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Bank-specific determinants of credit risk in Islamic banks: Evidence from Middle East

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ABSTRACT

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Credit risk affects the work and reputation of banks. Islamic banks' heavy reliance on debt financing has led to increased interest in credit risk and its management. This paper aimed to identify the bank-specific factors affecting credit risk in Islamic banks, expressed as Non-Performing Finance NPF in the Middle East for the period 2011-2022. The study was based on a panel data analysis of 30 Islamic banks. The findings of study show a significant negative impact of Return On Assets ROA, Capital Adequacy Ratio CAR and size Z on the credit risk. The findings show a significant positive impact of Finance Loss Provision FLP on the credit risk. The findings also show no impact of Finance Expansion FEX, Finance to Deposit Ratio FDR and Capital Ratio CPR on the credit risk. The study showed that increasing the provision for financing losses and capital adequacy helps banks to reduce the impact of credit risks. The study recommends applying cautious lending policies and carefully selecting clients.

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1. Introduction

In the last four decades, Islamic banking has emerged as a dynamic and rapidly growing sector within the global financial landscape, particularly in the Middle East, where it plays a pivotal role in shaping economic activities (Jarrah et al., 2023). As Islamic banks continue to gain prominence, understanding the intricacies of credit risk becomes crucial for sustaining financial stability and ensuring the resilience of these institutions. This study aims to delve into the bank-specific determinants of credit risk within Islamic banks operating in the Middle East, shedding light on the most important factors that uniquely influence credit risk in this distinctive financial framework of the Islamic banking sector. The relevance of exploring credit risk in Islamic banks lies in the distinctive principles governing their operations. Unlike conventional banks, Islamic banks adhere to Sharia principles, which prohibit the charging or receiving of interest (Riba) and engage in risk-sharing partnerships (Al Badarin et al., 2024). These fundamental differences necessitate a tailored examination of credit risk factors, acknowledging the unique features and complexities inherent in Islamic banking sector. As Islamic finance continues to expand globally, with the Middle East serving as a hub for its operations, understanding the determinants of credit risk in these institutions becomes pivotal for both practitioners and policymakers. Therefore, the scientific problem addressed in this research pertains to the lack of comprehensive empirical studies focusing on bank-specific factors influencing credit risk in Islamic banks, particularly within the context of the Middle East. Generally, risk indicates the possibility of an unexpected future outcome that may affect the achievement of the bank's objectives, so banks identify risks and evaluate them to determine the best methods to confront them (Omobolade et al., 2020). Moreover, risks need to be identified and managed continuously and dynamically with great precision in banks, the most important of which is credit risk (Shkodra & Ismajli, 2017). Credit risk is one of the most important types of banking risk. These risks result from the debtor's inability to repay on time and per the terms of the loan contract (Elgari, 2003). In fact, credit risk is a normal bank risk because the main activity of conventional banks is based on lending (Kusnandar, 2022). Therefore, credit risk refers to the creditworthiness of borrowers (Antony & Suresh, 2023). Credit risk depends on the ability of borrowers to generate sufficient cash flows to meet their future debts to banks, so if the assets

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do not generate any income, the bank's profitability becomes questionable, its assets are weak, and these banks usually lose the trust of many of their customers (Omobolade et al., 2020). Hence, it is possible to define credit risk in banks as the debtor's inability to fulfill obligations in terms of value, timing, or both (Kusnandar, 2022).

This research seeks to address this gap in the literature by employing rigorous econometric methods and a comprehensive dataset, thereby providing a holistic understanding of credit risk in the context of Islamic banking in the Middle East. By unraveling the bank-specific determinants, the study aims to contribute not only to academic knowledge but also to the practical enhancement of risk management practices within Islamic banking institutions.

This study aims to investigate the internal factors that affect credit risk, expressed in terms of Non-Performing Finance in the Islamic banks in the Middle East region for the period of 2011-2022. This study focuses on internal factors due to the ability of banks to control these factors to improve the quality of credit risk management in banks, unlike external factors that are beyond the control of Islamic banks.

2. Literature Review and Hypotheses

Credit risk management aims to protect the bank from debtors defaulting on their obligations to maximize risk-adjusted returns, so credit risk must be continuously monitored by identifying, measuring, and managing it (Kusnandar, 2022). Most commercial bank profits come from interest on lent funds, so banks must ensure that borrowers can repay the principal and interest (Caruso et al., 2021; Alrfai et al., 2022). Furthermore, non-performing loans were closely linked to the Asian financial crisis in 2007, so non-performing loans became a major problem for banks, so banks were interested in studying and analyzing them to reduce this problem (Endut et al., 2013). Most of the studies that dealt with credit risk came after 2008 (Naili & Lahrichi, 2020). Thus, credit risk is linked to financial crises (Fehri & Chkoundali, 2015). In the same context, Salas and Saurina (2002) and Samad (2012) confirmed the link between credit risk and the global financial crisis, as it was found that there was strong evidence indicating that non-performing loans were a major cause of the collapse of many banks. The mortgage crisis in the United States demonstrated the severity of credit risks and drew attention to non-performing loans. The huge number of non-performing loans generated during the mortgage crisis not only affected American banks but also extended to Europe, where non-performing debts in European banks amounted to nearly one trillion euros in 2013. (ECB, 2017). In contrast, Ali and Ghauri (2013) found that the impact of the 2008 global crisis on IBs was much less than on CBs. In CBs, credit risk is usually expressed as non-performing loans (NPLs) (Priyadi et al., 2021). In contrast, credit risk in IBs is expressed as non-performing financing (NPF) (Endut et al., 2013). According to the International Monetary Fund (IMF, 2005), a non-performing loan is a loan in which the client is late in repayment for a period exceeding 90 days from the due date. Therefore, non-performing loans are an important indicator of the quality of a bank's assets (Ganić, 2014). Asset quality is affected by the percentage of non-performing loans, and asset quality increases as the percentage of non-performing loans decreases (Tarchouna et al., 2017). Therefore, Ghosh (2015) described non-performing loans as financial pollution because of their far-reaching effects on the economy. Al-Wesabi and Ahmad (2013) stated that 75% of IBs failures are due to poor credit risk management. In a related vein, Barisitz (2013) believes that there is a contradiction in the classification of non-performing loans, and this is due to the lack of a common financial language among regulators, especially after the global financial crisis. Naili and Lahrichi (2020) explained that this discrepancy may make it difficult to understand the problem of non-performing loans, which may affect the correct assessment of credit risk in different countries. Therefore, the ECB (2017) considers the need to accurately disclose the concept of non-performing loans and the conditions for their approval in the financial statements to make their classification easier. Bholat et al. (2018) suggested that NPLs may be classified based on the borrower as mortgages, businesses, individuals, government, or government-backed entities.

On the other hand, IBs face higher risks compared to CBs because the nature of IBs' operations restricts their ability to manage risks due to restrictions set by Sharia provisions relating to financial transactions (Elgari, 2003). Effendi and Yuniarti (2018) also confirmed that the Islamic banking system's credit risks are high due to the lack of effective tools to confront customers' default. Therefore, Mismam and Bhatti (2020) suggest the necessity of working to reduce credit risks by identifying the causes and factors affecting them and managing them in the best possible way. Moreover, profit and loss sharing investments involve credit risk when Muḍārib or the Sharīk does not pay dividends to the bank or when they hide information that the bank cannot access, while in the case of debt-based contracts such as Muḍārabah, there is a fixed rate of return and payments scheduled, so the risk potential is low (Siddiqui, 2008). Lekpek (2018) found that credit risks in IBs increase due to the lack of management techniques specific to Islamic banking services, which forces Islamic banks to emulate traditional credit tools to comply with Islamic law to reduce the level of credit risks. The management of credit risks in IBs is extensive and cumbersome because Islamic law prevents banks from imposing additional funds or penalties for late payments (Abdul-Rahman et al., 2014). In examining the factors affecting credit risk, previous studies focused on three directions. Some studies focused on studying bank-specific determinants, which are internal factors influencing credit risk in banks, and expressed the expected link between bank lending strategies and changes in non-performing loans (Louzis et al., 2012; Us, 2017). Some studies also focused on macroeconomic determinants, which relate to the overall economic conditions of the country. This supports the idea that the ability of debtors to pay their obligations to banks is affected by business cycles (Amuakwa et al., 2017). Other studies have focused on determinants related to the banking industry, such as market shares and competition (Beck et al., 2015; Natsir et al., 2019).

Hence, the researchers believe that choosing determinants from different categories leads to the dispersal of the results of the study. Therefore, it is better to focus on one category, and the researchers chose to study the internal determinants because the bank can manage and address them, unlike the external determinants and determinants of the banking industry, which the bank cannot influence. Most studies combined internal factors with external factors (e.g., Zheng et al., 2018; Kharabsheh, 2019; Bsoul, 2022). Some studies added banking sector factors (e.g., Beck et al., 2015; Us, 2017; Natsir et al., 2019). Previous studies have highlighted the factors influencing credit risk to reduce it in the future and ensure a healthy and strong banking sector (Naili & Lahrichi, 2020). Studies have indicated an explanation of the causes of fluctuations in non-performing loans, which are the factors affecting credit risk (Louzis et al., 2012; Us, 2017). Profitability is usually expressed as Return on Assets (ROA). ROA reflects the bank's efficiency in managing its assets to achieve profit (Priyadi et al., 2021). Elgari (2003) showed that investors are willing to bear higher risks if they expect high returns. Rosly and Zaini (2008) found that the ROA of IBs depends mainly on the level of credit risk. Therefore, Abusharbeh (2014) indicates that a higher level of risk is associated with higher potential returns. Abbas et al. (2019) showed that the positive relationship of ROA with credit risk in the United States is greater than in Asia, due to the strict credit policies applied by Asian banks and more efficient supervision of loans. In addition, a positive relationship between ROA and credit risk was confirmed in Ghanaian banks (Madugu et al., 2020). Alexandri and Santoso (2015) also confirmed the positive impact of ROA on credit risk in Indonesian banks. In contrast, Al-Eitan and Bani-Khalid (2019) showed that the relationship between ROA and credit risk is negative in Jordanian banks. Al-Kharabsheh (2019) also confirmed the negative relationship between ROA and credit risk in Jordan, as it showed that Jordanian banks suffer from high credit risk if their profitability decreases. Antony and Suresh (2023) pointed out the negative relationship between ROA and credit risk in Indian banks. After the 2008 global financial crisis, the focus on the capital adequacy ratio (CAR) increased. The Bank for International Settlements (BIS) proposed Basel II, which suggests that banks maintain a CAR of at least 8%, while Basel III requires banks to maintain 10.5% at least (Fatima, 2014). CAR is the ratio of core capital to banks' total risk-weighted assets (Bialas & Solek, 2010). CAR is important for evaluating the financial structure of banks, as it shows the ability of banks to confront credit risks and the resulting financial failure or bankruptcy (Fatima, 2014). According to Alkhawaja and Görmüş (2019), a high CAR indicates the ability of banks to withstand losses. Consequently, their ability to attract deposits increases due to increased depositor confidence, which increases banks' liquidity and their ability to achieve profit. (Priyadi et al., 2021) indicated that a high CAR encourages banks to invest their money in credit because it increases their ability to face credit risks. In contrast, Alexandri & Santoso (2015) found a positive and significant effect of CAR on credit risk. Moreover, financing expansion (FEX) is the ratio of financing to the bank's total assets (Misman & Bhatti, 2020). Hassan et al. (2019) found a positive relationship between FEX and credit risk, so a higher financing ratio means a higher debt ratio and thus a higher probability of default. Imbierowicz and Rauch (2014) also showed that a high ratio of financing to total assets reduces liquid assets, so it is difficult to cover credit risks. Misman & Bhatti (2020) also showed the difficulty of avoiding credit risks because financing is the main service provided by banks. In contrast, Wiryono and Effendi (2018) explained that FEX has a negative impact on credit risks because financing in IBs have good, diversified portfolios that help reduce credit risks because IBs include most sectors, so the profit-loss sharing system reduces the credit risks in IBs.

Furthermore, the financing-to-deposit ratio FDR measures the bank's efficiency in exploiting deposits. FDR reflects the bank's ability to use funds to achieve profit and the extent to which the bank accepts high credit risks to achieve profit (Sharifi & Akhter, 2016). Koju et al. (2018) also showed that the FDR measures liquidity, as a high ratio means lower liquidity compared to investment, so credit risk increases. Ozili (2019) explained that a high FDR indicates a positive relationship with the non-performing loan ratio. A low FDR indicates high bank liquidity, which reduces the risk of insolvency. Wood and Skinner (2018) advise reducing credit risks by not concentrating on credit and looking for other investments. The capital ratio (CPR), also called the capital buffer ratio, is measured by the ratio of total equity to total assets (Misman & Bhatti, 2020). Zheng et al. (2018) and Misman et al. (2015) found a negative relationship between CPR and credit risk because a higher CPR gives banks greater ability to confront customer default. Rahman and Shahimi (2010) indicated that the capital ratio of IBs is lower than that of CBs in Malaysia, so they are exposed to higher credit risk. Misman & Bhatti (2020) believe that banks with low capital cannot invest with high risks because they will face the problem of high credit risks. Finance Loss Provision (FLP) denotes the amount of money that the bank allocates to compensate customers for defaults in credit repayment (Alkhawaja & Görmüş, 2019). Banks focus a lot on FLP because it is an important tool for reducing credit risk (Misman & Bhatti, 2020). FLP is a tool to control expected loan losses, so it helps to detect and cover high levels of credit losses on bank loans (Chaibi & Ftiti, 2015). Alkhawaja and Görmüş (2019) indicated that FLP is sensitive to cyclical fluctuations in the economy, so banks maintain higher rates of FLP when the credit default rate increases in bad economic conditions.

Moreover, Ozili (2019) believes that there is a positive relationship between FLP and credit risk. Zoubi and Al-Khazali (2007) and Azmat et al. (2020) also confirmed that there is a positive relationship between FLP and credit risk, which means that banks maintain higher loss provisions when financing is expected to be of low quality, which leads to increased exposure to credit risk. Bsoul et al. (2022) and Alkhawaja and Görmüş (2019) also found that FLP has a positive relationship with credit risk, as banks maintain high provisions if they expect high levels of loss. Hence, higher FLP indicates higher NPL (Chaibi & Ftiti, 2015). Bank size is measured by the logarithm of total assets (Alzoubi & Obeidat, 2020). Waemustafa and Sukri (2015) indicated that there is a significant negative effect of the size of CBs on credit risk, while the size of IBs has a small positive effect on credit risk. Abedifar et al. (2015) found that larger banks have a greater ability to bear higher risks by granting credit, so they have a higher ability to generate stable returns even if the risk is high.

On the contrary, Čihák and Hesse (2010) found that the size of the IBs negatively affects credit risk, so size plays an important role in its stability, but credit control in large-sized IBs becomes more complex compared to small-sized banks. Alexandri & Santoso (2015) also found a negative effect of size in Indonesia. Kharabsheh (2019) confirmed that Jordanian banks suffer from less credit risk the larger their size. Many studies have compared credit risks in IBs and CBs. Boumediene (2011) analyzed the level of credit risk in nine IBs and CBs for the period 2005–2009. It was found that IBs have much lower credit risks than CBs. In Pakistan, Ali and Ghauri (2013) found that the impact of credit risk on IBs is less than IBs. In contrast, Ariffin et al. (2009) showed that there is no difference in credit risks between IBs and CBs in a study of 14 countries. Masood et al. (2012) pointed out that IBs managers do not rely only on personal experiences and simple analysis of credit risks, but rather on the latest technologies, which means that there are opportunities to improve credit risk management. Alfawwaz et al. (2016), Masood et al. (2012), and Hachem & Sujud (2018) indicated that IBs are more interested in managing credit risks than CBs, as they give greater importance to risk assessment and analysis.

Moreover, Alkhawaja and Görmüş (2019) found that the main differences in credit risk management between IBs and CBs come from differences in financial principles, as CBs operate according to the rules of capitalism and an IB operates according to Islamic law. Akkizidis and Kumar (2008) consider that it is possible to identify credit risks in IBS according to financial products. In Murābahah and Ijārah, credit risks occur when there is a possibility that the customer will not complete the payments due on time. Debt-based banking products such as Murābahah and Salam are exposed to a lower level of risk than equity-based financing products such as Mushārahah and Mudaraba, and as a result, IBs focus their investments on debt (Abdul-Rahman et al., 2014). Furthermore, Alkhawaja and Görmüş (2019) indicated that credit risk in Salam or Istiṣnā' occurs when producers fail to deliver the commodity or product at the agreed-upon time and standards. As for Mushārahah or Murābahah, the relationship between the two parties depends on the investment results, so credit risk occurs when the expected revenues are not achieved (Akkizidis & Kumar, 2008). In conclusion, the literature dealt with clarifying the concept of credit risk in banks, its management methods, and its measures. Applied studies of credit risk in different regions were presented. The study analyzed the results of previous studies. Literature has used non-performing loans to express credit risk. The literature indicated a positive impact of the capital adequacy ratio, financing expansion, financing-to-deposit ratio, and the provision for financing losses. On the other hand, it indicated a negative impact of return on assets, capital ratio, and size on credit risk.

In conclusion, the study's literature dealt with clarifying the concept of credit risk in banks, methods of managing it, and standards. The study presented several applied studies of credit risk in different regions. The study analyzed the results of previous studies. Literature has used non-performing loans to express credit risk. Most of the literature indicates a positive impact of the capital adequacy ratio, financing expansion, financing-to-deposit ratio, and provision for financing losses. On the other hand, it indicated a negative impact of return on assets, capital ratio, and size on credit risk.

The study aims to demonstrate the impact of bank-specific factors affecting credit risk expressed in Non-Performing Financing (NPF) in IBs in the Middle East. The study examined a set of determinants: Return on Assets (ROA), Capital Adequacy Ratio (CAR), Financing Expansion (FEX), Finance to Deposits Ratio (FDR), Capital Ratio (CPR), Finance Loss Provision (FLP), and Bank Size (Z).

According to the discussion above, the following hypotheses are put forward:

- H₀₁:** *ROA negatively impacts IBS credit risk.*
- H₀₂:** *CAR has a positive impact on IBS credit risk.*
- H₀₃:** *FEX has a positive impact on IBS credit risk.*
- H₀₄:** *FDR has a positive impact on IBS credit risk.*
- H₀₅:** *CPR is negatively impacting IBS credit risk.*
- H₀₆:** *FLP positively impacts IBS credit risk.*
- H₀₇:** *Z is negatively impacting IBS credit risk.*

3. Method

The study sample consists of 30 Islamic banks from 12 countries in the Middle East during the period 2011–2022. Table 1 shows the distribution of the sample by country.

Table 1
Sample distribution

Country	Banks	%	Country	Banks	%
Jordan	3	10	Kuwait	4	13.3
Palestine	1	3.3	Qatar	3	10
Syria	2	6.7	Bahrain	2	6.7
Lebanon	1	3.3	UAE	3	10
Iraq	3	10	Yemen	1	3.3
KSA	4	13.3	Turkey	3	10

To determine the bank-specific factors influencing credit risk in Islamic banks in the Middle East, data can be obtained from several sources, including financial reports, applicable instructions, and regulatory files. Table 2 shows the description of the study variables.

Table 2
Study variables

variable	Symbol	Source
Dependent variable		
Non-Performing Finance	NPF	Bsoul et al., 2022; Manaf et al., 2021; Priyadi et al., 2021; Lassoued, 2018
Independent variables		
Return on Assets	ROA	Lassoued, 2018; Priyadi et al., 2021
Capital Adequacy Ratio	CAR	Saleh & Paz, 2023; Manaf et al., 2021
Finance Expansion	FEX	Misman & Bhatti, 2020; Hassan et al. 2019
Finance to Deposit Ratio	FDR	Kabir et al., 2022; Priyadi et al., 2021
Capital Ratio	CPR	Kabir et al., 2022;
Finance Loss Provision	FLP	Ahmad & Ahmad, 2014; Akram & Rahman, 2018
Bank Size	Z	Bsoul et al., 2022; Kabir et al., 2022

To investigate the determinants of credit risk for IBs in the Middle East, the study has used a group of appropriate methods. First, descriptive statistics such as mean, standard deviation, coefficient of variance, maximum value, and minimum will be used to describe the data. Secondly, correlation matrix analysis will be used to examine the relationship between variables. Third, pre-regression tests such as the L-M test and the Hausman test will be used to choose the appropriate regression model. Finally, panel data regression analysis will be used to examine the impact of independent variables on credit risk. Researchers' interest in studying the stability of the banking sector increased after the global financial crisis. Non-performing loans, which express credit risk, have become a fundamental area of research due to their important role in low stability. The decline in the level of stability has greatly affected economic stability and growth. Reducing credit risk is one of the most important ways to increase the level of banking stability, so the most important factors affecting credit risk must be controlled, especially in commercial banks that are more stable than central banks.

The panel data regression model of study is:

$$NPF_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 CAR_{it-1} + \beta_3 FEX_{it} + FDR_{it} + CPR_{it} + FLP_{it} + Z_{it} + \varepsilon_{it}$$

where

NPF_{it} = Non-performing finance for bank i in year t .

β_0 = Constant of equation.

β = Regression coefficient.

ROA_{it} = Return On Assets for bank i in year t .

NPF_{it} : Non-Performing Finance for bank i in year t .

CAR_{it} = capital adequacy ratio for bank i in year t .

FEX_{it} = Financing expansion ratio for bank i in year t .

FDR_{it} = Finance to deposit ratio for bank i in year t .

CPR_{it} = Capital Ratio for bank i in year t .

FLP_{it} = Finance Loss Provision for bank i in year t

Z_{it} = Size of bank i in year.

ε_{it} = error of equation.

4. Results

The descriptive statistics for all variables are presented in Table 3. For NPF, the average was 1.77%, which indicates that this percentage of the financing provided by banks is non-performing financing. This means that IBs must work hard to reduce this percentage, and the standard deviation was 0.18%. The maximum value for this variable was 2.12%, and the minimum value was 0.92%. This indicates a large discrepancy between banks in the percentage of non-performing financing. The average ROA reached 1.77%, which indicates the efficiency of Islamic banks in utilizing their assets to generate profits, and the standard deviation was 0.61%. The maximum value for this variable was 3.3%, and the minimum value was 0.27%. This indicates a large discrepancy between banks in generating a profit by using assets. Moreover, the average CAR reached 15.55%. It is noted that the CAR ratio in IBs is higher than the ratio stipulated in Basel III, which means that they are cautious about-facing credit risks, and the standard deviation reached 0.61%. The maximum value of this variable was 3.3%, and the minimum value was 0.27%. This indicates that there is a large discrepancy between banks in the CAR. The average FEX reached 69.39%, which reflects the ratio of financing to assets, and the standard deviation reached 4.97%. The maximum value of this variable was 88.25%, and the minimum value was 45.62%. This indicates that there is a large discrepancy between banks when investing their funds in financing.

Table 3

Descriptive statistics

Variable	Mean	Std.	COV	Max	Min
NPF	0.0177	0.0018	0.1017	0.0212	0.0092
ROA	0.0164	0.0061	0.3719	0.0330	0.0027
CAR	0.1555	0.0214	0.1376	0.2200	0.1000
FEX	0.6939	0.0497	0.0716	0.8825	0.4562
FDR	0.7732	0.0780	0.1009	0.9868	0.3845
CPR	0.1009	0.0609	0.6036	0.3490	0.0461
FLP	0.0087	0.0018	0.2069	0.0125	0.0022
Z	3.5198	0.9079	0.2579	5.2400	1.3500

Furthermore, the average FDR reached 77.32%, Which indicates the percentage of deposits invested in financing, and the standard deviation reached 7.8%. The maximum value of this variable was 98.68%, and the minimum value was 38.45%. This indicates that there is a large discrepancy between banks when investing their deposits in financing. The average CPR reached 10.09%, Which reflects the proportion of financing assets using capital, and the standard deviation reached 6.09%. The maximum value of this variable was 37.9%, and the minimum value was 4.61%. The average FLP reached 0.87%, which reflects the degree of credit risk from the perspective of bank administration, and the standard deviation reached 0.18%. The maximum value of this variable was 1.25%, and the minimum value was 0.22%. Finally, the average Z reached 3.52, and the standard deviation reached 90.79%. The maximum value of this variable was 5.24, and the minimum value was 1.35%, this indicates a clear disparity between bank sizes, which means that bank size may reflect differences in credit risk between banks. Table 4 shows the correlation matrix between the variables of the study, where it was found that all correlation values are between -0.661 and 0.635, and all are less than 0.70, which means that they are not high and do not constitute a clear linear problem.

Table 4

Correlation matrix

Item	NPF	ROA	CAR	FEX	FDR	CPR	FLP	Z
NPF	-	-0.547	0.187	-0.327	-0.416	-0.074	0.505	-0.519
ROA	-	-	-0.344	0.344	0.528	0.048	-0.661	0.635
CAR	-	-	-	-0.190	-0.475	-0.023	0.393	-0.354
FEX	-	-	-	-	0.608	0.169	-0.342	0.453
FDR	-	-	-	-	-	0.108	-0.602	0.533
CPR	-	-	-	-	-	-	-0.073	0.112
FLP	-	-	-	-	-	-	-	-0.592
Z	-	-	-	-	-	-	-	-

As in Table 5, to choose the appropriate panel analysis model, the Breusch and Pagan Lagrange multiplier test (L-M test) was applied to compare between common-effects model and random-effects model.

Table 5

Appropriate Model Tests

Test Summary	Stat.	Prob.
Breusch and Pagan Lagrange multiplier test	144.35	0.000
Hausman test / Cross-Section Random	0.18	1.000

The test showed that the random-effects model is appropriate because the probability value is less than 5%. After that, the Hausman test was conducted to compare between the fixed-effects model and the random-effects model. The test showed that the random-effects model is appropriate because the probability value is greater than 5%.

5. Discussion

In this section, we presented a discussion of our empirical results for the factors affecting credit risk in IB through FPL, as shown in Table 6. The variance inflation factor (VIF) and Tolerance indicate that there is no problem of multicollinearity in the panel regression model. It shows that all VIF values are less than 10 and all Tolerance values are less than one, which means that multicollinearity does not exist in the independent variables. Results show that ROA has a negative significant impact on credit risk expressed as NPF. This result confirms the result of Yusuf et al. (2021) and Bsoul et al. (2022). This result indicates that lower NPF means lower credit risk, so return on assets rises due to a lower percentage of defaulting customers. In addition, a high return on assets indicates good credit risk management, as the bank ensures the status of borrowers and selects them carefully, so credit risks are reduced. Results also show that CAR has a negative significant impact on credit risk. This result confirms the results of Alzoubi & Obeidat (2020), Mismam et al. (2015) and ALrfai et al. (2022). This result means a high CAR encourages banks to invest their money in credit because it increases their ability to face credit risks. Results also show that bank size has a negative significant impact on credit risk. This result confirms the results of Alkhwaja and Görmüş (2019), Mismam and Bhatti (2020), Alzoubi & Obeidat (2020), Bsoul et al. (2022) and Kabir et al. (2022). This result indicates that larger size means that banks face less credit risk because larger banks have a greater ability

to manage their risks. In contrast, results show a positive impact of FLP on credit risk. This result confirms the result of Chaibi and Ftiti (2015) Alkhawaja and Görmüş (2019) and Bsoul et al. (2022). This result means that banks maintain higher FLP when financing is expected to be of low quality, which leads to increased exposure to credit risk.

Table 6
Panel Regression Analysis

Variable	Coefficient	t-stat.	Prob.	Tolerance	VIF
C	0.02277	13.0221	0.0000***		
ROA	-0.08377	-4.4299	0.0000***	0.463	2.160
CAR	-0.00796	-2.2388	0.0306**	0.731	1.367
FEX	-0.002	-0.9741	0.3307	0.574	1.742
FDR	-0.00142	-0.8982	0.3697	0.395	2.534
CPR	-0.000313	-0.2423	0.8087	0.968	1.033
FLP	0.18504	2.8245	0.0050***	0.447	2.238
Z	-0.00044	-3.5673	0.0004***	0.489	2.045
R ²	0.5271	F	30.4379	D-W	1.3762
Adj R ²	0.5146	F Prob.	0.0000		

On other hand, results show no impact of FEX on credit risk. This result confirms the result of İncekara and Çetinkaya (2019). Results also show no impact of FDR on credit risk. This result confirms the results of Ahmad & Ahmad (2004), Ganić (2014), İncekara and Çetinkaya (2019), Priyadi et al. (2021) and ALrfai et al. (2022). Finally, results show no impact of CPR on credit risk. This result confirms the results of Misman and Bhatti (2020), Yusuf et al. (2021) and Antony and Suresh (2023).

6. Conclusion and recommendations

The purpose of this paper is to examine factors that may influence credit risk through finance loss provision FLP in IBS in the Middle East region. Using a sample of 30 IBs during the period 2011-2022. The findings of the study showed a significant negative impact of Return On Assets ROA, Capital Adequacy Ratio CAR and size Z on the credit risk. The findings also showed a significant positive impact of Finance Loss Provision FLP on the credit risk. The findings also showed no impact of Finance Expansion FEX, Finance to Deposit Ratio FDR and Capital Ratio CPR on the credit risk. The results of the study help banks to understand credit risks and the factors affecting them to plan to manage and reduce these risks. The study showed that increasing the provision for financing losses helps cover the losses of non-performing loans and thus reduces the impact of credit risks on banks. The results also showed that banks can use capital adequacy as a strong line of defense against credit risks. The best way to confront credit risks is to carefully select borrowers, apply cautious lending policies, and request guarantees that exceed the value of the financing. The results also showed the importance of size in reducing credit risks, so banks must work to increase their size by attracting more deposits and increasing capital by attracting investors. The study recommends studying credit risks in IBs in other regions, studying credit risks in IBs compared to CBs in the Middle East, or adding other variables that were not mentioned in this study.

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