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The Effect of PLS & NPLS Financing on the Industrial Production Index of The Indonesian Economy

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Abstract: This study aims to see the effect of PLS & non-PLS financing on Indonesia's economic growth using Autoregressive Distributed Lag (ARDL) with monthly data from January 2017 - December 2021. The results showed that financing with non-PLS schemes is still better in supporting the real sector than PLS schemes in the long term. For the short term, the second PLS and non-PLS financing schemes have a negative influence. Therefore, concrete steps must be taken to enhance PLS financing schemes to grow Islamic finance.

Keywords: ARDL; Economic Growth; Islamic banking; Non-PLS financing; PLS financing

JEL Classification: G2; G20; G21

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Introduction

The Islamic financial services industry, consisting of Islamic banking, Islamic insurance, and Islamic capital markets, has developed into an increasingly large part or system in the global financial market and has gained considerable advantages as an efficient alternative financial system. One of the essential roles in Islamic finance is Islamic banking. Islamic banking plays at least four crucial roles: encouraging lending, stimulating savings, increasing financial stability, and contributing to financing based on Islamic principles. Islamic finance is considered a stable financing system capable of boosting growth and creating long-term jobs (Boukhatem & Ben Moussa, 2018). The Industrial Production Index is among the many indicators describing Indonesia's macroeconomy, significantly affecting Islamic bank financing. According to data from the Central Bureau of Statistics (BPS) Indonesia, the development of the Industrial Production Index in Indonesia has changed every year, as seen in Figure 1.

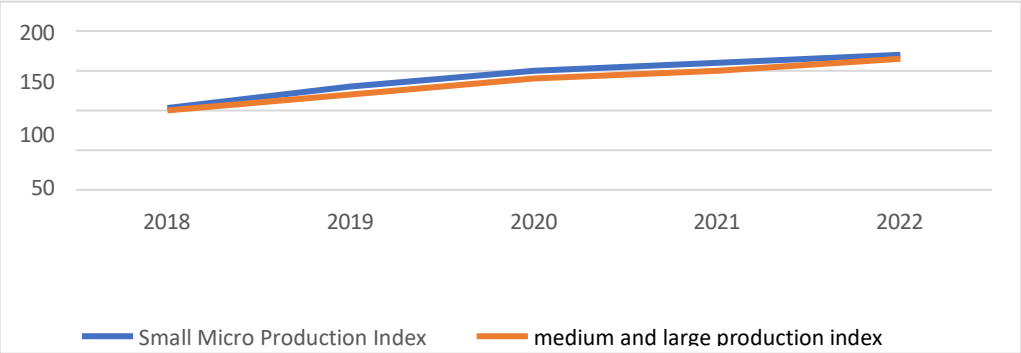

Figure 1 Small, Micro, Medium, and Large Production Index
Source: Central Bureau of Statistics, 2023

Figure 1 shows that the Industrial Production Index in Micro and Small Industries (IMK) is larger than the Industrial Production Index in Large and Medium Industries (IBS). The Industrial Production Index, or IPI, shows the growth and development of production in the processing industry sector. Due to its nature, it is an earlier, longer, and more complete data series designed periodically, monthly, and quarterly.

Based on the explanation above, it can be concluded that one of the purposes of forming an industrial production index is to influence the actual output of economic growth, which can be seen in the Industrial Production Index. However, the slowdown in the industrial production index from 2017 to 2021 (see Figure 1) raises questions for researchers about the relationship between the industrial production index and Indonesia's economic growth.

Unfortunately, Islamic banking practices in parts of the world and Indonesia in financing with non-Profit and Loss Sharing (non-PLS) schemes dominate compared to Profit and Loss Sharing (PLS) schemes. Profit and loss sharing (PLS) is a core principle of Islamic banking that involves sharing profits between Islamic banks and their customers. It's a Sharia-compliant method of financing that adheres to the religious prohibition on interest on loans. Meanwhile, Non-profit and loss sharing (non-PLS) financing is a concept in Islamic banking that is allowed in addition to profit and loss sharing (PLS) financing. Non-PLS financing includes debt-based contracts like *murabahah* and *Bai Bithaman Ajil* and leased-based contracts like *Ijarah*. The distribution of Islamic bank financing in Indonesia and the distribution of financing with the PLS scheme reached 32%, where the *musharakah* financing scheme was 25%, and the *mudharabah* financing scheme was 7%. In addition, financing with a sale and purchase contract (*murabahah*) is the highest portion, 59% of the total financing at Islamic banks (Waluyo, 2016). This is no longer under the initial spirit of opening Islamic banking, which carries the PLS concept.

Non-PLS financing schemes are notable for being simple & convenient for institutions. Non-PLS mechanisms are also relatively less risky than PLS. The increasing portion of non-PLS run by Islamic banking has caused various debates among Islamic scholars because the non-PLS financing methods offered by Islamic banking are similar to conventional banking practices and will trigger a socio-economic failure (Hatta et al., 2014).

M. Syafi'i Antonio (2001: 160), in his book "Islamic Banks and Theory of Practice." Financing is the distribution of facilities to provide funds to meet the needs of parties who are division units. According to Veithzal Rival and Arifin (2010: 681) in their book entitled "Islamic Banking," financing is funding distributed by parties to other parties to help investment both independently and institutionally or lease transactions on *ijarah* or lease purchase in the form of *ijarah muntahiya bittamlik*, sale and purchase transactions in the form of *mudharabah* receivables, greetings, and *istishna'*, lending and borrowing transactions in the form of *Qard*, as well as service lease transactions in the form of *ijarah* as multi-service transactions.

Replacing the existing interest rate system in conventional banking became the reason for establishing Islamic banking. Profit and loss sharing (PLS) is one of the principles brought by Islamic banking. At the suggestion of earlier scholars Quershi (1946), Ahmad (1952), Siddiqi (1983), and Khan (1983), this principle began to be improved. They propose that in its operations, Islamic banking uses the PLS principle with *musharakah* and *mudhorabah* contracts. Contemporary Islamic scholars such as Kahf and Khan (1992), El-Hawary, Tohirin and Ismail (2011), and Hasan (2002, 2008) say that *mudhorabah* & *Musharakah* contracts are good contracts in Islamic banking operations and are of interest to Islamic Finance intermediation. A *Musharakah* contract can be defined as a form of partnership in which two or more people combine their capital or labor to share profits and losses and have equal rights and obligations (Iqbal and Mirakhor, 2007). Meanwhile, a *mudhorabah* contract is a partnership contract between an investor (principal) and an entrepreneur who acts as an investor's agent to invest money in a way deemed appropriate by the agent with an agreement to share profits (Iqbal and Mirakhor, 2007).

To develop financing schemes other than PLS in the 1970s & 1980s, Significant progress was made in proposing other applicable principles to meet growing customer demand, known as non-PLS-based financing (Chowdhry, 2018). Financial instruments included in non-PLS schemes often used by Islamic banking are *murabaha*h, *Bay' bithaman Ajil, Bay' Al-istishna', Bay' As-Salam,* and *Ijarah*. *Murabahah* cost-plus contracts on sales, where financiers buy goods, commodities, and raw materials or provide them to entrepreneurs who do not have the capital to do so (Iqbal and Mirakhor, 2007). *Murabahah* is an essential part of Islamic finance and is well-known (Chowdhury, 2018). PLS-based financing is less known in Islamic finance due to a lack of qualified personnel on Islamic banking & financial systems and Islamic principles.

In his study, Schumpeter showed the banking system to be a significant factor in economic growth because of its role in allocating savings, increasing investment, and funding productive investments. According to the Islamic banking perspective, they contribute to economic growth. Combining ethical and moral values in financing increases the motivation of Muslims to mobilize their funds into the real sector for venture capital.

Research Method

This study will analyze, discuss, and explain how the total influence of Islamic financing, PLS financing schemes, non-PLS financing schemes, and whether non-PLS financing schemes still have more impact than PLS financing schemes on economic growth in Indonesia in the short and long term. The dependent variable in this study is the Industrial Production Index in Indonesia, and the independent variables in this study are Total Islamic Banking financing, Profit and Loss Sharing, Non-Profit and Loss Sharing, Consumer Price Index, and Total Trading Volume. The type of time series data that has been synchronized is converted into LN (natural logarithm) to reduce excessive data fluctuations in the choice of data type used. Natural logarithms can help adjust for the scale of the data, especially when values span several orders of magnitude. Variable testing was carried out from January 2017 to December 2021, which means that the overall data used in this study is 60 data obtained from various valid and trusted institutional websites, namely the Financial Services Authority, International Monetary Fund, and The Organisation for Economic Co-operation and Development. Quantitative data analysis was used to process this research using the Autoregressive Distributed lag (ARDL) method.

In this study, the relationship between Islamic banking and economic growth will be analyzed using Autoregressive distributed Lag (ARDL) and Error Correction Model (ECM) approaches introduced by Gujarati (2016). The ARDL model approach is widely used because it has many advantages. This approach can be applied by ignoring the stationarity of each variable and obtaining conjecture on the estimation of long-run equations. The ARDL approach captures both short-term and long-term relationships simultaneously. This makes it helpful in identifying long-term equilibrium relationships between variables and understanding how they adjust to these equilibria over time. In other words, ARDL can be applied regardless of whether the variables are all I (0), I (1), or usually coordinated (Gujarati, 2016). It also discusses those related to omitted variables and autocorrelation and gives valid results (Gujarati, 2016).

To estimate the effect of Islamic bank financing on economic growth in the long run, here is the ARDL model that we developed:

$$lnIPI_t = \beta_0 + \sum_{i=1}^{\rho} \beta_1 lnIPI_{t-i} + \sum_{i=0}^{\rho} \beta_2 lnFN_{t-i} + \sum_{i=0}^{\rho} \beta_3 \Delta lnCPI_{t-i} + \sum_{i=0}^{\rho} \beta_4 \Delta lnEXP_{t-i} + \mu t \text{.....} (1)$$

$$lnIPI_t = \beta_0 + \sum_{i=1}^{\rho} \beta_1 lnIPI_{t-i} + \sum_{i=0}^{\rho} \beta_2 lnPLS_{t-i} + \sum_{i=0}^{\rho} \beta_3 lnCPI_{t-i} + \sum_{i=0}^{\rho} \beta_4 \Delta lnEXP_{t-i} + \mu t \text{.....} (2)$$

$$\Delta nIPI_t = \beta_0 + \sum_{i=1}^{\rho} \beta_1 lnIPI_{t-i} + \sum_{i=0}^{\rho} \beta_2 lnNPLS_{t-i} + \sum_{i=0}^{\rho} \beta_3 lnCPI_{t-i} + \sum_{i=0}^{\rho} \beta_4 \Delta lnEXP_{t-i} + \mu t \text{.....} (3)$$

Meanwhile, the short-term coefficient is determined by looking at the error correction model generated. Error correction models allow one to separate long-term as Granger causality. Short-term dynamics are captured in the specific coefficients of lagging terms. In contrast, error correction terms contain long-term causality information. Therefore, if the coefficients of each lag-free variable are significant, it signifies short-term causation and negative and statistically substantial error correction terms signify long-term causality (Gujarati, 2016). To find the optimal length for the long-run coefficient, the Schwarz

Information Criterion (SIC) is used. Here's the ARDL model we developed based on Kurniawan (2020) to look at short-term relationships as follows:

$$\Delta lnIPI_t = \beta_0 + \sum_{i=1}^{\rho} \beta_1 \Delta lnIPI_{t-i} + \sum_{i=0}^{\rho} \beta_2 \Delta lnFN_{t-i} + \sum_{i=0}^{\rho} \beta_3 \Delta lnCPI_{t-i} + \sum_{i=0}^{\rho} \beta_4 \Delta lnEXP_{t-i} + \emptyset ECT_{t-1} + \mu t \quad (4)$$

$$\Delta lnIPI_t = \beta_0 + \sum_{i=1}^{\rho} \beta_1 \Delta lnIPI_{t-i} + \sum_{i=0}^{\rho} \beta_2 \Delta lnPLS_{t-i} + \sum_{i=0}^{\rho} \beta_3 \Delta lnCPI_{t-i} + \sum_{i=0}^{\rho} \beta_4 \Delta lnEXP_{t-i} + \emptyset ECT_{t-1} + \mu t \quad (5)$$

$$\Delta lnIPI_t = \beta_0 + \sum_{i=1}^{\rho} \beta_1 \Delta lnIPI_{t-i} + \sum_{i=0}^{\rho} \beta_2 \Delta lnNPLS_{t-i} + \sum_{i=0}^{\rho} \beta_3 \Delta lnCPI_{t-i} + \sum_{i=0}^{\rho} \beta_4 \Delta lnEXP_{t-i} + \emptyset ECT_{t-1} + \mu t \quad (6)$$

Information:
IPI = Industrial production index
FN = Total financing of Islamic Banking
PLS = Profit Loss Sharing
NPLS = Non Profit Loss Sahring
EXP = Total Volume of Trade
CPI = Consumer Price Index

Result and Discussion

Unit Root Test

Stationary tests are performed to distinguish that there are no integrated variables at level two or I (2); Augmented Dickey-Fuller (ADF) and Phillips-Perron tests can be used in these tests.

Table 1 Unit Root Test

Variables	ADF test		PP test	
	Level	First difference	Level	First difference
LNIPI	-4.244489***	-10.10837***	-4.249899***	-12.07107***
LNFN	-2.14587	-7.179803***	-2.304851	-7.166857***
LNPLS	-4.440712***	-58.72853***	-4.446351***	-10.90654***
LNNPLS	-6.580965***	-129.9006***	-4.566979***	-10.63187***
LNCPI	-2.348385	-6.082823***	-1.99996	-3.868756***
LNEXP	-0.46491	-13.03146***	-1.412012	-13.74335***

Note: Significant at: *10, **5 and ***1 percent levels

Variables LNIPI, LN FN, LN NPLS, LNNPLS, LNCPI, and LNEXP are not integrated in order two or I (2), where through two types of tests, namely ADF (Augmented Dicky-Fuller) and PP (Philips-Perron) with determination of stationarity at level α (alpha) 5% = 0.05, and conclusions can be drawn if the research variable is IPI, FN, PLS, NPLS, CPI, and EXP stationer on First Difference.

ARDL Cointegration Test

The test was carried out using the Bound Testing Approach Cointegration Test method, as well as the following output results:

Table 2 ARDL Cointegration Test

Model	F-Statistic Value	Number of Variables	Level Significant	I(0)	I(1)
FN	12.36686	3	1%	4.29	5.61
PLS	12.78199	3	5%	3.23	4.35
NPLS	13.84530	3	10%	2.72	3.77

Note: The critical values are based on Pesaran et al. (2001), table C (iii) unrestricted intercept and no trend

Long-Run Relationship

After establishing the existence of cointegration between variables, the study continued to estimate the long-term equilibrium relationship between the industrial production index and Islamic financing through the ARDL procedure.

Table 3 Estimation of Long-Term Relationships

Regressors	Model FN (Model 1)		Model PLS (Model II)		Model Non-PLS (Model III)	
	Coefficients	t-statistic	Coefficients	t-statistic	Coefficients	t-statistic
LNFN	6.094839***	2.689926	-	-	-	-
LNPLS	-	-	-0.010603	-0.238000	-	-
LNNPLS	-	-	-	-	0.094022*	1.688825
LNCPI	-4.140907	-0.30633	-1.998001	-0.156722	48.980569*	2.003384
LNEXP	2.479937***	2.76188	3.37198**	2.115482	2.58876**	2.640424
Intercept	4.646114***	124.416967	4.782794***	12.515887	3.730031***	6.873246
Diagnostic test statistics						
Serial Correlation		0.017624		0.643553		0.717643
		(0.9789)		(0.4760)		(0.3857)
Heteroscedasticity		3.815317		3.517023		2.372040
		(0.2191)		(0.0519)		(0.3564)
D-W		2.031233		2.163580		2.174995

Note: Significant at: *10, **5 and ***1 percent levels

The results of the research in Table 3 show that total financing has a positive and significant relationship to economic growth in the long term. This test shows that a 1% change in Islamic funding will increase the industrial production index by 6.09%. This indicates that the contract of activity in Islamic banking financing is directly related to the real sector. This result is based on previous research conducted by Masrizal and Trianto (2022) for the case of Indonesia, Furqani & Mulyany (2009), Abd. Majid & H. Kassim (2015), Kassim (2016) for cases in Malaysia, Abduh & Chowdhury (2012) for cases in Bangladesh, Lebdaoui & Wild (2016) for cases in Southeast Asian countries, Mohd. Yusof & Bahlous (2013) for cases in GCC and East Asian countries, and Grassa & Gazdar (2014) for cases in countries such as Bahrain, Kuwait, Qatar, Saudi Arabia, and UAE.

Furthermore, the study's results also show that financing with PLS financing contracts has a negative and insignificant effect on economic growth at a coefficient of -0.01%, and non-PLS financing contracts positively and significantly impact economic growth at a coefficient of 0.09%. The results also show that the CPI variable also affects the industrial production index in the long run. Still, the positive and significant influence is only found in the non-PLS financing contract model. The consumer price index is an indicator used to measure the inflation rate. The government can also use it to decide on maximum price policies that protect consumers and minimum prices for producers so that companies can increase their production capacity. The results of this study also show the EXP variable in the 3 models has a positive & significant effect on industrial production in the long run.

Short Run Relationship

The next step in the ARDL testing technique is to estimate the short-term coefficient using the error correction term (ECM) model shown in Table 4.

Table 4 Short-Term Estimation

Regressors	Model FN (Model 1)		Model PLS (Model II)		Model Non-PLS (Model III)	
	Coefficients	t-statistic	Coefficients	t-statistic	Coefficients	t-statistic
LNFN	1.530817***	3.645981	-	-	-	-
LNPLS	-	-	-0.020971**	-2.383952	-	-
LNNPLS	-	-	-	-	-0.018149*	-1.75206
LNCPI	4.63576*	1.777635	-0.384827	-0.158664	-7.595381**	-2.314996
LNEXP	0.502055***	8.556055	0.538065***	8.455065	0.540013***	8.013563
ECM(-1)	-0.251166***	-3.196168	-0.192606**	-2.304681	-0.264255***	-2.988066

Note: Significant at: *10, **5 and ***1 percent levels

The results of the above study show that in the short term, total Islamic financing has a positive and significant effect on industrial production by 1.53%. This means that when there is a 1% change in Islamic financing, the industrial production index will increase by 1.53%. These results are in line with research conducted by Kassim (2016) for cases in Malaysia, Abduh and Omar (2012), and Masrizal and Trianto (2022) for cases in Indonesia. Meanwhile, PLS financing contracts of -0.02% and non-PLS of -0.02% negatively and significantly affect the industrial production index. The results also show that the CPI variable affects the industrial production index in the short term. Still, the positive influence is only found in the total Islamic financing model. Meanwhile, the EXP variable in the three models has a positive and significant effect on industrial production in the short term.

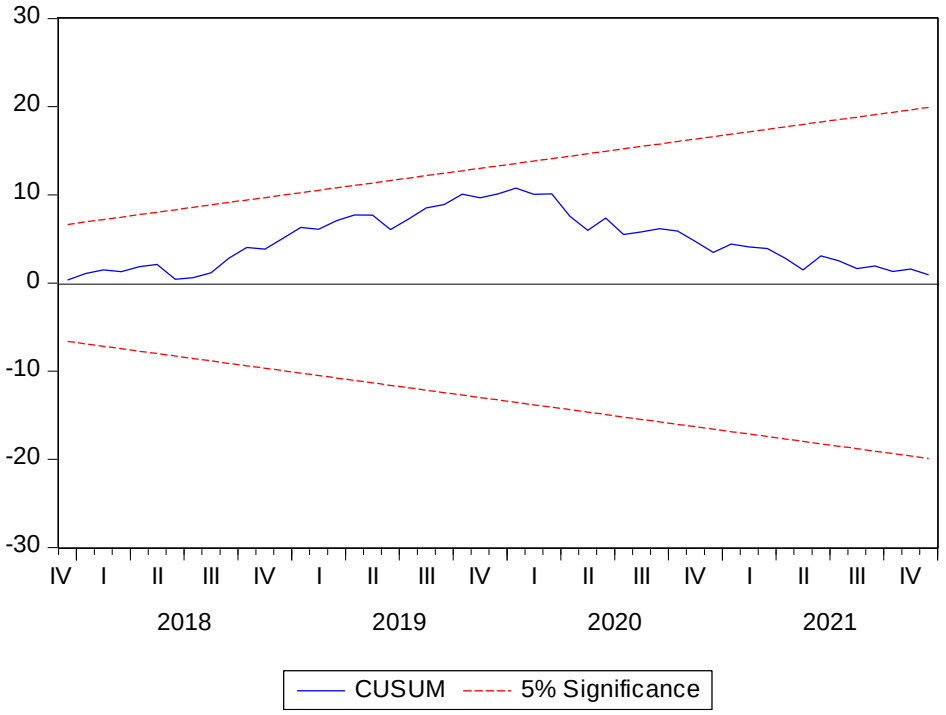

Figure 2 Cusum FN

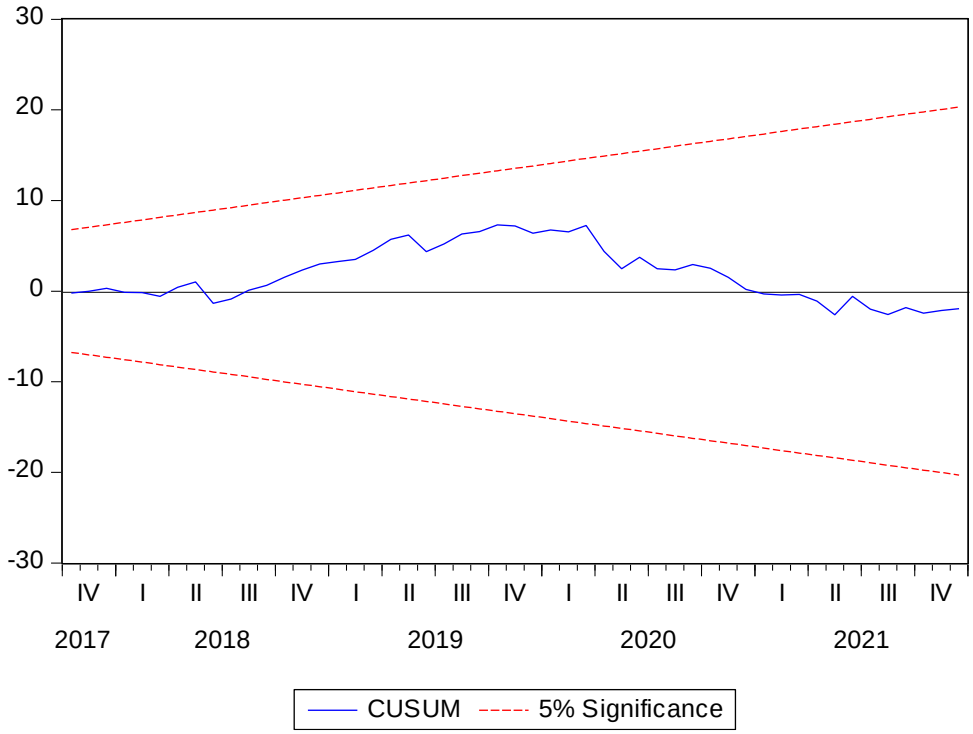

Figure 4 Cusum NPLS

Conclusion

Indonesia is the country with the largest Muslim population in the world. It, therefore, has excellent potential for the development of Islamic finance. One of the crucial roles in encouraging economic growth seen from industrial production is financing from the Islamic banking sector with PLS and non-PLS schemes. The study found that Islamic total funding significantly positively influenced industrial output in the long and short term. Our results also show that the contribution of real financing using non-PLS schemes is more significant than PLS schemes in the long term. PLS and NPLS schemes have a negative influence in the short term. This is no longer in accordance with the initial spirit of opening Islamic banking, which carries the PLS concept. The PLS concept was carried out to replace interest-based financing. The growing dominance of non-PLS financing contradicts Islamic banking theory. It undermines the ability to generate substantial economic development impacts by limiting the ability of new entrepreneurs to invest in new ventures. Therefore, the researcher recommends to decision-makers, regulators, and the Islamic banking industry that to increase the contribution of Islamic banking in supporting the real sector to drive the economy, they must increase the proportion of financing with the PLS scheme. In addition, we recommend that Islamic banks train their personnel to improve the quality and number of human resources to have adequate knowledge in financing based on PLS. For regulators, there needs to be incentives and regulations to use PLS financing schemes to achieve maximum potential. Thus, Islamic banking is expected to be a solution for the national and global economy.

The skills and knowledge of Islamic bank personnel are critical in effectively implementing PLS schemes. Research shows that successful deployment of PLS financing requires understanding risk assessment and relationship management to build trust between banks and clients. Therefore, it is recommended that Islamic banks implement comprehensive training programs focused on PLS-specific financial models, risk management techniques, and ethical finance principles. This will equip personnel with the necessary skills to effectively manage and promote PLS products, enhancing customer satisfaction and financing outcomes. Furthermore, a stronger PLS foundation can lead to higher profitability for banks as they foster longer-term partnerships with high-growth potential ventures.

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