

Article

Financial Performance and Credit Risk in the Islamic Banking Sector in Pakistan: A Panel Model Method

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Abstract: This study aims to assess the financial performance of the Islamic banking sector in Pakistan by analyzing the impact of credit risk over a ten-year period (2012–2022) using a panel model approach. The study utilizes data from annual reports and records of five selected Islamic banks, combining cross-sectional and time-series data. Panel data regression analysis is employed to examine the relationship between credit risk indicators (credit risk default, non-performing loans, credit spread risk, and classified loans) and the dependent variable, return on assets (ROA). The study finds significant and positive impacts ($p < 0.005$) of credit risk default and non-performing loans on ROA, indicating that increases in these credit risks negatively affect profitability. The findings underscore the importance of effective credit risk management in enhancing financial performance in Islamic banking. Limitations include the availability and accuracy of data from the selected banks. Future research could expand the dataset and consider additional variables to further refine the analysis. The study suggests that Islamic banks in Pakistan should strengthen their credit analysis capabilities and improve organizational structures to mitigate credit risks and enhance profitability. Effective risk management practices in Islamic banks can contribute to financial stability and resilience in the economy, benefiting stakeholders and society at large. This study contributes to the literature by applying a panel model method to examine credit risk impacts on financial performance specifically within the context of Islamic banking in Pakistan.

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1. Introduction

Islamic Banks contribute of financial development through financial services. Their role as intermediaries may spur financial development. A record of a nation's monetary health is an expert and engaging display of the banking industry across time. The scope to which an Islamic spreads credit to the general community for beneficial endeavors accelerates monetary development and manageability (Muriithi et al., 2016). Banks' ability to extend credit improves financial backers' ability to benefit from desired productive endeavors. Banks generate revenue through credit generation (Bhattarai, 2016). There is, however, a risk of credit exposure for banks. According to the Basel

Board of Trustees on Financial Management recognized risk is the possibility of losing a significant advance entirely or partially due to credit risk default (CRD). Non-performing loan are internal factor that affects banks' operations. A bank is more likely to incur financial hardship the more exposed it is to credit risk, and the opposite is also true.

One of the risks that banks monitor is credit risk since it has a significant impact on the amount of money banks make from the credits used to calculate expenditures. Credit risk and funding cost risk are directly related. This demonstrates how the likelihood of credit default increases with a large or extended credit limit. According to Gizaw et al. (2015), credit risk and sustained expenditure risk are inextricably linked. A growing percentage of non-performing advances in the loan portfolio makes it difficult for banks to achieve their objectives. Munangi et al., (2020) define non-performing credit as advanced characteristics that haven't been updated in a significant amount of time or more. Due to the cumulative number of NPL advancements, the Basel-I Consensus placed emphasis on using charge card risk that leaders can use. Consistency and understanding show that a prudent approach to managing credit risk has been adopted. Bank execution gradually advances as a result. Through the effective administration of credit while taking a chance and being transparent, banks contribute to the basic strength and a viable distribution of capital in the economy as well as helping the sensibility and efficiency of their own organization (Nwude et al., 2018).

The financial sector has been feeling the pinch from the weakening idea of its recognized assets due to the critical decline in esteem market records, the rise in global oil prices, and the unexpected devaluation of the naira compared to other monetary forms (Banking Report, 2010). Islamic banks' poor development assets prevented them from extending credit to the domestic economy, which negatively impacted the financial arrangement. This led to the Focal Council establishing the Assets of the Chiefs Association. This was to require a strong response to the recurrent difficulties with NPL that distressed banks by utilizing a Showing of the Public Social event. According to Ahmad et al., (2007), during financial and banking crises, the majority of banks in countries like Thailand, Indonesia, Malaysia, Japan, and Mexico experienced high non-performing advances and a significant expansion in credit risk. This led to the closure of banks in Indonesia and Thailand.

This research examines how credit risk has changed Pakistan Islamic banks' public image over eleven years, from 2010 to 2020. The review, which is motivated by the negative effects of characterized resources on bank capitalization, would be extremely pertinent. This is because it focuses on what credit risk means for Islamic banks' productivity using a concrete example. The findings would serve as the justification for recommending appropriate measures to various partners on how to manage credit risk. Islamic banks' betting assets would grow as a result. Twenty Islamic banks operate in Pakistan, and five were chosen randomly from the group. The selection was made because, as of January 2020, State bank of Pakistan are rated these banks as the top five in Pakistan. They account for more than half of the Islamic banking sector's assets and liabilities. The next part of the essay is structured as follows: Parts two and three discuss the technique, section 4 aims on data assessment and disclosure analysis, and part two examines relevant content on the subject. The following describes how the article's many sections are coordinated: The second section reviews the literature of the review, the third section describes the methodology, the fourth section focuses on data study and explanation of findings, and Section 5 provides a conclusion and recommendations.

2. Literature Review

A bank should normally assume praise risk since it exists to acknowledge stores and give credit to workplaces. By a long shot, the most widely recognized risk banks look at is credit risk, and the progress of their organization relies more upon a precise evaluation and powerful management of credit risk than on specific risks and dangers (Serwadda, 2018). Credit risk, as defined by Kwashie et al., (2022), is the level of significant worth vacillations in parent and auxiliary credit instruments. This is due to changes in counterparties and borrowers' basic credit character. Adekunle et al., (2015) defines recognize risk as calamities resulting from credit consumers' inability or reluctance to pay back debts promptly. When a borrower (client) fails to honor obligation agreements by the due date or at the process stage, a bank is open to looking at credit risk. This gamble, also known as "counterparty risk," can pose some problems for the bank if it isn't made up. It was found that credit risk executives were responsible for expanding banks' gambles and changing return pace by controlling credit risk openness. This was so that it was easier to understand the impacts of credit risk on banks' benefit (Noman et al., 2015). Managing credit risk, according to Taiwo et al., (2017), involves two factors: the recognition that once losses are incurred, they are impossible to bear; and changes in the financing of commercial paper, securitization, and other non-bank competition, which forces banks to find trustworthy loan borrowers. According to Mendoza et al., (2017), the main sources of credit risk are constrained institutional limits, bad credit practices, unstable financing costs, poor management, unscrupulous regulations, and low capital and liquidity levels, direct lending, extensive bank authorization, inadequate advance guaranteeing, lax credit evaluation, bad loaning practices, and government obstruction. Issues with liquidity and dissolvability are progressively brought on by a steady increase in bank credit risk. NPL might rise if a bank spreads credit to defaulters about whom it lacks sufficient information.

2.1 Credit risk management techniques

Bank executives use credit risk strategies to avoid or reduce the negative effects of credit risk. Banks must have a reliable credit risk management strategy in place if they want to increase productivity and guarantee longevity. Ledhem et al., (2020) says the fundamental requirements for the credit risk executive cycle are as follows: the foundation of an unmistakable design, part of liability, procedures that must be focused on and regulated, duties that must exist evidently linked, and delegation of duty. The processes for assessing credit danger involve, but are not inadequate to: (Shahid et al., 2019).

Credit subsidiaries: Consequently, they are able to save money with a framework that doesn't require them to modify their development portfolio. Perceived auxiliary provision provides a huge wellspring of income and a critical means of reducing managerial capital (Shao et al., 2007). Credit default swaps, in which a trader consents to move the credit hazard of a worthy representative for the security purchaser, are the most common kind of credit auxiliary. In their article "Credit Auxiliaries Urge Banks to Advance More Than They Would, at Lower Rates, to Less Get Borrowers," Plain Partnoy and David Skeel said in Financial Times on July 17, 2006, that this is valid. Late advancements in the credit auxiliary business sectors have improved loan specialists' capacities to move credit opportunities to different associations. This is while keeping up with borrower associations.

Credit securitization: This is the exchange of credit opportunities. This frees the bank from the responsibility of confirming the borrower and worried about the potentially hazardous impacts of pooled assets. This system safeguards banks' loans. Credit risk securitization is becoming more famous, which can be ascribed to the way that banks use it to extend centered credit risk open doors and investigate elective wellsprings of financing by recognizing regulatory trades and liquidity upgrades while

selling securitization trades. In cash-collateralized loans, money (series credits) is eliminated after a bank's financial record with bundled interested in attractive protections. A sort of securitization identified as a money collateralized credit responsibility includes the expulsion of resources (bank credits) from a bank's monetary records and the packaging of those resources into charming shields that are then proposed to bank patrons through a predetermined reason vehicle (Michalak et al., 2009).

Implementation of the Basel accord: The Basel Accord is a bunch of worldwide standards and rules that drive bank tasks to guarantee adequacy and sufficiency. In 1988, the Arrangement was presented in Switzerland. Consistence with the Understanding means having the opportunity to further develop gamble the executive's patterns of banks. In addition, it means having the ability to perceive, make, track, and report on risk-related data in a planned way with complete auditability and transparency. The New Basel Capital Accord explicitly expects banks to identify areas of strength for using credit risk management strategies to evaluate their capital ampleness requirements (Chen et al., 2012).

Acceptance of a sensible interior loan policy: Banks are guided by a loaning strategy when extending credit to customers. The least expensive and most straightforward method of managing credit risk across the board is strict adherence to a loaning strategy. The financing strategy should follow standard bank procedures. Factors to be considered when planning a loaning strategy include current credit policies, industry norms, the overall financial health of the country, and the dominant monetary environment (Kithinji, 2010).

Credit administration department: This is a company that collects information about borrowers' loan profiles and provides it to Islamic banks. The agency provides the borrower with a financial evaluation known as factual odd. This makes it easier for Islamic banks to choose a short-term loan option. The Credit Hazard the Board Framework (CRMS) of the Meezan Bank of Pakistan (MBP) serves as an example of a credit department (Fikri et al., 2023; Qamar et al., 2023; Iqbal and Fikri 2024 and Iqbal et al., 2024).

2.2 Literature review of related empirical research

Credit risk is a huge danger to bank's notorieties, and a few researchers affect banks according to alternate points of view. Kargi, (2011) assessed what credit risk meant for Nigerian banks' benefit. From the yearly reports and records of the researched banks from 2004 to 2008, financial extents as extents of bank execution and credit risk were gathered and investigated. These extents were examined utilizing unmistakable, association, and backslide approaches. The discoveries showed that credit risk influences Nigerian banks well in all cases. It was contended that the level of advances and acknowledges, as well as non-performing credits and stores, harmed banks' benefits, exposing them to a colossal gamble of illiquidity and difficulty. Epure et al., (2012) analyzed bank execution in the Costa Rican financial area somewhere in the range of 2008 and 2022. The discoveries show that regulatory alterations are trailed by presentation enhancements. The capital sufficiency proportion fundamentally influences the net income benefit, non-performing credits adversely affect efficiency and return on assets, and hazard figures out variations across banks (Iqbal & Fikri, 2023; Iqbal & Sofi, 2022; Iqbal & Sofi, 2023 and Iqbal et al., 2023).

Kithinji, (2010) concentrated on the impacts of credit risk on business banks' benefits in Kenya. For 2004 to 2008, information using a credit card about volume, non-performing advances, and advantages was gotten. The discoveries showed that most of business banks' advantages are not impacted by the volume of credit and non-performing advances, which prompted the proposal that advantages be affected by

different standards than credit and non-performing credits. In their review, Chen et al., (2012) analyzed the credit risk efficiency of 34 Taiwanese business banks from 2005 to 2008. Data Envelopment Assessment (DEA) was utilized to audit and assess credit risk utilizing money related extents. Felix et al., (2008) conducted research on the relationship between bank execution and credit risk. From their findings, it can be deduced that profit from value (ROE) and return on resources (ROA), two productivity indicators, were incongruently correlated with the percentage of non-performing credit, which added up to financial institutions' advance and led to a decrease in profit. In their 2007 study, Ahmad and Ariff examined the key factors influencing business banks' chances of obtaining loans in undeveloped and developed nations. The analysis revealed that regulations are significant for banking systems that provide a variety of products and services; CEOs' qualifications are crucial in the case of credit-dominant banks in underdeveloped nations. Additionally seen as a key indicator of possible credit risk is an increase in advance loss agreements. The focus also included the fact that banks in emerging nations face more credit risk than those in established ones (Rana et al., 2024; Iqbal et al., 2023; Iqbal & Fikri, 2023 and Iqbal & Fikri, 2024).

Al-Khouri, (2011) studied the impact of a bank's phenomenal betting characteristics and the general financial environment on the presentation of 43 business banks working in six GCC countries somewhere in the range of 1998 and 2008. At the point when productivity is evaluated by return on resources, credit risk, liquidity danger, and capital bet are the major factors that impact bank execution. Anyway, productivity is evaluated by return on value, liquidity risk influences benefit. Ben et al., (2008) found that bank capitalization and credit risk influence banks' overall gain edge, cost reasonableness, and benefit (Iqbal & Fikri, 2024; Mohammed et al., 2023; Iqbal et al., 2023; Iqbal & Fikri, 2023). They broke down the effect of bank rules, center, monetary change, and institutional enhancement on business banks' edge and efficiency in MENA nations from 1989 to 2005. Incekara et al., (2019) found that credit hardship plans impacted non-performing loans. Therefore, an expansion in credit misfortune plans shows an expansion in credit risk and a breakdown in the idea of credits. This adversely influences bank execution.

Table 2: provides a structured overview of various studies, their focus areas, and key findings related to credit risk management in banking. Adjustments can be made based on specific details from each study and their relevance to your research focus.

Authors	Purpose	Source	Summary Points
Serwadda, 2018	Define credit risk and its impact on banks	Literature review	Credit risk is a primary concern for banks, impacting profitability and requiring effective management strategies.
Kwashie et al., 2022	Define credit risk as volatility in credit instruments due to counterparties	Literature review	Credit risk involves fluctuations in credit values due to changes in the creditworthiness of borrowers and counterparties.
Adekunle et al., 2015	Discuss consequences of credit defaults on banks	Literature review	Defaults by borrowers expose banks to credit risk, impacting their financial stability and operations.
Noman et al., 2015	Study impacts of credit risk management on bank profitability	Empirical research	Effective credit risk management can mitigate risks and enhance banks' profitability through better risk control measures.
Taiwo et al., 2017	Explore factors influencing credit risk management strategies	Literature review	Factors such as regulatory changes and non-bank competition influence how banks manage credit risks.
Shahid et	Discuss credit derivatives as a	Literature	Credit derivatives like credit default swaps allow banks to transfer credit risks

al., 2019	risk management tool	review	to other entities, reducing exposure and enhancing risk management capabilities.
Michalak et al., 2009	Examine securitization as a strategy for managing credit risk	Literature review	Securitization helps banks manage credit risk by pooling assets and selling them as securities, thereby diversifying risk and enhancing liquidity.
Chen et al., 2012	Analyze the impact of Basel Accord on credit risk management	Empirical research	Basel Accord standards compel banks to adopt robust risk management practices, ensuring capital adequacy and risk mitigation capabilities.
Kithinji, 2010	Study effects of credit risk on bank profitability	Empirical research	Credit risk negatively impacts bank profitability, but its effects can be managed through effective risk mitigation strategies and policies.
Epure et al., 2012	Assess bank performance and credit risk	Empirical research	Non-performing loans and capital adequacy significantly influence bank profitability and operational efficiency.
Al-Khouri, 2011	Evaluate factors influencing bank performance	Empirical research	Factors like liquidity risk and capital adequacy affect bank profitability differently depending on the measurement (ROA vs. ROE).
Ben et al., 2008	Examine bank capitalization and credit risk impacts	Empirical research	Higher capitalization and effective credit risk management contribute positively to banks' financial health and profitability.
Incekara et al., 2019	Investigate credit loss provisions and non-performing loans	Empirical research	Increased credit loss provisions indicate higher credit risks, negatively impacting loan quality and overall bank performance.

Literature review summaries from a critical review

3. Research Methodology

The study's comprehensive examination of the quantitative impact of credit risk on Islamic banks' operations over a ten-year period (2012–2022) is its most significant feature. Five Islamic banking sector were examined out of the twenty existing commercial banks, as previously stated in section one. Meezan Bank, HBL Islamic, Faysal Islamic Bank, Bank-Al Habib, and Bank of Islami are Islamic banks in Pakistan. In the example, data were collected from the Islamic banks' yearly reports and records. The data are cross-sectional and time-series data that have been combined into a punitive data collection and evaluated operating penal data regression. In the example, there is support for five Islamic banks that includes;

1. According to State Bank of Pakistan (a publication of Monetary Times) from July 2020, these five Islamic banks are the top Islamic banks in Pakistan. These Islamic banks have also created separate lists of the top 5 Islamic banks and 43 banks in Pakistan and the rest of the globe.
2. The Islamic banks currently being investigated are usually identical to ensure that the wave of consolidations and purchases that reflected the financial crisis in Islamic banking in Pakistan between 2002 and 2023 have had no impact completely on their financial structures.
3. The five Islamic banks collectively account for more than half of all branch liabilities in this sector. The total market capitalization of the Islamic banking sector was around Rs. 36 billion as of December 2022, with the five selected Islamic banks accounting for Rs. 45 billion, or 59% of the total market capitalization.
4. As of January 2022 (State Bank of Pakistan), Islamic banks' financial strength ratings have changed from strong to positive.

5. Islamic banks are regularly listed on the Pakistan Stock Exchange (PSE) and have many customers.

3.1 Theoretical framework

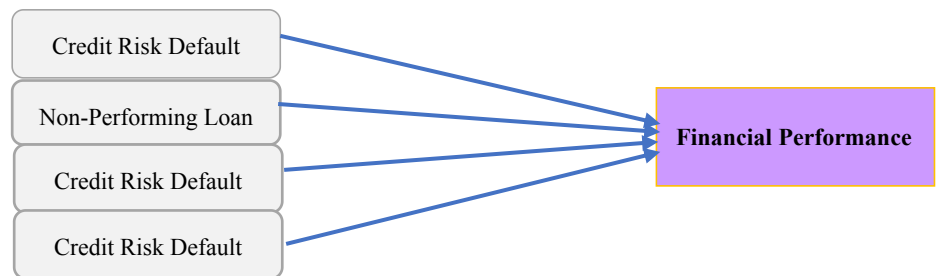


Figure 1: Theoretical framework

3.2 Statistics on the model

The model used in this research is based on the one proposed by Kargi, (2011) in his article "credit risk and the financial performance of Pakistan Islamic banking sector," which estimated productivity by calculating return on assets (ROA) as a component of the ratio of credit risk default (CRD) and non-performing loan (NPL) derived as indicators of credit risk. Nevertheless, by using the ratio of credit spread risk (CSR) and classified loan (CL) as a measure of credit risk, the study improved the model.

The concentrate's model essentially follows:

$$ROA = f(CRD/FP, NPL/FP, CSR/FP \text{ and } CL/FP) \dots \dots \dots \text{Eq-1}$$

Where: ROA: Return on Assets, CRD: Credit Risk Default, NPL: Non-Performing Loan, CSR: Credit Spread Risk, CL: Classified Loan and FP: Financial Performance.

The econometric condition for the model is determined as:

$$ROA = \beta_0 + \beta_1 CRD/FP + \beta_2 NPL/FP + \beta_3 CSR/CL/FP + \mu \dots \dots \text{Eq-2}$$

Where: β_0 = Constant parameter / Intercept and β_1 - β_3 = Coefficients of Independent Variable μ = Error term.

Based on the model's proposed assumption, except for credits risk and financial performance, all independent variables are assumed to have a positive relationship with Islamic bank performance as measured by return on assets (ROA). Credits risk and financial performance positively affect Islamic banking sector. The quantitative interaction is represented as $\beta_1, \beta_2 < 0$, and $\beta_3 > 0$. This indicates that a unit increase in the independent variables will cause a unit increase in ROA.

It is possible to update the model in equation 2: as follows:

$$ROA = \beta_0 + \beta_1 CRD/FP + \beta_2 NPL/FP + \beta_3 CSR/FP + \beta_4 CL /FP + \mu \dots \dots \text{Eq-3}$$

Where: CRD = CRD/FP, NPL = NPL/FP and CL = CL/FP

The research uses a penal data regression model. The variability in the 5 Islamic banks selected for the test is known by the penal data model method. Additionally, by using time series of cross-area perception, penal data provides improved knowledge, a higher level of possibilities a larger level of inconstancy, less co-linearity between each aspect, and further valuable data (Gujarati et al., 2007).

4. Empirical results

4.1 Result of constant Influence model

This model assumes that all coefficients remain constant over time and among different Islamic banks. By comprehending the purpose of this review, the assumption may be expressed as follows: The period covered by the research (2012–2022) reflects the era when the global economy faced the so-called "financial implosion," a trend of declining business cycles from downturn to negativity. The stable Impact Model thus acknowledges that all model coefficients remain constant among Islamic banks over the current period. There is also a continuous time (breakdown) effect. That is, the financial crisis has no effect on any of the variables of Islamic bank performance included in our model (CRD, NPL, CSR and CL).

4.2 Model's OLS results are provided below

Table 3: Estimates of constant influence models.

Variables	Coefficient	Std. Error	Statistics - t	Prob*
CRD	0.02256	0.00125	1.00215	0.000
NPL	0.02554	0.01255	0.02255	0.000
CSR	0.24882	0.01254	0.01445	0.001
CR	0.14452	0.00122	1.25546	0.000

R² = 0.77, WD = 287, (N) = 50 & Prob. (F) = 0.0000: Source of author's computation

Analyzing the penal data in Table 3: explains that all coefficients are statistically significant at both the 1% and 5% levels of significance. In addition, all prospective coefficients have been predicted. The R2 is extremely significant (0.77) and high. The evaluated results are serious. Rather high, showing that autocorrelation is not present in the data. The intercept value is high (positive). I assume the positive value is constant across all Islamic banks. Additionally, it is considered that in all Islamic banks, the perspective coefficients of the three factors are equal. These are obviously very specific theories. This outcome directly affects the real illustration of the link relating Islamic bank financial performance and each independent factor across the five Islamic banks. The Consistent effect Model completely ignores the impact of time variations by business cycle (monetary implosion), even though R2 suggests that collective variations in five variables account for 77% of the total variety of assets throughout the Islamic banking sector.

4.2 Cross-sectional Specific fixed effect model findings

Table 4: Estimates for Fixed Impact (Cross-Sectional Specific)

Variables	Coefficients	Std. Error	Statistic - t	Prob*
CL	0.25278	0.00012	1.66654	0.000
CSR	0.01142	1.02155	1.52445	0.001
NPL	0.02144	0.02214	1.78854	0.000
CRD	0.14456	0.01445	1.94254	0.001

R² = 0.79, W.D = 287, N = 50 Prob* (F) = 0.000: Source of author's computation

Compare this regression's results with Table 4. The coefficients of CL, NPL, CSR and CL in Table 4 are highly significant since the probability of positive effects of the estimated "t" coefficient is insignificant. The five Islamic banks' positive results are comparable to those shown below.

$$MBL = HBL = BAHL = FIBL = BIP = 6.11E-18.$$

This feature of the display may be related to the special benefits of Pakistan's Islamic banking sector. For example, its observation of identical State Bank of Pakistan policies and controls. We apply the restricted F test to determine if credit risk affects Islamic bank performance cross-sectionally between Islamic banks in Pakistan.

$$F = (0.77 - 0.79) / 3 \\ (- 0.79) / 50 \\ = 1.575$$

Important Value of F at 3, 50 df = .77

I conclude that Table 3: restricted regressions are entirely valid. This is because the F value of 1.575 (for 3 numerator levels of opportunity and 50 population levels of opportunity) is obviously not significant. For instance, it is comparable to Islamic banks in Pakistan. Credit risk affects Islamic bank performance and is assessed by the return on assets (ROA) of Islamic banks. In Table 4, exogenous variables include credit default and financial performance (CRD/FP), non-performing loans and bank performance (NPL/FP), credit spread risk and financial performance (CSR/FP), and classified loans and financial performance (CL/FP) used as indicators of credit risk. According to Table 4, CDRs, NPLs, CSRs, and CLs have increased as well as profits (ROA). It is to be expected that Islamic banks are able to earn money by performing well on the financial markets.

5. Conclusion and recommendations

The conclusions and results were created utilizing the penal data regression study to examine the effect of credit risk on Islamic bank performance measured by return on assets (ROA) value. The return on assets (ROA) of Islamic banks is a cross-sectional invariant measure of credit risk effect on Islamic bank execution. In other words, the type and administrative setting of certain enterprises does not determine the outcome. The restricted F-test conducted as part of an appropriate impact analysis reveals this. The credit risk default, non-performing loan, credit spread risk and classified loan on financial performance (FP) coefficient has the most significant impact on all financial organizations. According to our findings, Pakistani banks should be recommended for their capacity for credit analysis and organizational growth. In addition, the administrative authority should pay close consideration to Islamic banks' compliance with relevant provisions of the State Bank of Pakistan Act (SBP; IBD, 2022) and prudential regulations.

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