International Journal of Accounting and Economics Studies, 13 (2) (2026) 37-46

International Journal of Accounting and Economics Studies

Website: www.sciencepubco.com/index.php/IJAES
https://doi.org/10.14419/5nvdjy97
Research paper

A Synergy Development Model for The Islamic Economy Ecosystem-Based on Productive Debtors: Evidence From Financing The Customers of The Bank Sumut Sharia

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Received: December 30, 2025, Accepted: January 26, 2026, Published: February 8, 2026

Abstract

Islamic financial institutions in Indonesia continue to face challenges in optimizing productive financing to enhance business productivity while simultaneously fostering a synergistic and sustainable Islamic economic ecosystem. A key concern is that, although productive financing improves debtor performance, its impact remains limited in creating interconnections among ecosystem actors. This study investigates the effect of productive financing on debtor productivity and ecosystem synergy, examining the mediating role of productivity using evidence from financing customers of Bank Sumut Sharia. A Quantitative methods approach with a sequential explanatory design is employed. Quantitative data were collected through a survey and analyzed using Partial Least Squares–Structural Equation Modeling (SEM-PLS), while qualitative data were obtained through in-depth interviews with experts, bank management, and productive debtors to enrich and validate the quantitative findings. The results indicate that productive financing has a positive and significant effect on debtor productivity ($\beta = 0.042$; $p = 0.003$), aligning with Supply Chain Financing Ecosystem Theory and the maqāṣid al-sharīʿah, particularly ḥifẓ al-māl. However, productive financing does not significantly influence ecosystem synergy ($\beta = 0.005$; $p = 0.605$). Likewise, productivity does not significantly affect ecosystem synergy ($\beta = -0.007$; $p = 0.329$) and fails to mediate the relationship between productive financing and ecosystem synergy. This study contributes by proposing a synergy development model for the Islamic economic ecosystem based on productive debtors, integrating financing, business mentoring, cluster development, and multi-actor collaboration to support a more inclusive and sustainable Islamic economy.

Keywords: *Islamic Economics; Productive Financing; Productivity; Ecosystem Synergy; Maqāṣid Al-Sharīʿah.*

1. Introduction

The development of the Islamic economy has become an increasingly prominent agenda in many Muslim-majority countries, including Indonesia, as part of a broader strategy to achieve inclusive and sustainable economic growth. Indonesia, which hosts the world's largest Muslim population, has significant potential to position itself as a global hub for Islamic finance and the halal economy. This ambition is reflected in various national policy frameworks, such as the Master Plan for Indonesian Sharia Economy (MEKSI), which emphasizes the integration of Islamic finance, halal industries, Islamic social finance, and micro, small, and medium enterprises (MSMEs). Within this context, Islamic banking plays a pivotal role, particularly through productive financing aimed at supporting real-sector activities and enhancing entrepreneurial capacity (Ascarya & Yumanita, 2022; Hassan, Aliyu, Huda, & Rashid, 2023). While these policies and academic discussions have been extensively addressed in conceptual and review-based studies, empirical investigations that examine how Islamic banking financing mechanisms operate within broader economic ecosystems remain relatively limited.

Productive financing is fundamentally distinct from consumptive financing, as it is intended to generate income, expand business capacity, and create employment opportunities. In Islamic banking, productive financing instruments—such as murābaḥah, mushārakah, and muḍārabah—are expected to strengthen the linkage between the financial sector and the real economy while adhering to Sharia principles that prohibit speculative and interest-based transactions (Iqbal & Mirakhor, 2011). From a normative perspective, productive financing aligns closely with the objectives of maqāṣid al-sharīʿah, particularly ḥifẓ al-māl (preservation of wealth) and ḥifẓ al-nafs (protection of livelihoods), as it seeks to enhance economic productivity and social welfare (Chapra, 2008; Dusuki & Abozaid, 2007).

Despite the rapid growth of Islamic banking assets in Indonesia, empirical evidence suggests that the impact of productive financing on broader economic transformation remains limited. While several studies confirm that Islamic financing contributes positively to firm performance, income growth, and business sustainability at the micro level (Beck, Demirgüç-Kunt, & Merrouche, 2013; Abedifar, Hasan, &

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Tarazi, 2016), its capacity to generate systemic effects beyond individual debtors is still questionable. In practice, many productive debtors operate in isolation, with weak backward and forward linkages to suppliers, distributors, and halal value chains. As a result, productivity gains tend to be fragmented rather than embedded within a cohesive Islamic economic ecosystem. This observation highlights an empirical puzzle that cannot be sufficiently explained through conceptual reasoning alone, thereby necessitating systematic empirical investigation.

The concept of an economic ecosystem emphasizes interdependence, collaboration, and value co-creation among multiple actors, including financial institutions, businesses, regulators, supporting institutions, and communities (Moore, 1996; Adner, 2017). In the context of Islamic economics, an ecosystem perspective is particularly relevant, as Sharia principles stress cooperation (ta'āwun), justice ('adl), and shared prosperity. An effective Islamic economic ecosystem should therefore facilitate not only access to Sharia-compliant financing but also integration across halal value chains, knowledge sharing, market access, and institutional support (Hassan & Aliyu, 2018).

Recent literature has increasingly adopted ecosystem-based approaches to analyze financial development, including supply chain finance and SME ecosystems. Supply Chain Financing Ecosystem Theory argues that financing effectiveness depends not merely on capital provision but on the integration of financial flows, information flows, and physical flows among interconnected actors (Gelsomino, Mangiaracina, Perego, & Tumino, 2016). Applied to Islamic finance, this perspective implies that productive financing will generate stronger developmental outcomes when it is embedded within networks of suppliers, buyers, business support institutions, and halal certification bodies. However, empirical studies explicitly linking Islamic productive financing, debtor productivity, and ecosystem synergy remain scarce, particularly in emerging economies.

Most existing research focuses on the direct relationship between Islamic financing and firm-level outcomes, such as profitability, efficiency, and growth (Abdul-Rahman, Latif, Muda, & Abdullah, 2014; Farooq & Zaheer, 2015). While these studies provide valuable insights, they often treat productivity as an end in itself rather than as a potential catalyst for broader ecosystem integration. Moreover, limited attention has been paid to the mediating mechanisms through which productive financing may (or may not) translate into systemic synergy among economic actors. This gap is especially evident in regional Islamic banks, which play a crucial role in financing local MSMEs but operate under structural constraints, regulatory fragmentation, and limited coordination with non-financial stakeholders.

Bank Sumut Sharia, as a regional Islamic banking unit in North Sumatra, offers a relevant empirical setting to examine these issues. The province hosts a large number of MSMEs operating in agriculture, trade, food processing, and services—sectors that are closely linked to the halal economy. Bank Sumut Sharia has actively expanded its productive financing portfolio to support these sectors. Nevertheless, preliminary observations indicate that increased financing has not automatically resulted in stronger ecosystem linkages, such as clustering, supply chain integration, or sustained collaboration among debtors and other actors. This raises a critical question: why does productive financing improve debtor productivity without significantly fostering ecosystem synergy?

Addressing this question is essential both theoretically and practically. From a theoretical standpoint, it challenges the assumption that productivity improvements will naturally lead to systemic integration. From a policy and managerial perspective, it suggests that financing alone may be insufficient to build a resilient Islamic economic ecosystem. Complementary mechanisms—such as business mentoring, cluster development, digital platforms, and multi-actor coordination—may be required to transform individual productivity gains into collective economic value. Accordingly, this paper is positioned as an empirical research study rather than a conceptual or review-based contribution. It aims to analyze the effect of productive financing on debtor productivity and Islamic economic ecosystem synergy, as well as to examine the mediating role of productivity, using primary data and mixed analytical techniques. By employing a mixed-methods approach with a sequential explanatory design, this research integrates quantitative evidence from SEM-PLS analysis with qualitative insights from in-depth interviews involving experts, bank management, and productive debtors. This methodological approach allows for a more comprehensive understanding of both measurable relationships and underlying structural constraints.

The contribution of this study is threefold. First, from an empirical standpoint, it extends the Islamic finance literature by testing the relationship between productive financing, productivity, and ecosystem synergy, thereby moving beyond firm-level outcomes toward a systemic perspective. Second, it integrates Supply Chain Financing Ecosystem Theory with maqāṣid al-sharīʿah as a normative framework, offering a more holistic conceptualization of Islamic economic development. Third, it proposes a synergy development model for the Islamic economic ecosystem based on productive debtors, emphasizing the integration of financing, business assistance, clusterization, and multi-actor collaboration. This model provides actionable insights for Islamic banks, regulators, and policymakers seeking to strengthen the role of Islamic finance in fostering inclusive and sustainable economic growth.

The remainder of this paper is structured as follows. The next section reviews the relevant literature and develops the theoretical framework and hypotheses. The subsequent section outlines the research methodology, followed by the presentation of empirical results and qualitative findings. The discussion section interprets the results in light of existing theories and policy implications. Finally, the conclusion summarizes the key findings, limitations, and directions for future research.

2. Theoretical Framework

2.1. Productive financing in Islamic banking

Productive financing represents a core function of Islamic banking in linking financial intermediation with real-sector development. Unlike consumptive financing, productive financing is directed toward income-generating activities, business expansion, and value creation through Sharia-compliant contracts such as murābaḥah, mushārakah, and muḍārabah (Iqbal & Mirakhor, 2011). From an Islamic economic perspective, productive financing is not merely a financial instrument but a developmental mechanism aimed at enhancing socio-economic welfare and reducing structural inequalities.

In the framework of maqāṣid al-sharīʿah, productive financing directly supports ḥifẓ al-māl (preservation and development of wealth) by enabling entrepreneurs to utilize capital productively and sustainably (Chapra, 2008). Empirically, prior studies demonstrate that Islamic financing contributes positively to firm performance, income stability, and resilience, particularly among MSMEs (Abedifar et al., 2016; Beck et al., 2013).

However, the literature presents mixed findings regarding the broader developmental role of financing. While firm-level benefits are consistently reported, several studies suggest that financing expansion does not necessarily translate into structural transformation or inter-firm integration, especially in fragmented MSME environments. This divergence highlights a tension between micro-level productivity gains and macro or meso-level ecosystem outcomes that remains underexplored in Islamic finance research.

In SEM-PLS terms, productive financing is conceptualized as an exogenous latent construct, operationalized through indicators such as financing adequacy, contract suitability, accessibility, and Sharia compliance. These indicators capture not only capital provision but also

governance quality and institutional alignment, which are increasingly emphasized in recent Islamic banking and fintech-enabled financing models (Hassan et al., 2022; Nugroho, Badawi, & Hidayat, 2023).

2.2. Debtor productivity

Productivity refers to the ability of productive debtors to transform financial inputs into tangible outputs, such as increased production volume, sales growth, efficiency improvements, and business sustainability. In development finance literature, productivity is often viewed as a key intermediate outcome linking financial access to economic growth (Beck & Demirgüç-Kunt, 2006).

Within Islamic finance, productivity carries additional normative significance. Enhanced productivity is expected to translate into improved livelihoods, employment creation, and equitable wealth distribution, thereby reinforcing the ethical foundations of Islamic economic activity (Dusuki & Abozaid, 2007). Empirical studies consistently report a positive association between access to financing and MSME productivity, particularly when financing is aligned with business needs and accompanied by supportive institutional mechanisms (Abdul-Rahman et al., 2014).

Nevertheless, recent studies highlight that productivity improvements are increasingly shaped by non-financial factors, including digital adoption, platform participation, and access to MSME networks. This suggests that productivity alone may be a necessary but insufficient condition for broader economic integration (OECD, 2021; Aysan, Disli, & Ozturk, 2023).

In this study, debtor productivity is positioned as an endogenous construct and simultaneously as a mediating variable. SEM-PLS is particularly suitable for this role, as it allows the examination of both direct and indirect effects without imposing strict distributional assumptions. Productivity is operationalized using reflective indicators such as output growth, sales performance, cost efficiency, and business continuity.

2.3. Islamic economic ecosystem synergy

The concept of ecosystem synergy emphasizes coordinated interactions, complementarities, and value co-creation among multiple actors within an economic system (Adner, 2017; Moore, 1996). In conventional ecosystem theory, synergy is primarily evaluated in terms of efficiency, innovation, and competitive advantage.

In an Islamic economic context, ecosystem synergy extends beyond market efficiency to include ethical collaboration (ta‘āwun), justice (‘adl), and collective welfare (falāḥ). This distinction underscores the normative uniqueness of Islamic economic ecosystems, where value creation is assessed not only by economic returns but also by social and moral outcomes.

An Islamic economic ecosystem typically comprises Islamic financial institutions, productive enterprises, halal supply chains, supporting institutions (e.g., certification bodies, business development services), regulators, and communities. Synergy emerges when these actors are interconnected through functional linkages such as supply chain integration, information sharing, joint market access, and collaborative platforms (Hassan & Aliyu, 2018). Recent literature emphasizes the growing role of digital platforms, fintech-based financing, and MSME digital ecosystems in facilitating such interconnections, particularly in emerging economies (World Bank, 2022; Razak et al., 2024).

However, prior studies suggest that financing alone is insufficient to generate ecosystem-level synergy. Structural barriers, regulatory fragmentation, limited digital readiness, and weak coordination mechanisms often prevent productivity gains at the firm level from translating into systemic integration (Gelsomino et al., 2016). In SEM-PLS modeling, ecosystem synergy is conceptualized as a higher-order endogenous construct, measured through indicators such as network collaboration, value-chain integration, institutional support, and interactor coordination.

2.4. Relationship between productive financing and debtor productivity

From both conventional development finance theory and Islamic economic principles, access to adequate and well-structured financing is expected to enhance debtor productivity. Financing enables businesses to invest in capital, technology, raw materials, and labor, thereby improving operational efficiency and output capacity.

Supply Chain Financing Ecosystem Theory further posits that financing effectiveness is maximized when it aligns with production cycles and business needs (Gelsomino et al., 2016). In Islamic banking, Sharia-compliant contracts emphasize asset-backed transactions and risk-sharing, which can strengthen the linkage between financing and productive activities (Iqbal & Mirakhor, 2011). Based on this theoretical and empirical foundation, the first hypothesis is formulated as follows:

H1: Productive financing has a positive and significant effect on debtor productivity.

2.5. Relationship between productive financing and ecosystem synergy

While productive financing is expected to improve individual business performance, its direct effect on ecosystem synergy is theoretically ambiguous. On the one hand, increased financing may facilitate participation in supply chains and collaborative networks. On the other hand, without deliberate coordination mechanisms, financing may remain atomistic, benefiting individual firms without fostering interconnections.

Empirical evidence on this relationship remains limited, particularly in Islamic banking contexts. Some studies indicate that financial deepening does not automatically lead to stronger economic integration unless supported by institutional, digital, and organizational frameworks (Adner, 2017; World Bank, 2022). Accordingly, this study empirically examines the direct linkage between productive financing and Islamic economic ecosystem synergy, leading to the following hypothesis:

H2: Productive financing has a positive and significant effect on Islamic economic ecosystem synergy.

2.6. Relationship between debtor productivity and ecosystem synergy

Productivity improvements are often assumed to facilitate ecosystem integration by enabling firms to meet quality standards, participate in value chains, and engage in collaborative activities. In theory, productive firms are better positioned to connect with suppliers, buyers, and supporting institutions.

However, in fragmented economic environments, productivity gains may remain isolated and fail to generate systemic effects. Recent ecosystem studies suggest that without network orchestration and platform-based coordination, productivity does not automatically evolve

into synergy (Adner & Kapoor, 2021). From an SEM-PLS perspective, testing this path allows an assessment of whether productivity functions as a catalyst for ecosystem-level synergy.
H3: Debtor productivity has a positive and significant effect on Islamic economic ecosystem synergy.

2.7. The mediating role of debtor productivity

Building on mediation theory, productive financing may influence ecosystem synergy indirectly through its effect on debtor productivity. In this causal chain, financing enhances productivity, which in turn enables greater participation in interconnected economic activities.
This mediation mechanism is particularly relevant in Islamic finance, where financing is expected to generate both economic and social spillovers through productive and ethical enterprise development. SEM-PLS is particularly appropriate for testing such mediation effects, especially in exploratory or context-specific research with complex constructs. Accordingly, the mediation hypothesis is explicitly stated as follows:
H4: Debtor productivity mediates the relationship between productive financing and Islamic economic ecosystem synergy.

3. Research Method

3.1. Research design

This study employs a quantitative approach to comprehensively examine the impact of productive financing on debtor productivity and the synergy of the Islamic economic ecosystem. In this design, quantitative data collection and analysis. This approach allows the study to capture both empirical relationships and underlying mechanisms in the implementation of Islamic financing.

3.2. Population and sample

a) Population
The population consists of Mudharabah and Musyarakah financing debtors of Bank Sumut Sharia in North Sumatra, spanning 10 regencies and cities. According to the Financial Services Authority (OJK, 2022), the total number of active accounts in Mudharabah and Musyarakah financing is 226,305. The population includes all types of accounts across major cities such as Medan, Pematang Siantar, and Tapanuli Selatan.
b) Sample Size
Sample determination considered the Structural Equation Modeling (SEM) requirements. SEM guidelines suggest a minimum of 100–300 observations for valid path estimation (Hair, Anderson, Tatham, & Black, 1998; Foster, 2005). Following Jöreskog and Sörbom's (1996) recommendation, the study involves 15 indicators, leading to a minimum sample of 150 respondents. To account for potential outliers, the study uses a sample of 200 respondents.
c) Sampling Technique
A proportional random sampling technique was employed to ensure representativeness across all regencies/cities. The sample for each stratum was calculated using Cochran's formula (Ar-Rasyid, 1994), adjusting for population size in each region and expected response rates. For example, Medan contributes 94 respondents, Pematang Siantar 13, and Tapanuli Selatan 4, among others, totaling 128 respondents for analysis after stratification and proportional allocation.

3.3. Data collection techniques

Quantitative data were collected via a structured online questionnaire using Google Forms, targeting selected debtors. The questionnaire used a 5-point Likert scale to measure constructs: Productive Financing (independent variable), Debtor Productivity (moderating variable), and Islamic Economic Ecosystem Synergy (dependent variable). This method enables broad coverage, ease of administration, and seamless integration with SEM-PLS software for analysis (Hair et al., 2022).

3.4. Operational definition of variables

Variable	Definition	Indicators	Scale
Productive Financing (X)	Working capital and investment financing provided by Bank Sumut Sharia with full bank capital contribution.	Profit-sharing rate (X1), Financing tenure (X2), Collateral (X3), Disbursement procedure and time (X4)	Likert 5-pt
Debtor Productivity (Y)	Ratio of output to input in debtor business operations	Income (Y1), Workforce development (Y2), Product marketing (Y3), Technology/equipment (Y4), Financial management (Y5), Capital adequacy (Y6)	Likert 5-pt
Islamic Economic Ecosystem Synergy (Z)	Degree of integration and collaboration among ecosystem actors	Synergy with halal industry (Z1), Synergy with other Sharia financial institutions (Z2), Synergy with government institutions (Z3)	Likert 5-pt

All variables were measured reflectively, consistent with SEM-PLS requirements (Hair et al., 2022).

3.5. Data analysis

3.5.1. Outer model assessment (measurement model)

The outer model represents the relationships between latent variables and their respective indicators. Latent constructs in this study—productive financing, debtor productivity, and ecosystem synergy—cannot be measured directly and are reflected by multiple observable indicators. Each construct was measured reflectively, with indicators selected based on prior literature and theoretical justification, including Supply Chain Financing Theory, Maqashid Sharia, productivity theory, and system synergy concepts.
Evaluation of the outer model involves:

1) Item Loading Factor (λ): The loading factor assesses how well an item reflects its latent construct. Items with factor loadings below 0.50 are considered unreliable and may be removed (Hair et al., 2022).
2) Construct Reliability (CR): CR measures the internal consistency of indicators forming a construct. Values ≥0.70 indicate good reliability; 0.60–0.70 is acceptable for exploratory research (Hair et al., 2022).
3) Average Variance Extracted (AVE): AVE evaluates convergent validity, indicating the proportion of variance. AVE ≥0.50 demonstrates that indicators adequately represent the construct (Fornell & Larcker, 1981).
4) Discriminant Validity: Ensures that constructs are empirically distinct. Assessment includes:

- Fornell-Larcker criterion: Square root of AVE > inter-construct correlations.
- Cross-loadings: Indicators load higher on their own construct than others.
- Heterotrait-Monotrait ratio (HTMT): HTMT ≤0.85 confirms discriminant validity (Henseler, Ringle, & Sarstedt, 2015).

3.5.2. Inner model assessment (structural model)

The inner model evaluates relationships among latent variables. The model is expressed as:

$$\eta_j = \sum \beta_{ij} \eta_i + \zeta_j$$

Where:
η_j: Endogenous latent variable,
η_i: Exogenous latent variable,
β_ij: Path coefficient between η_i and η_j,
ζ_j: Residual variance of η_j not explained by exogenous variables.
Key assessments in the inner model include:

1) R-Square (R^2): Indicates the proportion of variance in an endogenous construct explained by exogenous constructs. Interpretation: 0.75 = substantial, 0.50 = moderate, 0.25 = weak (Hair et al., 2022).
2) Path Coefficients (β): Represent the strength and direction of relationships. Values >0.5 are strong, 0.3–0.5 moderate, and <0.3 weak. A relationship is significant if $t \geq 1.96$ ($p \leq 0.05$, 95% confidence level).
3) Mediation Testing: Indirect effects of debtor productivity between productive financing and ecosystem synergy are examined. Bootstrapped confidence intervals assess whether the indirect effect differs significantly from zero.
4) Model Fit and Predictive Relevance: The structural model's predictive relevance is evaluated using Stone-Geisser Q^2 and examining the predictive ability of endogenous constructs in line with the theoretical framework (Hair et al., 2022).

4. Result and Discussion

4.1. Outer model assessment

The evaluation of the outer model (measurement model) aims to ensure that the indicators used in this study adequately represent their respective latent constructs. Following the guidelines of Partial Least Squares Structural Equation Modeling (PLS-SEM), the assessment focuses on indicator reliability (loading factors), internal consistency reliability (construct reliability), convergent validity (Average Variance Extracted), and discriminant validity (Hair et al., 2022).
The latent constructs examined include Productive Financing (X), Debtor Productivity (Y), and Islamic Economic Ecosystem Synergy (Z), all of which are specified as reflective constructs, as their indicators are assumed to be manifestations of the underlying latent variables.

4.1.1. Indicator reliability (loading factor analysis)

Loading factor analysis constitutes a critical stage in construct validation, as it evaluates the extent to which each indicator reliably reflects its corresponding latent construct. High loading values indicate strong and meaningful relationships between observed indicators and latent variables, whereas low loadings may suggest weak measurement properties and the need for indicator refinement or elimination (Hair et al., 2022).

Table 1: Loading Factor

	X	Y	Z
X1.6			
X1.6	0.805		
X2.2	0.701		
X2.2			
X2.3			
X2.3	0.767		
X2.4	0.804		
X2.4			
X3.1	0.727		
X3.1			
X3.3			
X3.3	0.815		
X4.1	0.813		
X4.1			
X4.2	0.883		
X4.2			
X4.3			
X4.3	0.820		
X4.4			
X4.4	0.834		
X4.5	0.870		

	X	Y	Z
X4.5			
Y1.1		0.771	
Y1.1			
Y1.3		0.854	
Y1.3			
Y1.4		0.829	
Y1.4			
Y1.5			
Y1.5		0.885	
Y2.2		0.814	
Y2.2			
Y2.4		0.848	
Y2.4			
Y2.5		0.732	
Y2.5			
Y2.7		0.896	
Y2.7			
Y3.1			
Y3.1		0.905	
Y4.2			
Y4.2		0.759	
Y4.3		0.829	
Y4.3			
Y5.1		0.765	
Y5.1			
Y5.3			
Y5.3		0.742	
Y5.4			
Y5.4		0.806	
Y5.5		0.858	
Y5.5			
Y6.1		0.852	
Y6.1			
Y6.2			
Y6.2		0.773	
Y6.3			
Y6.3		0.766	
Y6.4			
Y6.4		0.703	
Z1.1			
Z1.1			0.849
Z1.2			
Z1.2			0.908
Z1.3			
Z1.3			0.931
Z1.4			0.963
Z1.4			
Z1.5			0.944
Z1.5			
Z1.6			0.860
Z1.6			
Z1.7			
Z1.7			0.897
Z1.8			
Z1.8			0.844
Z1.9			0.902
Z1.9			
Z2.1			
Z2.1			0.733
Z2.4			
Z2.4			0.824
Z3.1			0.881
Z3.1			
Z3.2			
Z3.2			0.901
Z3.3			0.858
Z3.3			
Z3.4			
Z3.4			0.814
Z3.5			0.864
Z3.5			
Z3.6			
Z3.6			0.864
Z3.7			0.901
Z3.7			
x1.1			
x1.1	0.753		
x1.2	0.816		
x1.2			

	X	Y	Z
x1.3	0.758		
x1.3			
x1.4			
x1.4	0.711		
x3.2	0.798		
x3.2			

Table 1 presents the standardized outer loadings for all indicators associated with constructs X, Y, and Z. The results demonstrate that all indicators exhibit loading values above the recommended threshold of 0.70, indicating satisfactory indicator reliability. Specifically, indicators for Productive Financing (X) show loading values ranging from 0.701 to 0.883, reflecting stable and consistent measurement after the elimination of weaker items in earlier stages. Indicators measuring Debtor Productivity (Y) also demonstrate strong loadings, ranging from 0.703 to 0.905, confirming robust convergent properties across productivity dimensions.

Notably, Islamic Economic Ecosystem Synergy (Z) exhibits the strongest indicator performance, with most loadings exceeding 0.85 and several approaching 0.96. This finding indicates an exceptionally strong representational capacity of the indicators in capturing ecosystem synergy. The achievement of uniformly high loading factors across all constructs confirms that each indicator contributes meaningfully to its latent variable, thereby supporting the adequacy of the measurement model for subsequent structural analysis (Hair et al., 2022).

4.1.2. Internal consistency reliability (construct reliability)

Internal consistency reliability assesses the extent to which indicators consistently measure the same construct. In PLS-SEM, this is commonly evaluated using Cronbach's Alpha, Composite Reliability (ρa), and Composite Reliability (ρc). Values exceeding 0.70 indicate acceptable reliability, while higher values reflect stronger internal consistency (Hair et al., 2022).

Table 2: Construct Reliability

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)
X	0.949	0.962	0.957
Y	0.968	0.974	0.971
Z	0.977	0.983	0.979

As shown in Table 4.18, all constructs exhibit very high reliability values. The Productive Financing (X) construct records a Cronbach's Alpha of 0.949, ρa of 0.962, and ρc of 0.957. Debtor Productivity (Y) demonstrates even higher consistency, with values of 0.968, 0.974, and 0.971, respectively. The highest reliability is observed for Islamic Economic Ecosystem Synergy (Z), with Cronbach's Alpha of 0.977, ρa of 0.983, and ρc of 0.979.

These results confirm excellent internal consistency across all constructs, indicating that the indicators reliably capture the intended latent variables. The high reliability values further strengthen confidence in the robustness of the measurement instrument and reduce the likelihood that structural relationships are biased by measurement error.

4.1.3. Convergent validity (average variance extracted)

Convergent validity evaluates whether a construct explains a sufficient proportion of variance in its indicators. This is assessed using Average Variance Extracted (AVE), where a value of 0.50 or higher indicates that the construct explains at least 50% of the variance of its indicators (Fornell & Larcker, 1981).

Table 3: Average Variance Extracted

	Average variance extracted (AVE)
X	0.776
Y	0.755
Z	0.701

Table 3 reports AVE values of 0.776 for Productive Financing (X), 0.755 for Debtor Productivity (Y), and 0.701 for Islamic Economic Ecosystem Synergy (Z). These results indicate that the indicators for each construct explain between 70.1% and 77.6% of the variance, far exceeding the minimum threshold.

Accordingly, all constructs demonstrate strong convergent validity, confirming that the indicators are highly representative of their respective latent variables. The high AVE values reinforce the empirical soundness of the measurement model and support its suitability for testing structural relationships.

4.1.4. Discriminant validity (fornell–larcker criterion)

Discriminant validity assesses whether a construct is empirically distinct from other constructs in the model. The Fornell–Larcker criterion requires that the square root of a construct's AVE (displayed on the diagonal of the correlation matrix) exceeds its correlations with other constructs (Fornell & Larcker, 1981).

Table 4: Fornell-Larcker Criterion

	X	Y	Z
X	0.759		
Y	0.705	0.745	
Z	0.723	0.731	0.837

As shown in Table 4, the square root of AVE for Productive Financing (X) is 0.759, which is greater than its correlations with Debtor Productivity (Y) (0.705) and Ecosystem Synergy (Z) (0.723). Similarly, Debtor Productivity (Y) exhibits a diagonal value of 0.745, exceeding its correlations with X and Z. Islamic Economic Ecosystem Synergy (Z) records the highest diagonal value (0.837), which is also greater than its correlations with the other constructs.

These findings confirm that all constructs meet the Fornell–Larcker criterion, demonstrating adequate discriminant validity. Each construct captures a unique conceptual domain without excessive overlap, providing a solid foundation for analyzing causal relationships in the structural model.

4.2. Inner model assessment

4.2.1. Coefficient of determination (R^2)

The coefficient of determination (R^2) is a central indicator in structural model evaluation, as it reflects the proportion of variance in an endogenous construct that is explained by its exogenous predictors. In PLS-SEM, R^2 values are commonly interpreted as measures of the model's predictive accuracy, with values of 0.75, 0.50, and 0.25 often described as substantial, moderate, and weak, respectively (Hair et al., 2019).

In this study, the R^2 value for construct X (Productive Financing) is 0.998, indicating that 99.8% of the variance in productive financing is explained by its antecedent constructs. While this exceptionally high value demonstrates strong predictive relationships, it also warrants caution, as R^2 values approaching 1 may indicate potential issues such as common method bias, over-specification of indicators, or redundancy among constructs. Such factors can artificially inflate R^2 and mask model limitations if not properly addressed.

Similarly, construct Y (Productivity) exhibits an R^2 value of 0.996, meaning that 99.6% of its variance is explained by its predictors. Although this near-perfect explanatory power suggests a highly stable predictive structure, it is important to consider that multicollinearity among indicators or highly correlated latent variables may contribute to such extreme values. Therefore, complementary assessments, including variance inflation factors (VIF) and cross-loadings, are necessary to ensure construct distinctiveness and validity.

Construct Z (Sharia Ecosystem Synergy) records the highest R^2 value of 0.999, implying that 99.9% of its variance is explained by other constructs in the model. While this finding highlights strong interrelationships and coherence among constructs, it also raises the possibility that the model may be over-specified. Careful inspection of indicator relevance, potential redundancy, and model parsimony is recommended to confirm that the high explanatory accuracy reflects substantive relationships rather than statistical artifacts.

Importantly, the identical values of R^2 and adjusted R^2 across all endogenous constructs (X, Y, and Z) indicate the absence of overfitting from model complexity. However, given the extremely high R^2 values, further diagnostic checks, such as Harman's single-factor test for common method bias and evaluation of indicator cross-loadings, are suggested to reinforce confidence in the model results (Hair et al., 2021). Overall, the results confirm that the structural model demonstrates excellent predictive power, with the caveat that extreme R^2 values require careful interpretation to rule out potential methodological issues, and is well-suited for hypothesis testing and theoretical inference.

4.2.2. Direct effects

Direct effects in a structural model represent the immediate influence of one latent construct on another without mediation. In this research, direct effect analysis is employed to assess the magnitude and significance of causal relationships among latent variables, thereby evaluating the effectiveness of the hypothesized structural paths (Chin, 2010).

The results show that profit-sharing rates (X1) exert a significant positive effect on productive financing (X) ($\beta = 0.325$, $t = 20.358$, $p < 0.001$). This finding indicates that more competitive and attractive profit-sharing schemes offered by Islamic financial institutions significantly encourage productive financing for MSMEs. The consistency between the original sample and the sample mean, along with the low standard deviation, confirms the robustness of this estimation.

The financing tenor (X2) also has a significant positive impact on productive financing ($\beta = 0.203$, $t = 13.114$, $p < 0.001$), suggesting that longer or more flexible repayment periods enhance MSMEs' capacity to utilize financing for productive activities. Likewise, collateral requirements (X3) positively influence productive financing ($\beta = 0.187$, $t = 10.691$, $p < 0.001$), indicating that although collateral is not the core principle in Islamic finance, it remains an important practical consideration in financing decisions.

Among all antecedents of productive financing, procedures and disbursement speed (X4) emerge as the most dominant factor ($\beta = 0.380$, $t = 20.410$, $p < 0.001$). This result highlights that efficient procedures and timely fund disbursement substantially strengthen MSMEs' willingness to engage in productive financing.

Regarding productivity (Y), all indicators—income growth (Y1), labor development (Y2), product marketing (Y3), technology adoption (Y4), financial management (Y5), and capital adequacy (Y6)—exert positive and significant effects. Income growth shows the strongest influence ($\beta = 0.228$, $p < 0.001$), followed by financial management and marketing capability, indicating that productivity improvements are multidimensional and depend on both financial and managerial capacities.

For Sharia ecosystem synergy (Z), synergy with the halal industry (Z1) has the strongest effect ($\beta = 0.518$, $t = 33.092$, $p < 0.001$), followed by synergy with government (Z3) and other financial institutions (Z2). These results underscore that ecosystem strength is primarily driven by institutional collaboration rather than individual firm performance.

The direct path from productive financing (X) to productivity (Y) is positive and statistically significant ($\beta = 0.042$, $t = 9.737$, $p = 0.003$), confirming that productive financing contributes to improved MSME productivity. However, the relatively small coefficient suggests that financing alone is insufficient and must be complemented by market access, technology, and managerial capability.

In contrast, the direct effects of productivity (Y) on Sharia ecosystem synergy (Z) ($\beta = -0.007$, $p = 0.841$) and productive financing (X) on Sharia ecosystem synergy (Z) ($\beta = 0.005$, $p = 0.604$) are statistically insignificant. These findings indicate that improvements at the firm level do not automatically translate into stronger ecosystem-level collaboration. This disconnect highlights structural challenges in integrating productive MSMEs into a broader Sharia economic ecosystem and suggests that ecosystem development requires deliberate institutional design, policy intervention, and collaborative platforms rather than relying solely on firm-level success.

5. Conclusion

5.1. Conclusion

This study provides empirical evidence on the structural relationships between productive financing, MSME productivity, and Sharia economic ecosystem synergy within the context of Islamic financial institutions. Using a PLS-SEM approach, the findings demonstrate that the proposed model exhibits exceptionally high predictive power, as reflected by the substantial R^2 and adjusted R^2 values across all endogenous constructs. This confirms that the determinants of productive financing, productivity, and ecosystem synergy are comprehensively captured within the research framework. The results reveal that productive financing is significantly influenced by profit-sharing

schemes, financing tenure, collateral considerations, and—most dominantly—procedural efficiency and disbursement speed. These findings underscore the importance of operational efficiency and institutional responsiveness in enhancing MSMEs' access to productive Islamic financing. Faster and less complex financing procedures strengthen trust and encourage entrepreneurs to utilize financing for productive purposes rather than short-term consumption. Furthermore, productive financing is shown to have a positive and statistically significant effect on MSME productivity, indicating that Islamic financing plays a functional role in supporting income growth, labor expansion, marketing capacity, technological adoption, and financial management. However, the relatively modest magnitude of this effect suggests that financing alone is insufficient to generate substantial productivity gains without complementary non-financial support. Notably, the study finds no significant direct relationship between MSME productivity and Sharia ecosystem synergy, nor between productive financing and ecosystem synergy. This indicates that firm-level success does not automatically translate into stronger ecosystem-level collaboration. Instead, Sharia ecosystem synergy is primarily driven by institutional partnerships, particularly with the halal industry, government, and other financial institutions. These findings highlight a structural disconnect between individual enterprise performance and systemic ecosystem development within the Islamic economy. Overall, the study contributes to the Islamic finance literature by demonstrating that while productive financing effectively enhances MSME productivity, the transformation of productivity gains into a resilient and integrated Sharia economic ecosystem requires deliberate institutional coordination, policy alignment, and ecosystem-oriented strategies.

5.2. Recommendations

Based on the empirical findings, several strategic recommendations can be proposed for policymakers, Islamic financial institutions, and ecosystem stakeholders. First, Islamic financial institutions should prioritize procedural efficiency and accelerate financing disbursement processes. Simplifying administrative requirements, leveraging digital financing platforms, and improving internal coordination can significantly enhance the effectiveness of productive financing and increase MSMEs' utilization of Sharia-based financial products. Second, financing programs should be integrated with capacity-building initiatives. Training in financial management, digital marketing, technology utilization, and human resource development is essential to amplify the productivity impact of financing. A hybrid approach that combines financial and non-financial support will enable MSMEs to optimize the use of capital and achieve sustainable growth. Third, policymakers and regulators should design financing schemes that explicitly encourage ecosystem integration. Incentive mechanisms—such as preferential financing terms for MSMEs engaged in halal value chains, government-backed guarantees, or tax incentives for collaborative projects—can strengthen linkages between MSMEs, the halal industry, and supporting institutions. Fourth, the development of formal collaboration platforms is crucial to bridging the gap between productivity and ecosystem synergy. Islamic financial institutions, government agencies, and halal industry players should jointly facilitate networking hubs, shared databases, and integrated supply-chain platforms that promote cross-sector collaboration and knowledge exchange. Finally, for future research, scholars are encouraged to extend this model by explicitly incorporating moderating or mediating variables such as institutional support, digital ecosystem readiness, regulatory quality, or governance mechanisms. Longitudinal designs and comparative cross-regional studies are particularly recommended to capture dynamic effects over time and variations across different Islamic banking and MSME environments. Such approaches would provide deeper and more actionable insights into how productive financing can be effectively transformed into systemic and sustainable Sharia economic development. In conclusion, productive Islamic financing is a necessary but not sufficient condition for building a strong Sharia economic ecosystem. Achieving sustainable ecosystem synergy requires a coordinated, policy-driven, and institutionally integrated approach that aligns financial inclusion with structural economic transformation while leveraging digital and organizational capabilities.

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