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An empirical analysis of profit-and-loss sharing financing in Indonesian Islamic banks

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Abstract

Purpose – This study examines the determinants of profit-and-loss sharing (PLS) financing adoption in Indonesia by incorporating bank-specific, macroeconomic, and religiosity variables.

Methodology – Utilizing monthly time-series data from October 2014 to October 2023, this research employs the Autoregressive Distributed Lag (ARDL) approach to model both long-run and short-run relationships. The analyzed variables include PLS financing, non-performing financing (NPF), capital adequacy ratio (CAR), total assets (TA), Zakat, Infaq, and Shadaqah (ZIS), the Islamic financing rate, the exchange rate, inflation, and the Industrial Production Index (IPI).

Findings – The results indicate that in the short run, PLS financing is significantly influenced by CAR, TA, ZIS, and IPI. In the long run, however, PLS financing is predominantly determined by internal banking factors, specifically CAR and TA. Bank capitalization and asset size are critical to PLS financing dynamics, ensuring stability and responsiveness to internal financial conditions, thereby enhancing its viability within Indonesia's dual banking system.

Implications – The findings suggest that Indonesian regulators and bank policymakers should focus on enhancing the long-term availability of PLS-based financing, establishing standardized monitoring frameworks, and improving financial transparency. Furthermore, fostering innovation in Sharia-compliant products and investing in capacity-building initiatives that integrate Islamic jurisprudence with modern finance are recommended to strengthen the sustainability and competitiveness of PLS financing.

Originality – This study contributes to the literature by providing an integrated empirical analysis of both internal bank-specific and external macroeconomic determinants of PLS financing in Indonesia, a comprehensive approach rarely explored in prior research.

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Introduction

Islamic banking operates under distinctive principles designed to ensure fairness and equity in financial transactions by prohibiting usury (riba) and banning trading in financial risk, because this is seen as a form of gambling that is forbidden in Islam (Abdul Khir & Mohamed, 2023). Another prohibition under the Sharia is that Muslims cannot invest in businesses that are considered haram (forbidden or sinful), such as those selling alcohol or pork, engaging in gambling, producing un-Islamic media, and promoting risk-sharing mechanisms (Abasimel, 2023). These principles also set

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Islamic banking apart from conventional financial systems by emphasizing real-sector activities that enhance financial stability and bridge the gap between monetary and economic operations. Islamic banks primarily offer two types of financing schemes: profit–loss sharing (PLS) and non-PLS (NPLS) financing (Sutrisno & Widarjono, 2022), with the former being central to the Shariah-compliant ethos by ensuring a just distribution of profit and risks (Afkar, 2017).

The PLS financing framework offers significant advantages and is recognized as an effective instrument for fostering sustainable and inclusive economic development (Maghrebi & Mirakhor, 2015), directly linking fund disbursement to project performance, creating an equilibrium between monetary and real-sector activities while contributing to price stability (Yungucu & Saiti, 2016), fostering productive investment, poverty alleviation, and macroeconomic stability (Imam & Kpodar, 2016), and alleviating poverty through shared returns (Boukhatem & Ben Moussa, 2018). Profit-sharing financing has the potential to dominate Islamic banking practices because of its capacity to stimulate productive enterprises, create employment opportunities, and reduce economic disparities (Riyadi et al., 2021). From a broader perspective, Chowdhury et al. (2018) show that PLS financing facilitates capital accumulation, promotes industrial growth, and enhances economic opportunities by driving investments in productive sectors.

Various empirical studies highlight the potential of PLS-based financing to achieve greater equity (Khan, 2024), enhance allocative efficiency (Hadi et al., 2024) and strengthen financial system stability (Fakhrunnas & Anto, 2023). Elamin (2023) and Raimi et al. (2024) showed that PLS financing not only encourages economic efficiency but also aligns with *Maqashid Shariah* and the ethical norms of Islamic Finance. According to the Financial Services Authority, in 2021, total funding in the Islamic banking sector increased at an average annual rate of 8.19% between 2018 and 2021. The total financing increased from IDR 202,766 billion in December 2018 to IDR 256,405 billion by December 2021. *Mudarabah* profit-sharing-based financing increased significantly between 2018 and 2021, with an average annual growth rate of 10.62%. *Mudharabah* profit-sharing financing in December 2018 totalled 74,122 billion and is expected to reach 99,615 billion in December 2021 (Otoritas Jasa Keuangan, 2022). Thus, effective implementation requires mutual trust and strict management. Significant restraints include investment risks, difficulty in finding acceptable partners, and low client creditworthiness (Abdul-Rahman & Nor, 2016). As a result, Islamic banks frequently require superior risk-management procedures that exceed those employed by conventional banks.

Indonesia, the world's most populous Muslim-majority country, offers a compelling case for examining the adoption of PLS financing.While its Islamic banking sector has expanded- average financing grew 8.19% annually between 2018-2021 (Otoritas Jasa Keuangan, 2022)- the share of PLS remains marginal, with a 1.36% average ratio over the past decade (Bank Indonesia, 2020). This limited adoption persists, despite Indonesia's demographic strength, increasing religiosity, and institutional initiatives to promote Islamic finance. In fact, PLS financing peaked at 48.22% in 2019 but has never surpassed non-PLS financing (Ibrahim et al., 2022). Constraints exist on both the supply side (e.g., weak regulation, risk complexity, and institutional readiness) and the demand side (e.g., financial literacy and client risk aversion) (Nugraheni & Alimin, 2022; Robiatun et al., 2024). This presents a paradox, as PLS aligns closely with Islamic values and socioeconomic objectives; however, its real-world implementation remains weak, raising questions about structural and behavioral barriers.

Theoretically, PLS is seen as the most authentic Islamic financing model, reflecting the principles of justice, transparency, and shared responsibility (Elamin, 2023; Raimi et al., 2024). However, literature in this domain remains limited and fragmented. Most studies have focused on aggregate Islamic finance or debt-based models, with mixed findings regarding their macroeconomic impacts (Belkhaoui et al., 2020). Some argue that Islamic financing avoids the distortions of interest-based systems, while others show Islamic finance behaving similarly to conventional mechanisms in practice. Very few studies have focused on the determinants of PLS adoption in Indonesia, and even fewer have incorporated religiosity as a relevant explanatory factor. This study fills this gap by introducing a novel variable, religiosity, using the volumes of zakat, infaq, and sadaqah (ZIS) as a proxy. A ZIS represents individual ethical behavior and religious

devotion, which can influence trust, mitigate information asymmetry, and promote participation in risk-sharing contracts (Bin Mat Isa et al., 2021).

This study addresses two main research questions: (1) What are the short- and long-term determinants of profit-and-loss sharing (PLS) financing adoption in Indonesia? (2) To what extent does religiosity, as measured by ZIS contributions, influence the adoption of PLS financing by Islamic banks?

Literature Review

Theoretical background

Profit- and loss-sharing (PLS) financing, including mudharabah and musharakah, is a central principle of Islamic finance that emphasizes risk-sharing, ethical investment, and equitable income distribution (Ahmed et al., 2021; Mohd Nor & Ismail, 2020). In mudharabah, capital providers (banks) finance entrepreneurs (*Mudharib*) in exchange for pre-agreed profit-sharing ratios, while losses are borne by investors, fostering accountability, and aligning incentives (Hidayah et al., 2021; Nugraheni & Alimin, 2022). Musharakah involves joint ownership, with profits and losses distributed proportionally to contributions.

The Islamic financing rate (IFR) reflects the proportion of the profit earned by Islamic banks from financing activities (Zulkhibri & Sukmana, 2017). Although the Indonesian Ulama Council (DSN-MUI) permits the time value of money considerations, IFR represents Shariah-compliant returns rather than interest (Fakhrina & Islahuddin, 2023). In contrast to conventional interest, IFR is calculated ex-post based on actual transaction outcomes, ensuring that profits stem from real economic activity (Shamsher et al., 2017; Supriyanto, 2019). The central bank regulates the IFR to manage liquidity, promote equitable wealth distribution, and support macroeconomic stability, in line with Maqasid al-Shari'ah (Madbash, 2024). Nonetheless, Islamic banks often benchmark IFR against conventional rates, such as the London Interbank Offered Rate (LIBOR), for competitiveness, which may blur operational differences despite legal and ethical distinctions (Beck et al., 2013; Hussain et al., 2016). In this study, conventional interest rates are excluded to uphold the doctrinal consistency of Islamic finance. According to Yaya et al. (2021), including conventional interest rates in Islamic economic models may introduce conceptual inconsistencies and bias, thus supporting the use of IFR as a more appropriate Shariah-compliant indicator. The key theoretical frameworks include the following.

1. Agency theory, highlighting risk allocation and monitoring between banks and entrepreneurs.
2. The profit-and-loss sharing Theory emphasizes the equitable distribution of gains and losses in accordance with Shariah.
3. Solow growth theory and Schumpeterian perspectives illustrate how capital accumulation, productivity, and efficient resource allocation via Islamic banks stimulate sustainable economic growth (Abbas & Hassouni, 2024; Mustofa, 2024).

Internal bank factors (NPF, CAR) determine the capacity to provide PLS financing, while macroeconomic factors (inflation, exchange rates) influence financing demand and viability (Roziq et al., 2020; Alnajjar & Abdullah Othman, 2021). Religiosity, proxied by Zakat, Infaq, and Sadaqah (ZIS), enhances ethical behavior, repayment discipline, and trust, thus mitigating financing risks (Ibrahim et al., 2022; Setyawigasta et al., 2024). Furthermore, the expansion of ZISWAF activities contributes to economic growth through productive empowerment and equitable income redistribution, creating fertile grounds for PLS mechanisms (Hasanah et al, 2023). ZIS embeds religious norms into financial transactions, reinforcing trust-based relationships between customers and banks (Apriyani & Septiatin, 2024). Thus, ZIS not only signifies religiosity, but also supports a behavioral and economic environment conducive to PLS financing success. Debates remain regarding the relative influence of socio-religious versus financial factors on PLS adoption, especially in emerging markets such as Indonesia. Compared with conventional loans, PLS prioritizes project viability over creditworthiness, aligning financial outcomes with ethical and social objectives (Hanieh, 2020; Saleh et al., 2018).

Prior empirical studies & hypothesis development

Empirical studies indicate that internal and external factors significantly affect PLS financing performance. A high NPF reduces bank profitability and financing capacity, whereas a robust CAR supports stability and operational efficiency. Inflation and exchange rate fluctuations negatively affect financing demand and project viability, whereas Total Assets (TA) enhance banks' capacity to provide long-term PLS financing. IFR directly affects bank performance by providing Shariah-compliant profit returns while reflecting real economic outcomes and influencing financing decisions and bank behavior.

Beyond financial and macroeconomic determinants, religiosity measured through ZIS affects customer financial behavior, savings, and the repayment discipline, although its integration with PLS performance remains underexplored (Ibrahim et al., 2022; Setyawigasta et al., 2024). The expansion of ZISWAF activities stimulates economic growth by promoting productive investment and equitable income distribution, thereby creating a more fertile ground for the effective operation of PLS mechanisms (Hasanah & Nst, 2023). Moreover, ZIS embeds religious norms into financial transactions, reinforcing trust-based relationships between customers and Islamic banks (Apriyani & Septiatin, 2024). Thus, ZIS not only signifies religiosity, but also fosters both the behavioral and economic environment necessary for the sustainability of PLS financing. Finally, PLS financing contributes positively to economic growth, especially in the industrial sector, through efficient capital allocation and equitable income distribution (Abbas & Hassouni, 2024; Bougatef et al., 2020; Chowdhury et al., 2018). The Industrial Production Index (IPI) serves as a proxy for economic growth, capturing medium- and large-scale manufacturing output (Stanger, 2020; Wadström et al., 2019).

Based on theory and prior studies, the following hypotheses are proposed:

H_1: Non-performing financing (NPF) negatively affects PLS financing performance.
H_2: Capital adequacy ratio (CAR) positively affects PLS financing performance.
H_3: Inflation (INF) negatively affects PLS financing performance.
H_4: Islamic financing rate (IFR) positively affects PLS financing performance.
H_5: Exchange rate (EXR) negatively affects PLS financing performance.
H_6: Total assets (TA) positively affect PLS financing performance.
H_7: Religiosity (ZIS) positively affects PLS financing adoption.
H_8: PLS financing positively affects Economic Growth (measured by IPI).

Research Methods

The objective of this research is to analyze the determinants of profit and loss sharing (PLS) using monthly data collected from October 2014 to October 2023. This period was deliberately selected because it captures the multiple economic cycles that are crucial to Islamic banking dynamics in Indonesia. Specifically, it includes the pre-pandemic period marked by stable growth, economic shock triggered by the COVID-19 pandemic (2020–2021), and subsequent recovery and monetary tightening phase (2022–2023). These stages provide a comprehensive economic backdrop for observing how Islamic banks adjust their PLS financing strategies under varying macroeconomic conditions, including demand shocks, policy shifts, and fluctuations in consumer and investor confidence. The presence of these distinct periods enhances the robustness of the analysis and allows the evaluation of both resilience and responsiveness in Sharia-compliant financing mechanisms.

The secondary data are derived from statistical reports published by various organizations, and data on banking variables are sourced from the Financial Services Authority (OJK). Macroeconomic data were quoted from the Bank Indonesia (BI) and the Central Bureau of Statistics (BPS), except for IPI data quoted from the macroeconomic data provider agency CEIC through its official website www.ceicdata.com. Meanwhile, the amount of ZIS was quoted from the National Zakat Agency (BAZNAS), the official government-sanctioned nstitution mandated by Law No. 23/2011 to manage zakat at the national level, which provides systematically collected, audited, and publicly accessible data on ZIS. Although numerous private and regional Zakat

agencies operate across Indonesia and manage substantial funds, comprehensive and consistent time-series data from these institutions are not centrally available. For this reason, this study relies exclusively on BAZNAS statistics as the most authoritative, standardized, and nationally representative source. Although this approach may underestimate the total zakat potential in Indonesia, it ensures data reliability and comparability across the observed period, making it suitable for empirical analysis. The autoregressive distributed lag (ARDL) method was employed in this study to analyze the dynamic relationships between independent and dependent variables in both the short and long terms (Pesaran & Shin, 2012). ARDL has the advantage of flexibility in analyzing variables with different levels of integration, both I(0) and I(1) (Widarjono & Rudatin, 2021). The analysis of dynamic relationships, both in the short and long terms, is facilitated by ARDL, which is highly relevant for revealing the complexity of interactions between variables.

The variables examined in this study include both macroeconomic and bank-specific factors that are theoretically anticipated to affect the performance of profit- and loss-sharing (PLS) financing. The following variables are included in this analysis: non-performing financing (NPF), capital adequacy ratio (CAR), inflation rate (INF), Islamic financing rate (IFR), exchange rate (ER), total assets (TA), funds allocated to zakat, infaq, and shadaqah (ZIS), and industrial production index (IPI). The selection of these variables was predicated on the availability of data during the study period and a comprehensive review of the relevant literature. The exchange rate (ER) indicates exchange rate stability in financial performance, while the INF rate indicates macroeconomic conditions. The IPI is a proxy for economic growth. At the same time, NPF, CAR, and TA are regarded as critical internal factors of Islamic banks because they represent the quality of assets, adequacy of capital, and overall size of the bank, respectively. Furthermore, the ZIS is integrated to investigate its potential influence on the PLS financing mechanism as a component of Islamic social finance. The model specification employed in this research is detailed in this section and supported by several previous studies, including those by Ibrahim et al. (2022) and (Madbash, 2024).

$$\begin{aligned}\Delta logPLS_t = \alpha &+ \sum_{k=1}^{n1} \alpha_{1k}\, \Delta logPLS_{t-k} + \sum_{k=0}^{n2} \alpha_{2k}\, \Delta logINF_{t-k} + \sum_{k=0}^{n3} \alpha_{3k}\, \Delta logER_{t-k} \\ &+ \sum_{k=0}^{n4} \alpha_{4k}\, \Delta logIPI_{t-k} + \sum_{k=0}^{n5} \alpha_{5k}\, \Delta logNPF_{t-k} + \sum_{k=0}^{n10} \alpha_{10k}\, \Delta logCAR_{t-k} \\ &+ \sum_{k=0}^{n10} \alpha_{10k}\, \Delta logTA_{t-k} + \sum_{k=0}^{n10} \alpha_{10k}\, \Delta logZIS_{t-k} + \lambda_0 logPLS_{t-1} + \lambda_1 logINF_{t-1} \\ &+ \lambda_2 logER_{t-1} + \lambda_3 logIPI_{t-1} + \lambda_4 logNPF_{t-1} + \lambda_9 logCAR_{t-1} + \lambda_9 logTA_{t-1} \\ &+ \lambda_9 logZIS_{t-1} + \mu_t\end{aligned}$$

The ARDL analysis process comprises multiple stages (Kripfganz & Schneider, 2023). The Phillips-Perron method is employed to conduct a stationarity test to ascertain the degree of variable integration, as it determines the degree of integration for variables stationary at level I(0) or first difference I(1) of the ARDL model (Himmawan & Firdausi, 2021). The ARDL model meets implementation requirements, with all variables being stationary at the first difference level, and a cointegration analysis confirming a substantial long-term correlation between independent and dependent variables. In the next step, the Akaike information criterion (AIC) was employed to ascertain the optimal lag structure. The most suitable lag structure is that selected (1, 0, 0, 0, 0, 4, 3, 2, 0), as it effectively captures the dynamic relationships between the variables while minimizing model complexity. Eventually, parameter estimates are obtained by estimating the ARDL model using the ordinary least squares (OLS) method after the lag structure has been established. Subsequently, a Classical Assumption Test was implemented to verify the validity of the model. Autocorrelation was assessed using the Lagrange multiplier (LM), whereas heteroskedasticity was assessed using the Harvey Test. The two tests indicate that the model does not experience autocorrelation or heteroskedasticity, which implies that the classic regression assumption is valid.

Results

The autoregressive distributed lag (ARDL) approach involves several critical tests to ensure the validity of the model (Kripfganz & Schneider, 2023). These tests include the unit root test, the Bounds test for cointegration, and the ARDL long- and short-run tests. Additionally, this study also conducted classical assumption tests, such as autocorrelation and heteroscedasticity, to verify model validity, and the Johansen cointegration Test to enhance cointegration analysis validity. The ARDL model's estimation process begins with a unit root test using the Phillips (PP) method to assess the stationarity level of each variable. According to Kripfganz and Schneider (2023), the ARDL model is applicable when the variables are integrated at different levels, specifically a combination of I(0) and I(1), as long as the second difference level is I(2) or higher. If any variable is integrated at the second difference (I(2)), then the ARDL approach is no longer valid. The following section presents the results of the unit root test conducted using the Phillips-Perron method.

Table 1. The result of the unit root of *Phillips-Perron*

Variable	I(0)		I(1)	
	ADF t-Statistic	Prob	ADF t-Statistic	Prob
PLS	1.492933	0.9992	-11.52470	0.0000
IFR	-2.075012	0.2552	-13.51602	0.0000
INF	-7.838239	0.0000	-26.80756	0.0001
IPI	-4.061710	0.0017	-24.17100	0.0000
Exchange Rate	-2.374097	0.1515	-16.14852	0.0000
NPF	-0.664338	0.8502	-14.27377	0.0000
CAR	-0.581373	0.8692	-10.83223	0.0000
ZIS	2.494813	0.9999	-14.18064	0.0000
TA	-7.968042	0.0000	-75.86448	0.0001

Source: Data processed (2025)

The results indicate that all variables are stationary at the First Difference I(1). However, inflation (INF), industrial production index (IPI), and total assets (TA) demonstrate stationarity at this level. Given these mixed orders of integration, the ARDL model was considered the most appropriate for this analysis. The ARDL approach is particularly advantageous for datasets containing variables integrated at different levels, specifically, I(0) and I(1). The subsequent test is the Johansen cointegration test, designed to examine the long-run relationships among the variables included in the ARDL model used in this study.

Table 2. Johansen cointegration rank test

Hypothesized	0.05			
No. of CE(s)	Eigenvalue	Trace-Statistic	Critical Value	Prob.**
None *	0.404304	200.1665	197.3709	0.0361
At most 1	0.321119	146.8099	159.5297	0.1988
At most 2	0.246193	106.9170	125.6154	0.3854
At most 3	0.217972	77.80731	95.75366	0.4407
At most 4	0.189972	52.48324	69.81889	0.5280
At most 5	0.118768	30.78254	47.85613	0.6781
At most 6	0.092683	17.75977	29.79707	0.5839
At most 7	0.068277	7.741620	15.49471	0.4934

Source: Data processed (2025)

The Johansen Cointegration Test results for this model reject the null hypothesis, indicating cointegration. This conclusion is predicted on the trace statistic value (200.1665), which surpasses the critical value (197.3709). Consequently, this discovery implies that the variables are associated with at least one cointegration relationship. To further evaluate the existence of a long-term relationship between the variables in the model, a Bounds Cointegration Test was conducted

following the Johansen test. The following section presents the results of the Bounds Cointegration Test for the ARDL model.

Table 3. Bound F- cointegration test result

Test Statistic		Value				
F-statistic		2.877603				
α	10%		5%		1%	
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
Asymptotic	1.85	2.85	2.11	3.15	2.62	3.77

Source: Data processed (2025)

From the Bound cointegration test, the calculated F-statistic value was higher than the upper critical limit at a significance level of 10% (2.877603>2.85), as confirmed by the cointegration bound result. Therefore, Hypothesis 1 is validated, indicating a significant long-term relationship between the ARDL model variables, and the dependent variable is influenced by the independent variables. The next step is to select the optimum lag to ensure accurate and valid estimation results. The Hannan-Quinn method was chosen because of its ability to prevent overfitting in models with more complex data facilitated by relatively numerous datasets.

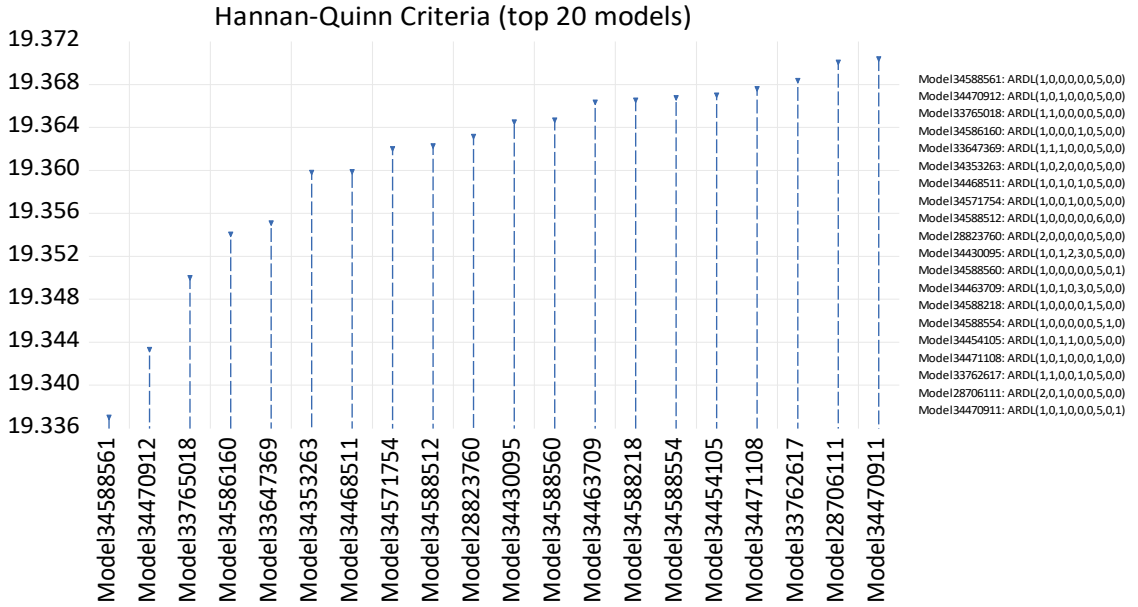

Figure 1. Determination of Lag Length
Source: Data processed (2025)

Based on the Hannan-Quinn criterion (HQ) optimal lag selection test, the optimal lag structure for the ARDL model in this study was (1, 0, 1, 0, 0, 0, 5, 0, 1). This finding indicates that the impact of the independent variables on the dependent variable varies over time, with some variables exerting an immediate effect, while others require a longer period to influence the outcome. The next step in the analysis involves testing Classical Assumptions to ensure that the model remains unbiased and statistically reliable. The first assumption was the autocorrelation test, which was conducted using the Lagrange Multiplier (LM) test.

Table 4. The result of Lagrange multiplier (LM) test: Breusch-Godfrey

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	0.148272	Prob. F(2,87)	0.8624
Obs*R-squared	0.353942	Prob. Chi-Square(2)	0.8378

Source: Data processed (2025)

The results of the LM test above reveal that in this ARDL model, the chi-square produced does not exceed the significance value of 5% (0.8378>0.005) and explains that in this ARDL model, the residual model is not correlated between periods; thus, this model can be declared unbiased and valid. The classical assumption test is a heteroscedasticity test using the Harvey test. The following are the results of the heteroscedasticity test.

Table 5. Heteroskedasticity test: Harvey

F-statistic	0.613132	Prob. F(14,88)	0.8475
Obs*R-squared	9.154085	Prob. Chi-Square(15)	0.8211
Scaled explained SS	10.20023	Prob. Chi-Square(15)	0.7474

Source: Data processed (2025)

The results of the Harvey test indicate that the F-statistic value is lower and the chi-square value is higher than the 5% significance level (0.7474 > 0.05). This finding suggests that the null hypothesis, which states that heteroscedasticity is absent, cannot be rejected. Consequently, the ARDL model exhibits constant residual variance (homoscedasticity), confirming that it is free from heteroscedasticity issues. Thus, the ARDL model can be considered efficient and unbiased. Therefore, it can be concluded that the residuals in the ARDL model are normally distributed, further supporting the reliability, consistency, and robustness of the estimation results.

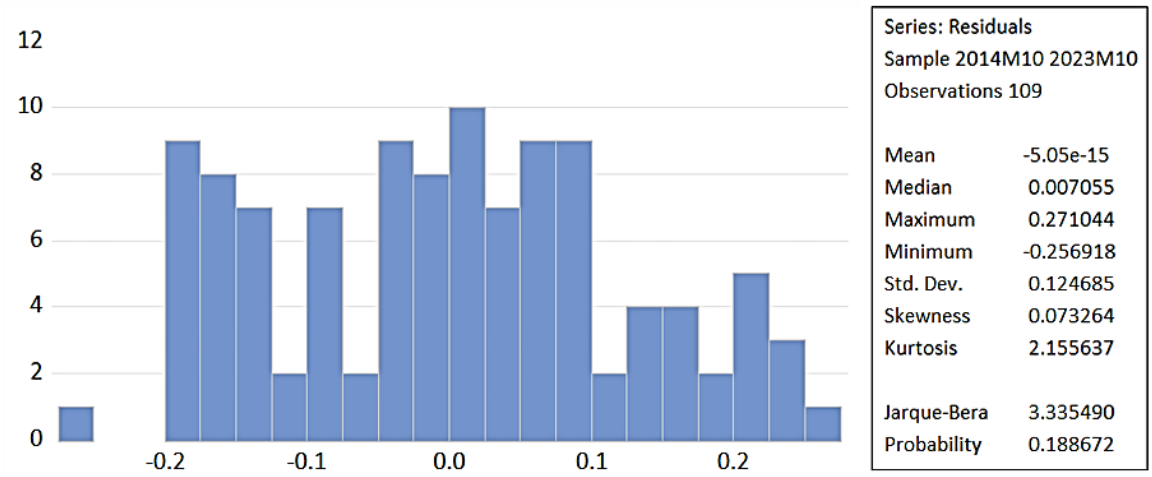

Figure 1. Jarque-Berra normality test

Source: Data processed (2025)

The normality test of the residuals was conducted using the Jarque-Bera statistic and visual inspection of the histogram. The Jarque-Bera value obtained was 3.335, with a probability of 0.1887, exceeding the conventional significance level of 0.05. This result indicates that the null hypothesis of normal distribution cannot be rejected, implying that the residuals are normally distributed. Furthermore, the histogram of residuals shows a symmetrical pattern centered around zero, with slight dispersion, but no severe skewness or kurtosis. The skewness value is 0.073, suggesting near-symmetry, and the kurtosis is 2.156, which is close to the standard normal distribution kurtosis of 3. Collectively, these findings confirm that the residuals satisfy the normality assumption required for a valid estimation and inference in the ARDL model.

The results of this study indicate a stable ARDL model that ensures validity and reliability, provides a robust understanding of the dynamic PLS factors, and serves as a foundation for policy recommendations in Islamic banking. The final step in the ARDL estimation process is the long- and short-run ARDL tests. This step is a crucial analysis tool that assesses the relationship between independent and dependent variables in both short- and long-term scenarios, ensuring an accurate representation of long-term equilibrium dynamics and trends. The following section presents the ARDL long- and short-run estimations.

Table 6. ARDL Long-run and short-run estimation.

Short run				
Variable	Coefficient	Std. Error	t-Statistic	Prob
PLS(-1)	0.915896	0.092695	9.880755	0.0000
NPF	419.0514	996.3819	0.420573	0.6751
CAR	-1070.870	625.2842	-1.71262	0.0903
INF	-2912.740	2280.964	-1.27698	0.2050
IFR	-158.8890	615.4094	-0.25818	0.7969
Exchange Rate	0.429509	0.648657	0.662152	0.5096
TA	0.129925	0.062888	2.065981	0.0418
TA(-1)	-0.122270	0.037543	-3.25678	0.0016
TA(-2)	-0.064600	0.057251	-1.12844	0.2622
TA(-3)	0.075465	0.027759	2.718581	0.0079
TA(-4)	-0.117720	0.048891	-2.40782	0.0181
TA(-5)	0.133164	0.077256	1.723666	0.0883
ZIS	2.280800	1.25E-08	1.822772	0.0717
IPI	45.73761	23.37883	1.956368	0.0536
C	963.6566	9698.904	0.099357	0.9211
Long Run				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPF	4982.528	13596.26	0.366463	0.7148
CAR	-12732.7	6325.803	-2.01282	0.0470
INF	-34632.5	22746.4	-1.52255	0.1312
IFR	-1889.19	10401.28	-0.18163	0.8563
Exchange Rate	5.106872	9.293537	0.549508	0.5840
TA	0.403774	0.132047	3.057814	0.0029
ZIS	2.71E-07	2.17E-07	1.251678	0.2138
IPI	543.8209	658.5128	0.825832	0.4110
C	11457.89	201113	0.056972	0.9547

Source: Data processed (2025)

The estimation results of the ARDL model indicate multiple significant relationships between the independent and dependent variables in both the short and the long run. In the immediate term, factors that show statistical significance comprise multiple lags of total assets (TA) and the industrial production index (IPI). The influence of total assets varies across various lags, and the contemporaneous (unlagged) total assets and its third lag demonstrate a significant positive effect, whereas the first and fourth lags of total assets have a significant negative impact. Furthermore, the IPI showed a slight level of significance, as indicated by a probability value of 0.0536. Other variables, including inflation rate (INF), exchange rate (KURS), non-performing financing (NPF), capital adequacy ratio (CAR), and funds allocated to zakat, infaq, and shadaqah (ZIS), do not show statistical significance in the short term. However, certain variables, such as ZIS and the fifth lag of TA, are near the 10% significance threshold, indicating possible importance. On a long-term basis, only CAR and TA were statistically significant. The coefficient of -12,732.7 for CAR suggests that an increase in CAR can lead to a decrease in the dependent variable. This is a negative effect. Conversely, the coefficient of 0.4038 for TA indicates that an increase in total assets can have a substantial positive impact on the dependent variable in the long term. In the long term, other variables, including INF, KURS, IPI, NPF, and ZIS, did not exhibit a significant effect, suggesting that their roles may be indirect or inconsistent with the dependent variable.

Discussion

Non-performing financing (NPF) as the determinant factor of PLS

This study finds that NPF exerts a positive yet statistically insignificant effect on PLS-based financing, applicable in both the short and long terms. This finding is consistent with the research conducted by Salman (2023) and Winarsih and Asokawati (2019), who demonstrated that NPF

does not significantly impact profit-sharing-based financing volume. The absence of significance can be explained by a multitude of factors. In the short term, the NPF's impact on PLS performance is not immediately apparent because it records profits or losses only after the project's completion or timeframe, and the PLS' risk management framework differs from debt-based financing (Aslam, 2024). Sharia banking regulations offer flexibility in managing risk, reducing the likelihood of financial challenges in the near term without an immediate rise in NPF, even in the presence of PLS issues. In the long term, this negligible relationship may be attributed to the relatively low proportion of PLS financing within the portfolios of Islamic banks, which are predominantly characterized by sale-based financing instruments such as Murabaha (Hidayat et al., 2020). Furthermore, given that PLS is significantly influenced by the real sector, its effect on NPF is closely tied to the prevailing economic conditions (Ernawati, 2024). During robust growth, non-performing financing risk can be mitigated, whereas economic instability may lead to decreased profitability without an immediate increase in NPF.

Although the impact may not be substantial, the favorable correlation between NPF and PLS financing can be explained by several factors. Initially, despite the rise in NPF, banks continued to direct funds towards PLS financing. Financial institutions use Sharia-aligned risk mitigation strategies, including rigorous project selection, hybrid contracts, and diligent oversight, to advance the real sector and mitigate risks (Arief Jailani & Muneeza, 2023). Second, an increase in NPF might encourage banks to adopt a more prudent approach to the allocation of PLS financing and risk controllers for business activities (Hardana et al., 2023). Nevertheless, this increased caution is improbable, leading to a total lack of such financing distribution. In specific circumstances, financial institutions may incorporate PLS instruments into portfolios to enhance long-term returns and liquidity, reducing the financing risks faced by banks (Nihayah & Walyoto, 2018). Consequently, although a positive correlation is observed between NPF and PLS, this relationship does not possess the adequate strength to indicate a significant influence, especially when considering the multitude of other factors that play a role in the allocation of PLS financing by Islamic banks.

Capital adequacy ratio (CAR) as the determinant factor of PLS

The results of this study suggest that CAR has a significant and adverse effect on PLS financing in Islamic banking in both the short and long term. Risk aversion, regulatory constraints, profitability considerations, agency problems, and preferences for alternative financing methods are all interrelated factors that can be used to explain this relationship (Hasan et al., 2023). Initially, a higher CAR indicates that a bank maintains a larger capital buffer than its risk-weighted assets (Moudud-Ul-Huq, 2019). Although this improves financial stability, it suggests a more cautious approach to risk taking. Banks with robust capital positions can choose to participate in lower risk financing models. PLS financing is inherently associated with increased risk due to asymmetric information and uncertain returns (Farihana & Rahman, 2021). Banks with strong capital positions tend to favor Murabahah-based financing, which offers more stable and predictable returns (Abbas, 2022). Consequently, higher CAR is associated with a lower proportion of PLS financing. However, despite its challenges, PLS financing can enhance profitability when supported by strong governance through proper selection and monitoring mechanisms, making it an attractive option for customers owing to its fair contract structure and flexible repayment terms (Risfandy et al., 2019). Therefore, while banks with high CAR may limit PLS financing, effective risk management and governance strategies can help optimize their potential in Islamic banking.

The second factor that significantly influences'nksthe financing decisions is regulatory requirement (Challoumis, 2024). Islamic banks must adhere to capital adequacy regulations established by financial authorities, which frequently require the preservation of a strong capital base (Alnajjar & Abdullah Othman, 2021). Owing to the risk exposure associated with PLS financing, banks with a higher CAR may restrict their participation in such financing models to prevent capital strain and guarantee regulatory compliance (Ahmed et al., 2022). This restriction deters Islamic banks from conducting extensive PLS transactions, whether implemented as a short- or long-term strategy. Third, banks' decision-making processes are influenced by the trade-off

between financial stability and profitability (Khémiri et al., 2024). In the immediate and extended future, Islamic banks with high CAR tend to allocate fewer resources to PLS financing, in favor of more predictable revenue streams. The presence of agency problems and moral hazard in PLS financing is another critical factor (Abasimel, 2023). In Mudarabah and Musharakah contracts, entrepreneurs or business partners may undertake excessive risks or incorrectly report profits with the knowledge that losses are shared with the bank. Banks are discouraged from providing PLS financing due to the additional uncertainty they generate, particularly when they attempt to preserve robust capital reserves over both the short- and long-term horizons. Islamic banks prefer debt-based financing instruments such as Murabaha for predictable returns and lower risk. A high CAR influences this preference, causing challenges in promoting PLS financing while maintaining financial stability. To accelerate adoption, regulatory modifications or risk-mitigation strategies may be necessary to address profitability and agency issues.

Inflation as the determinant factor of PLS

The study reveals that inflation has a negative but insignificant impact on determining PLS financing in both short- and long-term terms. This can be attributed to regulatory frameworks, risk management strategies, and macroeconomic adjustments and may vary based on specific economic conditions and the nature of project contracts financed through the PLS scheme (Kismawadi et al., 2023). Inflation can increase business uncertainty in the short term by increasing costs and making banks cautious when offering PLS contracts. Nevertheless, it can be mitigated by government interventions, cost-cutting measures, and price adjustments and banks prioritize factors such as regulatory constraints and creditworthiness while making financing decisions (Alali & Haddad, 2023). In the long term, the appeal of PLS arrangements may be diminished by persistent inflation, which may result in fixed return contracts such as Murabaha by affecting consumer behavior and demand for Murabaha financing products as individuals and businesses become more cautious with their spending. An example of the effect of inflation on Murabaha Financing is when a bank offering Murabaha financing for goods and services must acquire goods at a higher price because of inflation (Athari & Bahreini, 2023; Belkhaoui, 2023). Nevertheless, this negligible influence implies that inflation has an impact on PLS financing, but it is not the primary determinant. Macroeconomic stability, governance, financial sector development, and regulatory policies are additional significant determinants of financing, including PLS (Mabkhot & Al-Wesabi, 2022). A robust financial sector enhances liquidity and risk management, which encourages banks to participate in PLS financing, despite inflation. Governance and regulatory confidence ensure the sustainability of profit-sharing contracts, and economic growth fosters better investment opportunities and reduces the relative impact of inflation. Financial literacy and public awareness also influence participation in PLS financing by promoting a better understanding of the risk-sharing mechanisms. Although inflation adds uncertainty and reduces returns, its effect on PLS financing remains statistically insignificant. Hence, this study suggests that broader economic and institutional factors have more substantial influence. Therefore, Islamic banks and policymakers should focus on these aspects to support the sustainable growth of PLS financing in Islamic banking.

Islamic financing rate (IFR) as The Determinant Factor of PLS

The findings of this study indicate that the Islamic financing rate (IFR) serves as a determinant factor for profit-loss sharing (PLS) financing in Islamic banking. However, its impact on PLS financing is negative and statistically insignificant in the short and long term. Other studies conducted by Zulkhibri and Sukmana (2017) also support the results of this study. This result also strengthens the statement by Karim et al. (2017) who state that changes in IFR do not affect Islamic financing in the short or long term. Fluctuations in IFR do not significantly influence the allocation of PLS financing by Islamic banks, which may be attributed to several key factors. Inherently, PLS financing is predicated on profit-sharing principles rather than fixed cost structures. In contrast to conventional debt-based financing, PLS financing in Islamic banking is contingent on investment profitability (Hamza, 2016). However, Islamic banking institutions are constrained in their capacity

to adapt to IFR modifications because of the inherent risks they encounter, such as moral hazard and adverse selection. Alternative financing instruments, such as murabaha and ijarah, offer predictable returns and reduced risk exposure (Yustiardhi et al., 2020). Regulatory frameworks and market conditions may influence the relationship between IFR and PLS financing. A higher IFR may discourage risk-sharing investments, whereas a lower IFR does not necessarily translate into higher PLS financing. Further research is needed to explore the factors that influence PLS financing in Islamic banking.

Exchange rate as the determinant factor of PLS

The exchange rate's positive but insignificant influence on profit–loss sharing (PLS) financing in both the short and long term can be explained through economic and financial dynamics. Exchange rate fluctuations in Islamic banking and the economy have a weak or inconclusive impact on financial stability and investment decisions, which can affect business profitability, financing demand, and foreign investment costs. On the other hand, stronger exchange rates potentially boost profitability and investment, whereas weaker rates increase revenues but increase costs (Avdjiev et al., 2019). Given that PLS financing is contingent upon profit-sharing agreements, a favorable exchange rate can generate opportunities for businesses to expand, thereby boosting the demand for PLS financing. However, the insignificant aspect of this effect implies that exchange rate fluctuations may not be the primary factor influencing PLS financing in the short term (Farihana & Rahman, 2021). Other variables, including market demand, interest-free banking regulations, and business risk perception may have a more substantial impact on bank financing decisions (Louhichi & Boujelbene, 2016). Furthermore, hedging mechanisms and monetary policies may mitigate the immediate effect of short-term exchange rate volatility on PLS financing (Li et al., 2023).

In the long term, a stable and strengthened exchange rate has the potential to increase financing opportunities, including PLS, attract foreign capital, and improve macroeconomic conditions, thereby enhancing investor confidence (Beirne et al., 2024). Stable exchange rates may increase the openness of businesses to participate in profit-sharing contracts as they mitigate the risk of currency-related financial losses (Harunoğulları, 2023). Nevertheless, the positive but insignificant long-term impact of exchange rates implies that other macroeconomic variables, including GDP growth, inflation, financial sector development, and regulatory policies, have a more significant influence on the financing trends of the PLS. Additionally, when formulating long-term financing decisions, Islamic banks may prioritize factors such as business viability, risk management, and adherence to Shariah principles over exchange rate stability (Faizi, 2024). Exchange rate fluctuations do not significantly influence PLS financing decisions because Islamic banks and businesses rely more on domestic economic conditions, governance frameworks, and financial stability. This highlights the importance of a comprehensive economic and financial framework for Islamic banking.

Total assets as the determinant factor of PLS

The total assets of Islamic banks play a crucial role in determining profit-loss sharing (PLS) financing, exhibiting both positive and negative effects in the short term, with a significant positive influence on lags 0, 3, and 5 but a significant negative influence on lags 1 and 4, with a positive and significant impact in the long term. The financial strength, risk management strategies, and operational priorities of Islamic banks should be considered over various time horizons to explain these dynamics (Jan et al., 2021). Total assets have a mixed short-term impact on PLS financing with significant positive and negative effects. The implication is that PLS is constantly affected by fluctuations in total assets rather than in a straightforward manner (Kismawadi, 2024). A short-term rise in total assets is good for the bank's ability to handle risk-sharing contracts, such as Mudarabah and Musharakah, and increase its cash flow (Adams et al., 2025). Because they have more money, Islamic banks may be more willing to make higher-risk investments, especially in businesses that will make money, in line with their moral and Shariah-compliant beliefs. Short-term problems can occur because of rules and people being afraid to take risks.

Islamic banks accumulate more assets but may prefer low-risk and predictable financing methods such as murabahah or ijara, which are riskier due to profit volatility and asymmetric information. Despite asset growth, short-term economic, financial, and policy changes may cause banks to reduce their exposure to PLS (Hoque & Liu, 2023). The short-term mixed effects of total assets on PLS financing reflect the dynamic trade-off between financial strength and risk avoidance. By contrast, the positive long-term effect results show Islamic banks' growing confidence, stability, and strategic focus on risk-sharing contracts. This suggests that Islamic banks initially hesitated to expand PLS financing, despite asset growth. However, as they improve risk management and long-term investment strategies, they recognize their potential and allocate more resources. Total assets significantly impact PLS financing over the long term as Islamic banks grow in size and financial strength, allowing for profit-sharing mechanisms and generating the majority of their income (Priyadi et al., 2021).

Zakat, infaq & shadaqah (zis) as the determining factor of PLS

Profit-Loss Sharing (PLS) financing in Islamic banking is positive and significantly influenced by Zakat, Infaq, and Shadaqah (ZIS) in the short term but becomes insignificant in the long term, which is in line with the study by Widodo (2017), which can be attributed to the immediate impact of social finance on liquidity and economic activity in the short term. ZIS has a positive and substantial impact on PLS financing in the short term because it contributes to the improvement of financial inclusion, reduction of poverty, and increasing economic activity (Widiastuti et al., 2021). Elbanna (2024) also states that ZIS fund accumulation and distribution by Islamic banks is advantageous to low-income individuals and small entrepreneurs. To sustain their enterprises, numerous individuals employ Islamic financing models such as the PLS contract. Moreover, Islamic banks' liquidity is enhanced by the inflow of Zakat funds, which allows them to provide financing through PLS mechanisms with greater flexibility (Yaya et al., 2021). Islamic banks adhering to Shariah-compliant and ethical principles may encourage them to allocate resources to productive and social sectors, thereby promoting economic participation through PLS arrangements. As demonstrated by the substantial short-term impact, ZIS funds are effectively mobilized to support immediate economic activities and empower businesses that benefit from PLS financing (Qomariyah & Hilyatin, 2023).

ZIS continues to have a positive long-term effect; however, its influence on PLS financing is statistically insignificant, which is in line with Ibrahim et al. (2022). In contrast to investment-based financial resources, ZIS are predominantly social and charitable contributions that may not provide sustainable and large-scale funding for long-term PLS financing (Hamzah, 2024). This could be attributed to the fact that these contributions are social and charitable. Additionally, as economies and Islamic banks expand, the trajectory of PLS financing is increasingly affected by other macroeconomic factors, including GDP growth, inflation, financial development, and regulatory frameworks (Mensi et al., 2020). The impact of ZIS that reflects Indonesian religious practices is ceremonial, involving zakat payments on Islamic banks' financing strategies, which may be diminished as they shift to structured investments. The rise in interest rates led to a decrease in the ZIS volume, prompting the public to reduce donation expenditures and increase savings. Usman et al. (2017) conducted a study that further substantiate this phenomenon, indicating that Islamic bank depositors are more susceptible to fluctuations in interest rates than are their conventional bank counterparts (Aysan et al., 2018). ZIS, a key factor in the short-term economic and social benefits of Islamic institutions, had a statistically insignificant long-term impact on sustainable PLS financing growth. Instead, the long-term financial strategies, macroeconomic stability, and regulatory environments of Islamic institutions have a substantial impact on the development of PLS financing.

Industrial production index (IPI) as the determinant factor of PLS

The short-run relationship between the industrial production index (IPI) and profit loss-sharing (PLS) financing is positive and significant; however, it becomes positive but insignificant in the long run. This pattern emphasizes the direct responsiveness of PLS financing to industrial

development as the monthly economic indicator that measures real output in the manufacturing, mining, electricity, and gas industries (Ibrahim et al., 2022) and highlights the diminishing direct influence of IPI during a protracted period of structural and macroeconomic adjustment. The PLS financing scheme is highly influenced by IPI as an important indicator of monthly economic activity and describes the relationship between the financial sector and the real sector in Islamic banking (Abdul Majid & Kassim, 2015). An increase in IPI in the short term indicates greater demand for investment capital, increased economic activity, and increased production and industrial output (Wen et al., 2022). Customers are more likely to engage in Islamic banks' PLS contracts based on profit-sharing agreements when sectors generate high expected profits. The allocation of PLS financing has risen markedly as banks and firms seek to capitalize on favorable market conditions (Robiatun et al., 2024). Furthermore, during phases of industrial growth, enterprises require supplementary financial resources to facilitate expansion, obtain equipment, and sustain working capital. The propensity of enterprises to enter profit-sharing agreements with Islamic banks highlights the substantial short-term influence of IPI on PLS financing. PLS contracts are conducive to promoting investment growth (Cherqaoui, 2024). IPI has a statistically insignificant impact on PLS financing, but its long-term correlation remains positive. Macroeconomic and financial issues including inflation trends, financial stability, and regulatory changes substantially affect financing decisions. Islamic banks may expand their portfolios beyond PLS financing to diversify and prioritize stable structures over high-risk profit-sharing contracts. The maturation of financial institutions contributes to the long-term insignificance of the IPI in PLS financing.

Conclusions

This study evaluates the dynamics of profit-and-loss sharing (PLS) financing in Indonesia using the autoregressive distributed lag (ARDL) method. They find that short-term factors such as the capital adequacy ratio (CAR), total assets (TA), zakat, infaq, shadaqah (ZIS), and industrial production index (IPI) influence PLS financing. However, long-term growth is primarily driven by the CAR and TA, highlighting the high-risk nature of PLS financing. This study also highlights the role of religion in shaping financial decisions among Indonesians. Despite being a fundamental principle of Islamic banking, the adoption of PLS financing continues to face various challenges, including high moral hazard risks, limited financial literacy regarding Islamic finance, and the absence of effective risk mitigation instruments. Therefore, a comprehensive strategy is required to enhance the competitiveness and trust in the financing model. Key measures include improving financial transparency, strengthening regulatory frameworks, and advancing Islamic financial technologies.

Based on these findings, this study recommends that Islamic banks expand long-term PLS financing by securing stable and affordable funding sources, improving efficiency through digital collaboration with e-commerce platforms, and adopting shared service mechanisms alongside stronger internal monitoring of risk-sharing contracts. At the regulatory level, the government and central bank should reinforce the legal and supervisory framework for PLS, formulate explicit risk-mitigation guidelines, allocate state sukuk and hajj funds, select public expenditure to support Islamic banking liquidity, and invest in capacity-building programs that integrate Islamic jurisprudence with modern financial techniques. Although these measures are expected to enhance the sustainability and competitiveness of PLS financing, this study is limited by its reliance on secondary data and the exclusive use of BAZNAS-reported ZIS figures, which may not fully capture the broader zakat landscape. Future research should expand the dataset, incorporate other socio-religious indicators, and examine fintech-based risk-mitigation and macroprudential policies to provide deeper insights into the long-term potential of PLS financing.

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