic and conventional banks.

There are two main findings. To begin with, SDG involvement is positively and significantly correlated with the Z-score of conventional banks, meaning that the more aligned it is to SDGs, the more the bank stability and lower the insolvency risk. This observation confirms the stakeholder-based perspective, which proposes that sustainable development investments promote reputation, enhance risk management behavior, build stakeholder confidence, and eventually make firms more resilient financially. In the case of traditional banks, the integration of SDGs can be seen as a long-term risk-mitigation mechanism, strengthening their solvency and stability.

Second, the coefficient on SDGs for Islamic banks is positive but not significant. This implies that, in contrast to conventional banks, SDG engagement is not a net effect of further relative stability of Islamic banks. Nevertheless, it does not mean that Islamic banks should not use SDGs. Instead, it might be the outcome of the naturally risk-sharing and asset-based nature of Islamic banking principles, already in close relation to the ethical, social, and sustainability aspects, incorporated in the SDGs. That is, Islamic banks can already internalize most of the SDG-related goals in form of Shariah-compliant financing processes, like profit and loss sharing, banning of speculative business, and focus on actual economic business. As a result, the marginal effect of formal SDG disclosure or participation on risk measures might be simply minimal since the principles of sustainability are systematically integrated into their model of operations.

On the whole, the results suggest that SDG engagement will contribute to financial stability on the one hand in the traditional banking system, where sustainability practices can be viewed as an extra layer of governance and strategy. In the case of Islamic banks, the SDG resonance can be more inherent than progressive. Regulators and bank managers ought to note that introducing sustainability into the banking sector can be viewed as an additional stability instrument in traditional banking whereas in the case of Islamic banks, the accentuation can require altering the emphasis on enhancing transparency, standardization, and the measurement of sustainability outputs instead of enhancing the level of SDG disclosures.

5.1. Policy Implications

The results have several significant policy implications. Regulators and supervisory authorities need to develop standardized SDG-based disclosure frameworks that enable similar, uniform sustainability reporting across all banking institutions. These frameworks can consist of minimum disclosure standards pertaining to environmental, social, and economic performance, SDG alignment, and sustainability-linked risk indicators. Standard reporting instructions enhance transparency, lessen information asymmetry, and promote more effective supervision.

In the case of Islamic banks, the findings underscore the need to standardize sustainability indicators and reporting measures in a way that is aligned with the SDG goals and the Maqasid al-Shariah principles. The stakeholder confidence can be enhanced by developing harmonized sustainability scorecards with provisions of social welfare funding, ethical investment, and risk-sharing activities, which can enhance the position of sustainability as a risk-reduction instrument. By fulfilling these requirements of SDGs adoption, it is expected that Islamic banks can have a better risk profile in the future.

5.2. Limitations

However, there are some shortcomings that should be noted. To begin with, the sample is restricted to the chosen countries in Asia-Pacific, and it might not be a complete representation of banking activities around the world. The relatively short time period of the study limit the ability to capture long-term effects of sustainability and structural changes in banking

behavior over the time. Future studies may extend the sample period and employ alternative measures to validate the robustness of the findings.

5.3. Conclusion

To sum up, this work presents the evidence of the fact that SDG activity is reinforcing the financial stability of the traditional financial institutions, whereas the effects of SDG on the Islamic ones is statistically neutral, perhaps, because of the inherent compatibility of the principles of Islamic finance and the objectives of sustainable development. These results point to the fact that sustainability efforts have stability value aspects which are contingent and determined by the underlying banking models.

DECLARATIONS

Ethics Approval and Consent to Participate

Not applicable.

Consent for Publication

Not applicable.

Availability of Data and Material

The datasets generated and/or analyzed during the current study are not publicly available due to the privacy issues as the dataset is the part of Ph.D. thesis and cannot be shared publicly but is available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests.

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Author's Contributions

SI has contributed towards the data collection, analysis and interpretation of data. Maham Sattar has contributed towards the incorporation of reviewer´s comments.

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REFERENCES

Altunbas, Y., Manganelli, S., & Marques-Ibanez, D. (2017). Realized bank risk during the great recession. Journal of Financial Intermediation, 32, 29-44. https://doi.org/10.1016/j.jfi.2017.08.001

Ammar, R., Rebai, S., & Saidane, D. (2023). Toward the development of an Islamic banking sustainability performance index. International Journal of Islamic and Middle Eastern Finance and Management, 16(4), 734-755. https://doi.org/10.1108/IMEFM-12-2021-0479

Apicella, G., Carannante, M., & D'Amato, V. (2025). Policyholders' subjective beliefs: Approaching new drivers of insurance ESG reputational risk. Decisions in Economics and Finance. https://doi.org/10.1007/s10203-025-00516-x

Arhinful, R., Mensah, L., Gyamfi, B. A., & Obeng, H. A. (2025). The impact of non-performing loans on bank growth: The moderating roles of bank size and capital adequacy ratio—Evidence from US banks. International Journal of Financial Studies, 13(3), 165. https://doi.org/10.3390/ijfs13030165

Aslam, W., & Jawaid, S. T. (2023). Green banking adoption practices: Improving environmental, financial, and operational performance. International Journal of Ethics and Systems, 39(4), 820-840. https://doi.org/10.1108/IJOES-06-2022-0125

Atichasari, A. S., Ratnasari, A., Kulsum, U., Kahpi, H. S., Wulandari, S. S., & Marfu, A. (2023). Examining non-performing loans on corporate financial sustainability: Evidence from Indonesia. Sustainable Futures, 6, 100137. https://doi.org/10.1016/j.sftr.2023.100137

Baum, C. F., Lewbel, A., Schaffer, M. E., & Talavera, O. (2012). Instrumental variables estimation using heteroskedasticity-based instruments. United Kingdom Stata User's Group Meetings, 7. https://www.stata.com/meeting/germany13/abstracts/materials/de13_baum.pdf

Chao, A., Gotelli, N. J., Hsieh, T. C., Sander, E. L., Ma, K. H., Colwell, R. K., & Ellison, A. M. (2014). Rarefaction and extrapolation with Hill numbers: A framework for sampling and estimation in species diversity studies. Ecological Monographs, 84(1), 45-67. https://doi.org/10.1890/13-0133.1

Chen, S.-L., Wang, D., & Chen, H.-W. (2025). The impact of ESG factors on credit ratings: An empirical study of European banks. International Review of Economics & Finance, 99, 104056. https://doi.org/10.1016/j.iref.2025.104056

Chiaramonte, L., Dreassi, A., Girardone, C., & Piserà, S. (2022). Do ESG strategies enhance bank stability during financial turmoil? Evidence from Europe. The European Journal of Finance, 28(12), 1173-1211. https://doi.org/10.1080/1351847X.2021.1964556

CHITOROAGA, C. (2024). Integrating ESG Criteria into Factor-Based Investment Strategies: A Quantitative Approach to Sustainable Portfolio Construction. https://unitesi.unive.it/handle/20.500.14247/25906

DeMenno, M. B. (2022). Environmental sustainability and financial stability: Can macroprudential stress testing measure and mitigate climate-related systemic financial risk? Journal of Banking Regulation, 1. https://doi.org/10.1057/s41261-022-00207-2

Demirgüç-Kunt, A., & Huizinga, H. (2010). Bank activity and funding strategies: The impact on risk and returns. Journal of Financial Economics, 98(3), 626-650. https://doi.org/10.1016/j.jfineco.2010.06.004

Durre, M. R., & Kulmie, D. A. (2025). Sustainability practices in Islamic banking institutions in Africa: A systematic literature review. Multidisciplinary Reviews, 8(11), 2025368-2025368. https://doi.org/10.31893/multirev.2025368

ElAlfy, A., & Weber, O. (2019). Corporate sustainability reporting: The case of the banking industry. https://www.cigionline.org/sites/default/files/documents/Paper%20no.211web.pdf

Ewim, C. P.-M., Azubuike, C., Ajani, O. B., Oyeniyi, L. D., & Adewale, T. T. (2023). Incorporating climate risk into financial strategies: Sustainable solutions for resilient banking systems. Iconic Research and Engineering Journals, 7(4), 579-586.

Ghenimi, A., Chaibi, H., & Omri, M. A. (2024). Risk and performance of Islamic and conventional banks under COVID-19

pandemic: Evidence from MENA region. Arab Gulf Journal of Scientific Research, 42(4), 1788-1804. https://doi.org/10.1108/AGJSR-03-2023-0098

Hassan, A. (2025). The Role of Islamic Financial Institutions in Achieving Sustainable Development with Special Reference to Environmental Protection. Journal of Cultural Analysis and Social Change, 3575-3592. https://doi.org/10.64753/jcasc.v10i2.2144

Iqbal, M., Hakim, L., & Aziz, M. A. (2024). Determinants of Islamic bank stability in Asia. Journal of Islamic Accounting and Business Research. https://www.emerald.com/insight/content/doi/10.1108/jiabr-07-2022-0174/full/html https://doi.org/10.1108/JIABR-07-2022-0174

Köhler, M. (2015). Which banks are more risky? The impact of business models on bank stability. Journal of Financial Stability, 16, 195-212. https://doi.org/10.1016/j.jfs.2014.02.005

Kumar Pradhan, S., & Routroy, S. (2014). Analyzing the supply chain risk issues for an Indian manufacturing company. Journal of Advances in Management Research, 11(2), 144-162. https://doi.org/10.1108/JAMR-11-2012-0047

Lapteacru, I. (2016). On the consistency of the Z-score to measure the bank risk. Available at SSRN 2787567. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2787567 https://doi.org/10.2139/ssrn.2787567

Li, Y., He, J., & Xiao, M. (2019). Risk disclosure in annual reports and corporate investment efficiency. International Review of Economics & Finance, 63, 138-151. https://doi.org/10.1016/j.iref.2018.08.021

Nurdiana, N., Muin, R., & Wahab, A. (2025). Fundamental Principles of Islamic Economic System: Justice, Equity, and Moral Conduct. Formosa Journal of Multidisciplinary Research, 4(6), 2627-2646. https://doi.org/10.55927/fjmr.v4i6.271

Rashid, A., & Riaz, M. (2018). Are Islamic banks really different from conventional banks? An investigation using classification techniques. Journal of Islamic Business and Management, 8(1). https://journals.riphah.edu.pk/index.php/jibm/article/view/113 https://doi.org/10.26501/jibm/2018.0801-003

Ruan, X., & Liang, Y. (2025). Does ESG Performance Mitigate Earnings Volatility? Evidence from China's Manufacturing Industry. Journal of Transition Economics and Finance, 2550014. https://doi.org/10.1142/S3082844925500149

Scott, A. O., Amajuoyi, P., & Adeusi, K. B. (2024). Advanced risk management solutions for mitigating credit risk in financial operations. Magna Scientia Advanced Research and Reviews, 11(1), 212-223. https://doi.org/10.30574/msarr.2024.11.1.0085

Sendi, A., Banna, H., Hassan, M. K., & Huq, T. I. (2024). The effect of ESG scores on bank stability: Islamic vs. conventional banks. Journal of Sustainable Finance & Investment, 1-31. https://doi.org/10.1080/20430795.2024.2395876

Sharma, S., Gupta, C., Malhotra, R. K., & Upreti, H. (2024). Sustainable banking practices: Impact, challenges and opportunities. E3S Web of Conferences, 556, 01031. https://www.e3s-conferences.org/articles/e3sconf/abs/2024/86/e3sconf_rawmu2024_01031/e3sconf_rawmu2024_01031.html https://doi.org/10.1051/e3sconf/202455601031

Srairi, S., & Kateb, I. (2025). From ESG to risk-taking and financial stability: Is board gender diversity the missing link in Islamic and conventional GCC banks? The Journal of Risk Finance, 26(5), 805-839. https://doi.org/10.1108/JRF-04-2025-0177

Stauropoulou, A., Sardianou, E., Malindretos, G., Evangelinos, K., & Nikolaou, I. (2023). The effects of economic, environmentally and socially related SDGs strategies of banking institutions on their customers' behavior. World Development Sustainability, 2, 100051. https://doi.org/10.1016/j.wds.2023.100051

Stiroh, K. J., & Rumble, A. (2006). The dark side of diversification: The case of US financial holding companies. Journal of Banking & Finance, 30(8), 2131-2161. https://doi.org/10.1016/j.jbankfin.2005.04.030

Zheng, L., Mirza, N., Umar, M., & Su, C.-W. (2025). Sustainable Lending to European SMEs: Implications for Bank Performance. International Review of Economics & Finance, 104283. https://doi.org/10.1016/j.iref.2025.104283

https://doi.org/10.65638/2978-8196.2026.02.01